## JVC

## SERVICE MANUAL

## DVD PLAYER \& VIDEO CASSETTE RECORDER

## HR-XVC22UC, HR-XVC23UC, HR-XVC26US, HR-XVC27UC, HR-XVC27US



HR-XVC22UC, HR-XVC23UC, HR-XVC26US, HR-XVC27UC, HR-XVC27US [D3PV0]
For disassembling and assembling of MECHANISM ASSEMBLY, refer to the SERVICE MANUAL No.86700(MECHANISM ASSEMBLY).

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## SPECIFICATION

|  | HR-XVC22UC, HR-XVC23UC | HR-XVC26US ,HR-XVC27UC, HR-XVC27US |
| :---: | :---: | :---: |
| GENERAL |  |  |
| Power requirement | AC $120 \mathrm{~V}, 60 \mathrm{~Hz}$ |  |
| Power consumption |  |  |
| Power on | 22 W |  |
| Power off | 2.0 W |  |
| Temperature |  |  |
| Operating | $5^{\circ} \mathrm{C}$ to $40^{\circ} \mathrm{C}\left(41^{\circ} \mathrm{F}\right.$ to $\left.104^{\circ} \mathrm{F}\right)$ |  |
| Storage | $-20^{\circ} \mathrm{C}$ to $60^{\circ} \mathrm{C}\left(-4^{\circ} \mathrm{F}\right.$ to $\left.140^{\circ} \mathrm{F}\right)$ |  |
| Operating position | Horizontal only |  |
| Dimensions (W $\times \mathrm{H} \times \mathrm{D}$ ) | 435 mm x $93 \mathrm{~mm} \times 272 \mathrm{~mm}$ |  |
| Weight | 4.1 kg |  |
| Format | VHS NTSC standard |  |
| Maximum recording time |  |  |
| (SP) | 210 min. with ST-210 video cassette |  |
| (EP) | 630 min . with ST-210 video cassette |  |
| VIDEO/AUDIO (VCR deck) |  |  |
| Signal system | NTSC color signal and EIA monochrome signal, 525 lines/60 fields |  |
| Recording system | DA4 (Double Azimuth) head helical scan system |  |
| Signal-to-noise ratio | 45 dB |  |
| Horizontal resolution | 230 lines |  |
| Frequency range | 70 Hz to 10,000 Hz (Normal audio) 20 Hz to $20,000 \mathrm{~Hz}$ (Hi-Fi audio) |  |
| Input/Output | RCA connectors: IN $\times 1$, OUT $\times 1$ |  |
| VIDEO/AUDIO (DVD deck) |  |  |
| Signal system | NTSC |  |
| Applicable disc | DVD (12 cm, 8 cm ), CD (12 cm, 8 cm ) |  |
| Audio characteristics | DVD: $4 \mathrm{~Hz}-22 \mathrm{KHz}$ |  |
| Frequency response | CD: $4 \mathrm{~Hz}-20 \mathrm{KHz}$ |  |
| S/N Ratio | 90 dB |  |
| Harmonic distortion | 0.1\% |  |
| Wow and flutter | Below Measurable Level |  |
| Dynamic range | 90 dB |  |
| Output |  |  |
| Component-Y | (RCA) $1.0 \mathrm{Vp}-\mathrm{p} / 75 \Omega$ |  |
| Component-PB/PR | (RCA) $0.7 \mathrm{Vp-p/75} \Omega$ |  |
| Audio | (RCA) $2 \mathrm{Vrms}, 1 \mathrm{~K} \Omega$ |  |
| Digital Audio | (COAXIAL) $0.5 \mathrm{Vp}-\mathrm{p} / 75 \Omega$ |  |
| TUNER |  |  |
| Tuning system | Frequency synthesized tuner |  |
| Channel coverage | VHF: Channels 2-13, UHF: Channels 14-69, CATV: 113 Channels |  |
| RF output | - | Channel 3 or 4 (switchable; preset to Channel shipped) $75 \Omega$, unbalanced |
| TIMER |  |  |
| Clock reference | Quartz |  |
| Program capacity | 1-year programmable timer/8 programs |  |
| Memory backup time | Approx. 5 seconds |  |
| ACCESSORIES |  |  |
| Provided accessories | /Video cable, Infrared remote control unit, | RF cable, Infrared remote control unit, "AA" battery $\times$ |

- Specifications shown are for SP mode unless otherwise specified.
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## SECTION 1 PRECAUTION

### 1.1 SAFTY PRECAUTIONS

Prior to shipment from the factory, JVC products are strictly inspected to conform with the recognized product safety and electrical codes of the countries in which they are to be sold.However, in order to maintain such compliance, it is equally important to implement the following precautions when a set is being serviced.

### 1.1.1 Precautions during Servicing

(1) Locations requiring special caution are denoted by labels and inscriptions on the cabinet, chassis and certain parts of the product.When performing service, be sure to read and comply with these and other cautionary notices appearing in the operation and service manuals.
(2) Parts identified by the $\left.\begin{array}{|c}\text { ssymbol and shaded ( } \\ \square\end{array}\right)$ parts are critical for safety.
Replace only with specified part numbers.

## NOTE :

Parts in this category also include those specified to comply with X-ray emission standards for products using cathode ray tubes and those specified for compliance with various regulations regarding spurious radiation emission.
(3) Fuse replacement caution notice.

Caution for continued protection against fire hazard.
Replace only with same type and rated fuse(s) as specified.
(4) Use specified internal wiring. Note especially:

- Wires covered with PVC tubing
- Double insulated wires
- High voltage leads
(5) Use specified insulating materials for hazardous live parts. Note especially:
- Insulation Tape
- PVC tubing
- Spacers
- Insulation sheets for transistors
- Barrier
(6) When replacing AC primary side components (transformers, power cords, noise blocking capacitors, etc.) wrap ends of wires securely about the terminals before soldering.


Fig.1-1-1
(7) Observe that wires do not contact heat producing parts (heatsinks, oxide metal film resistors, fusible resistors, etc.)
(8) Check that replaced wires do not contact sharp edged or pointed parts.
(9) When a power cord has been replaced, check that 10-15 kg of force in any direction will not loosen it.


Fig.1-1-2
(10) Also check areas surrounding repaired locations.
(11) Products using cathode ray tubes (CRTs)In regard to such products, the cathode ray tubes themselves, the high voltage circuits, and related circuits are specified for compliance with recognized codes pertaining to X-ray emission.

Consequently, when servicing these products, replace the cathode ray tubes and other parts with only the specified parts. Under no circumstances attempt to modify these circuits.Unauthorized modification can increase the high voltage value and cause X -ray emission from the cathode ray tube.
(12) Crimp type wire connectorln such cases as when replacing the power transformer in sets where the connections between the power cord and power trans former primary lead wires are performed using crimp type connectors, if replacing the connectors is unavoidable, in order to prevent safety hazards, perform carefully and precisely according to the following steps.

- Connector part number :E03830-001
- Required tool : Connector crimping tool of the proper type which will not damage insulated parts.
- Replacement procedure
a) Remove the old connector by cutting the wires at a point close to the connector.Important : Do not reuse a connector (discard it).


Fig.1-1-3
b) Strip about 15 mm of the insulation from the ends of the wires. If the wires are stranded, twist the strands to avoid frayed conductors.


Fig.1-1-4
c) Align the lengths of the wires to be connected. Insert the wires fully into the connector.


Fig.1-1-5
d) As shown in Fig.1-1-6, use the crimping tool to crimp the metal sleeve at the center position. Be sure to crimp fully to the complete closure of the tool.


Fig.1-1-6
e) Check the four points noted in Fig.1-1-7.


Wire insulation recessed more than 4 mm

Fig.1-1-7

### 1.1.2 Safety Check after Servicing

Examine the area surrounding the repaired location for damage or deterioration. Observe that screws, parts and wires have been returned to original positions, Afterwards, perform the following tests and confirm the specified values in order to verify compliance with safety standards.
(1) Insulation resistance test Confirm the specified insulation resistance or greater between power cord plug prongs and externally exposed parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.).See table 1 below.
(2) Dielectric strength test

Confirm specified dielectric strength or greater between power cord plug prongs and exposed accessible parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.). See Fig.1-1-11 below.
(3) Clearance distance

When replacing primary circuit components, confirm specified clearance distance (d), (d') between soldered terminals, and between terminals and surrounding metallic parts. See Fig.1-1-11 below.


Fig.1-1-8
(4) Leakage current test

Confirm specified or lower leakage current between earth ground/power cord plug prongs and externally exposed accessible parts (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.).
Measuring Method : (Power ON)Insert load Z between earth ground/power cord plug prongs and externally exposed accessible parts. Use an AC voltmeter to measure across both terminals of load Z. See Fig.1-1-9 and following Fig.1-1-12.


Fig.1-1-9
(5) Grounding (Class 1 model only)

Confirm specified or lower grounding impedance between earth pin in AC inlet and externally exposed accessible parts (Video in, Video out, Audio in, Audio out or Fixing screw etc.).Measuring Method:
Connect milli ohm meter between earth pin in AC inlet and exposed accessible parts. See Fig.1-1-10 and grounding specifications.


| Region | Grounding Impedance (Z) |
| :--- | :---: |
| USA \& Canada | $\mathrm{Z} \leqq 0.1$ ohm |
| Europe \& Australia | $\mathrm{Z} \leqq 0.5 \mathrm{ohm}$ |

Fig.1-1-10

| AC Line Voltage | Region | Insulation Resistance (R) | Dielectric Strength | Clearance Distance (d), (d') |
| :---: | :---: | :---: | :---: | :---: |
| 100 V |  | $\mathrm{R} \geq 1 \mathrm{M} / 500 \mathrm{~V}$ ( | AC 1 kV 1 minute | $\mathrm{d}, \mathrm{d}^{\prime} \geqq 3 \mathrm{~mm}$ |
| 100 to 240 V | Japan | $\geqq$ M $2 / 500 \mathrm{~V}$ D | AC 1.5 kV 1 minute | $\mathrm{d}, \mathrm{d}^{\prime} \geqq 4 \mathrm{~mm}$ |
| 110 to 130 V | USA \& Canada | $1 \mathrm{M} \Omega \leqq \mathrm{R} \leqq 12 \mathrm{M} \Omega / 500 \vee \mathrm{DC}$ | AC 1 kV 1 minute | $\mathrm{d}, \mathrm{d}^{\prime} \geqq 3.2 \mathrm{~mm}$ |
| $\begin{aligned} & 110 \text { to } 130 \mathrm{~V} \\ & 200 \text { to } 240 \mathrm{~V} \end{aligned}$ | Europe \& Australia | $\mathrm{R} \geqq 10 \mathrm{M} \Omega / 500 \mathrm{~V}$ DC | AC 3 kV 1 minute <br> (Class II) <br> AC 1.5 kV 1 minute <br> (Class I) | $\begin{aligned} & \mathrm{d} \geqq \geqq \mathrm{~mm} \\ & \mathrm{~d}^{\prime} \geqq 8 \mathrm{~mm} \text { (Power cord) } \\ & \mathrm{d}^{\prime} \geqq 6 \mathrm{~mm} \text { (Primary wire) } \end{aligned}$ |

Fig.1-1-11

| AC Line Voltage | Region | Load Z | Leakage Current (i) | a, b, c |
| :---: | :---: | :---: | :---: | :---: |
| 100 V | Japan | $\circ \underbrace{(2)}_{1 \mathrm{k} \Omega}$ | $\mathrm{i} \leqq 1 \mathrm{~mA} \mathrm{rms}$ | Exposed accessible parts |
| 110 to 130 V | USA \& Canada |  | $\mathrm{i} \leqq 0.5 \mathrm{~mA} \mathrm{rms}$ | Exposed accessible parts |
| $\begin{aligned} & 110 \text { to } 130 \mathrm{~V} \\ & 220 \text { to } 240 \mathrm{~V} \end{aligned}$ | Europe \& Australia | $\circ \underbrace{}_{2 \mathrm{k} \Omega}$ | $\begin{aligned} & \mathrm{i} \leqq 0.7 \mathrm{~mA} \text { peak } \\ & \mathrm{i} \leqq 2 \mathrm{~mA} \mathrm{dc} \end{aligned}$ | Antenna earth terminals |
|  |  | $\circ \underbrace{2}_{50 \mathrm{k} \Omega}$ | $\mathrm{i} \leqq 0.7 \mathrm{~mA} \text { peak }$ $\mathrm{i} \leqq 2 \mathrm{mAdc}$ | Other terminals |

Fig.1-1-12

## NOTE :

These tables are unofficial and for reference only. Be sure to confirm the precise values for your particular country and locality.

### 1.2 Preventing static electricity

Electrostatic discharge (ESD), which occurs when static electricity stored in the body, fabric, etc. is discharged, can destroy the laser diode in the traverse unit (optical pickup). Take care to prevent this when performing repairs.

### 1.2.1 Grounding to prevent damage by static electricity

Static electricity in the work area can destroy the optical pickup (laser diode) in devices such as DVD players.
Be careful to use proper grounding in the area where repairs are being performed.
(1) Ground the workbench

Ground the workbench by laying conductive material (such as a conductive sheet) or an iron plate over it before placing the traverse unit (optical pickup) on it.
(2) Ground yourself

Use an anti-static wrist strap to release any static electricity built up in your body.

(3) Handling the optical pickup

- In order to maintain quality during transport and before installation, both sides of the laser diode on the replacement optical pickup are shorted. After replacement, return the shorted parts to their original condition. (Refer to the text.)
- Do not use a tester to check the condition of the laser diode in the optical pickup. The tester's internal power source can easily destroy the laser diode.


### 1.3 Precautions for Service

### 1.3.1 Handling of Traverse Unit and Laser Pickup

(1) Do not touch any peripheral element of the pickup or the actuator.
(2) The traverse unit and the pickup are precision devices and therefore must not be subjected to strong shock.
(3) Do not use a tester to examine the laser diode. (The diode can easily be destroyed by the internal power supply of the tester.)
(4) To replace the traverse unit, pull out the metal short pin for protection from charging.
(5) When replacing the pickup, after mounting a new pickup, remove the solder on the short land which is provided at the center of the flexible wire to open the circuit.
(6) Half-fixed resistors for laser power adjustment are adjusted in pairs at shipment to match the characteristics of the optical block. Do not change the setting of these half-fixed resistors for laser power adjustment.

### 1.3.2 Destruction of Traverse Unit and Laser Pickup by Static Electricity

Laser diodes are easily destroyed by static electricity charged on clothingor the human body. Before repairing peripheral elements of the traverse unit or pickup, be sure to take the following electrostatic protection:
(1) Wear an antistatic wrist wrap.
(2) With a conductive sheet or a steel plate on the workbench on which the traverse unit or the pick up is to be repaired, ground the sheet or the plate.
(3) It solders to two short circuit sections on the substrate of a pick-up.
(4) After removing the flexible wire from the connector (CN101), short-circuit the flexible wire by the metal clip.
(5) Short-circuit the laser diode by soldering the land which is provided at the center of the flexible wire for the pickup. After completing the repair, remove the solder to open the circuit.


* Please refer to the SECTION3 DISASSEMBLY method for details.


## SECTION 2 <br> SPECIFIC SERVICE INSTRUCTIONS

### 2.1 Different table of feature

The following table indicates main different points between models HR-XVC22UC, HR-XVC23UC, HR-XVC26US, HR-XVC27UC and HR-XVC27US.

|  | HR-XVC22UC | HR-XVC23UC | HR-XVC26US | HR-XVC27UC | HR-XVC27US |
| :--- | :--- | :--- | :--- | :--- | :---: |
| BODY COLOR | BLACK | PURE SILVER | BLACK | PURE SILVER | $\leftarrow$ |
| REMOCON COLOR | BLACK | GRAY | BLACK | GRAY | $\leftarrow$ |
| A/V CABLE | SUPPLIED | $\leftarrow$ | OPTIONAL | $\leftarrow$ | $\leftarrow$ |
| RF CONVERTER | NOT USED | $\leftarrow$ | USED | $\leftarrow$ | $\leftarrow$ |

NOTE :
Mark $\leftarrow$ is same as left.

### 2.2 Service position

This unit has been designed so that the Mechanism and Main board assemblies can be removed together from the bottom chassis. Before diagnosing or servicing the circuit boards, take out the major parts from the bottom chassis.

### 2.2.1 How to set the "Service position"

(1) Refer to the disassembly procedure and perform the disassembly of the major parts before removing the Mechanism assembly.
(2) Remove the screws that fix the Mechanism, Main board assembly to the bottom chassis. If any other screws are used to fix the boards, remove them also.
(3) Remove the combined Mechanism and Main board assemblies.
(4) If any other major parts are used, remove them also.
(5) Connect the wires and connectors of the major parts that have been removed in steps (1) to (4). (Refer to Fig. 2-2a.)
(6) Place the combined Mechanism, Main board and other board assemblies upside down.
(7) Insert the power cord plug into the power outlet and then proceed with the diagnostics and servicing of the board assembly.

## Notes:

- Before inserting the power cord plug into the power outlet, make sure that none of the electrical parts are able to short-circuit between the workbench and the board assembly.
- For the disassembly procedure of the major parts and details of the precautions to be taken, see "Removing the major parts".
- If there are wire connections from the Main board and Mechanism assemblies to the other major parts, be sure to remove them (including wires connected to the major parts) first before performing step (2).
- When carrying out diagnosis and repair of the Main board assembly in the "Service position", be sure to ground both the Main board and Mechanism assemblies. If they are improperly grounded, there may be noise on the playback picture or FDP counter display may move even when the mechanism is kept in an inoperative status.
- In order to diagnose the playback or recording of the cassette tape, set the Mechanism assembly to the required mode before placing it upside down. If the mechanism mode is changed (including ejection) while it is in
an upside down position the tape inside may be damaged.
- For some models, the mechanism and board assemblies are attached by connectors only. When carrying out a diagnosis or repair of the boards in the "Service position", make sure that the connectors are not disconnected.


Fig.2-2a
2.3 Jig RCU mode

This unit uses the following two modes for receiving remote control codes.
(1) User RCU mode:Ordinary mode for use by the user.
(2) Jig RCU mode: Mode for use in production and servicing.

When using the Jig RCU, it is required to set the VCR to the Jig RCU mode (the mode in which codes from the Jig RCU can be received). As both of the above two modes are stored in the EEPROM, it is required to set the VCR back to the User RCU mode each time that an adjustment is made or to check that the necessary operations have been completed.These modes can be set by the operations described below.

## Note:

- Confirm the RCU mode when exchanged parts. Since some SERVICE PARTS sets the VCR to the Jig RCU
mode as initial setting. Therefore please set the VCR to the user RCU mode after replacing the EEPROM.

| User RCU mode |
| :---: |
| $\begin{aligned} & 11.111 \\ & 11011101 \end{aligned}$ |
| Jig RCU mode |
|  |
| - (: not displayed) |

Fig.2-3a User/Jig RCU mode

### 2.3.1 Setting the Jig RCU mode

(1) Turn on the power.
(2) Press the following remocon keys continuously within 2 seconds " SET UP " $\rightarrow$ " 2 " $\rightarrow$ " 8 " $\rightarrow$ " ENTER ". When the VCR is set to the Jig RCU mode, the symbols ( " : " ) in the time display of the FDP are turned off. (Refer to Fig.2-3a)

### 2.3.2 Setting the User RCU mode

(1) Turn off the power.
(2) Press the "REC" and "PAUSE" buttons of the VCR simultaneously. Alternatively, transmit the code "80" from the Jig RCU.

### 2.4 Mechanism service mode

This model has a unique function to enter the mechanism into every operation mode without loading of any cassette tape. This function is called the "Mechanism service mode".

### 2.4.1 How to set the "Mechanism service mode"

(1) Set the VCR to the Jig RCU mode (the mode in which codes from the Jig RCU can be received)
(2) Transmit the code "E5" from the Jig RCU.
(3) Release the lug of the Cassette holder and then slide the Cassette holder toward the direction where the Cassette holder is loaded by manually.
(4) The cassette holder lowers and, when the loading has completed, the mechanism enters the desired mode.
When the VCR is set to the Mechanism service mode, the symbols ("Timer") in the FDP (LED) are blinked.

### 2.4.2 How to exit from the "Mechanism service mode"

(1) Unplug the power cord plug from the power outlet.

### 2.5 Maintenance and inspection

### 2.5.1 Cleaning

Regular cleaning of the transport system parts is desirable but practically impossible. So make it a rule to carry out cleaning of the tape transport system whenever the machine is serviced. When the video head, tape guide and/or brush get soiled, the playback picture may appear inferior or at worst disappear, resulting in possible tape damage.

## Note:

- Absolutely avoid sweeping the upper drum vertically as this will cause damage to the video head.
(1) When cleaning the upper drum (especially the video head), soak a piece of closely woven cloth with alcohol and while holding the cloth onto the upper drum by the fingers, turn the upper drum counterclockwise.
(2) To clean the parts of the tape transport system other than the upper drum, use a piece of closely woven cloth or a cotton swab soaked with alcohol.
(3) After cleaning, make sure that the cleaned parts are completely dry before using the cassette tape.


Fig.2-5a

### 2.5.2 Lubrication

With no need for periodical lubrication, you have only to lubricate new parts after replacement. If any oil or grease on contact parts is soiled, wipe it off and newly lubricate the parts.

## Note:

- See the "mechanism assembly" diagram of the "parts list" for the lubricating or greasing spots, and for the types of oil or grease to be used.
2.5.3 Suggested servicing schedule for main components The following table indicates the suggested period for such service measures as cleaning, lubrication and replacement. In practice, the indicated periods will vary widely according to environmental and usage conditions. However, the indicated components should be inspected when a set is brought for service and the maintenance work performed if necessary. Also note that rubber parts may deform in time, even if the set is not used.

| System | Parts name | Operation hours |  |
| :--- | :--- | :---: | :---: |
|  |  | 1000 H | 2000 H |
| Tape <br> transport | Drum assembly | $\mathrm{C}, \mathrm{X}$ | X |
|  | $\mathrm{A} / \mathrm{C}$ head | $\mathrm{C}, \mathrm{X}$ | $\mathrm{C}, \mathrm{X}$ |
|  | Pinch roller arm assembly | C | C |
|  | Full erase head | C | C |
|  | Tension arm assembly | C | C |
|  | Capstan motor (Shaft) | C | C |
|  | Guide arm assembly | C | C |
| Drive | Capstan motor |  | X |
|  | Capstan brake assembly |  | X |
|  | Main brake assembly |  | X |
|  | Belt (Capstan) | X | X |
|  | Loading motor |  | X |
|  | Clutch unit |  | X |
|  | Worm gear | X |  |
| Other | Rotary encoder |  | X |

C: Cleaning
X : Inspection or Replacement if necessary

## SECTION 3 <br> DISASSEMBLY

### 3.1 Removing the major parts

### 3.1.1 Destination of connectors

Two kinds of double-arrows in connection tables respectively show kinds of connector/wires.
$\Leftrightarrow$ : Flat wire $\quad \leftrightarrow$ : Wire $\quad \Leftrightarrow$ : Board to board (B-B) : The connector of the side to remove

| CONN. No. | CONNECTOR |  |  |  | PIN No. |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| WR2a | Main | CN101 | $\Leftrightarrow$ | Digital | CN761 | 40 |
| WR2b | Main | CN103 | $\Leftrightarrow$ | Digital | CN762 | 10 |

## - Destination of connectors

| CONN. No. | CONNECTOR |  |  |  |  | PIN No. |
| :---: | :--- | :--- | :--- | :--- | ---: | :---: |
| WR2a | Main | CN7103 | $\Leftrightarrow$ | Jack | CN7191 | 10 |
| WR2b | Main | CN3102 | $\Leftrightarrow$ | Display | CN7003 | 22 |
| WR3a | Main | CN2001 | $\Leftrightarrow$ | A/C head |  | 6 |
| WR3b | Drum <br> assembly | $\Leftrightarrow$ | Main | CN1 | 9 |  |
| WR4a | Main | CN7302 | $\Leftrightarrow$ | DVD <br> servo control | CN503 | 17 |
| WR4b | Main | CN7301 | $\Leftrightarrow$ | DVD <br> servo control | CN501 | 19 |
| WR4c | Main | CN8301 | $\Leftrightarrow$ | DVD <br> Servo control | CN1 | 5 |

### 3.1.2 How to read the procedure table

This table shows the steps for disassembly of the externally furnished parts and board assemblies. Reverse these steps when re-assembling them.

| $\begin{array}{\|c\|} \hline \text { Step/ } \\ \text { Loc No. } \\ \hline \end{array}$ | Part Name | Fig. No. | Point | Note |
| :---: | :---: | :---: | :---: | :---: |
| [1] | Top cover | 3-1a | 4(S1a),(S1b),3(L1a), 2(SD1a),(P1a),(W1a), CN1(WR1a), | <Note 1a> |
|  | Bracket |  | 2(S1c) |  |
| 4 | 4 | 4 | 4 | 4 |
| (1) | (2) | (3) | (4) | (5) |

(1) Order of steps in Procedure

When reassembling, perform the step(s) in the reverse order.
These numbers are also used as the identification (location) No. of parts Figures.
(2) Part name to be removed or installed.
(3) Fig. No. showing procedure or part location.
(4) Identification of part to be removed, unhooked, unlocked, released, unplugged, unclamped or unsoldered.
$\mathrm{P}=$ Spring, $\mathrm{W}=$ Washer, $\mathrm{S}=$ Screw, $\mathrm{L}=$ Locking tab, $\mathrm{SD}=$ Solder, $\mathrm{CN}^{* *}\left(\mathrm{WR}^{* *}\right)=$ Remove the wire $\left(\mathrm{WR}^{* *}\right)$ from the connector (CN**).

## Note:

- The bracketed ( ) WR of the connector symbol are assigned nos. in priority order and do not correspond to those on the spare parts list.
(5) Adjustment information for installation


### 3.1.3 Disassembly procedure

| Step/ Loc No. | Part Name | $\begin{array}{\|l} \hline \text { Fig. } \\ \text { No. } \end{array}$ | Point | Note |
| :---: | :---: | :---: | :---: | :---: |
| [1] | Top cover | 3-1d | 8(S1a) |  |
| [2] | Front panel assembly (Display board assembly) (Jack board assembly) | $\begin{array}{\|l\|} \hline 3-1 a \\ 3-1 d \end{array}$ | 4(L2a),5(L2b),2(S2a) CN7103(WR2a), CN3102(WR2b) | <Note 2a> <br> <Note 2b> |
| [3] | Mechanism assembly <br> (Drum assembly) | $\begin{array}{\|l\|} \hline 3-1 \mathrm{~b} \\ 3-1 \mathrm{c} \\ 3-1 \mathrm{~d} \end{array}$ | $\begin{aligned} & \text { CN2001(WR3a) } \\ & 3(\mathrm{~S} 3 \mathrm{a}),(\mathrm{S} 3 \mathrm{~b}) \\ & \hdashline \mathrm{CN}(\overline{\mathrm{~W}} \overline{\mathrm{~W}} 3 \mathrm{~B}) \\ & (\mathrm{S} 3 \mathrm{C}),(\mathrm{SS3d}),(\mathrm{S} 3 \mathrm{e}) \end{aligned}$ | <Note 2a> <Note 3a> <Note 3b> <Note 3c> |
| [4] | $\begin{array}{\|l\|l\|} \hline \text { DVD unit } \\ \text { (Bracket) } \end{array}$ | 3-1d | 3(S4a),3(S4b), CN7302(WR4a), CN7301(WR46), CN8301(WR4c) |  |
| [5] | Rear cover | 3-1d | 5(S5a),5(L5a) |  |
| [6] | Main board assembly | 3-1d | 3(S6a) |  |

<Note 2a>

- Be careful not to damage the connector and wire etc. during connection and disconnection.
- When connecting the flat wire to the connector, be careful with the flat wire direction.
<Note 2b>
- When reattaching the Front panel assembly, make sure that the door opener of the Side frame $(R)$ is lowered in position prior to the reinstallation.
- When reattaching the Front panel assembly, pay careful attention to the switch lever of the Front panel assembly not to make it touch the switch knob of the Main board assembly from the side.
- When reattaching the Front panel assembly, lift the Cassette door slightly.


Fig.3-1a
<Note 3a>

- When reattaching the Mechanism assembly, secure the screws (S3a to S3b) in the order of 1,2,3.


## <Note 3b>

- When reattaching the Mechanism assembly, be sure to align the phase of the Rotary encoder on the Main board assembly.
- When reattaching the Mechanism assembly, set the "Mechanism assembling mode". [See "MECHANISM ASSEMBLY SERVICE MANUAL (No. 86700)".]
- When reattaching the Mechanism assembly to the Main board assembly, take care not to damage the sensors and switch on the Main board assembly.
<Note 3c>
- When reattaching the Drum assembly, secure the screws (S3c to S3e) in the order of $\mathrm{c}, \mathrm{d}, \mathrm{e}$.


Fig.3-1b

- When handling the drum assembly alone, hold it by the motor or shaft. Be careful not to touch other parts, especially the video heads. Also take care not to damage the connectors.


Fig.3-1c


Fig.3-1d

### 3.2 Loading mechanism assembly

3.2.1 Removing the tray (See Figure 3-2a, Figure 3-2b, Figure 3-2c, Figure 3-2d, Figure 3-2e, Figure 3-2f)
(1) Push a of the slide cam on the hole in the right side of the loading base by using a driver until it stops. (See Figure 32a.)
(2) The tray comes out. Pull the tray in a front direction until it stops.
(3) Remove the two screws $\mathbf{A}$ attaching the slide bracket. (See Figure 3-2b.)
(4) Tilt the tray in a direction of the arrow around the point in the left rear part of the tray. (See Figure 3-2c.)
(5) The rail of the tray is removed from $\mathbf{b}$ of the loading base. Then, remove the tray upward. (See Figure 3-2d.)

## Attaching the tray:

Engage cof the loading base to the projection of the tray while tilting the tray to the left. Turn the tray in a direction of the arrow, and attach the slide bracket. (See Figure 3-2e.)

## Note:

Prior to the procedure above, move the slide cam in a direction of the arrow so that $\mathbf{d}$ of the slide cam can be inserted in $\mathbf{e}$ of the tray. (See Figure 3-2f.)


Fig.3-2a


Fig.3-2b


Fig.3-2c


Fig.3-2d


Fig.3-2e


Fig.3-2f
3.2.2 Removing the traverse mechanism assembly (See Figure 3-2g)

Reverse the loading mechanism assembly. Remove the four screws B attaching the traverse mechanism assembly. Remove the traverse mechanism assembly upward.


Fig.3-2g
3.2.3 Removing the elevator (See Figure 3-2h and Figure 3-2j)

- Prior to the following procedure, remove the traverse mechanism assembly.
(1) Remove the two arms of the elevator from the two parts $\mathbf{f}$ by moving the arms in a direction of the arrow.
(2) Pull out the elevator in a rear direction.


## Attaching the elevator:

Engage the two holes $\mathbf{g}$ to the two shafts on the front part of the elevator. And then, attach the elevator.


Fig.3-2j
3.2.4 Removing the loading motor (See Figure 3-2k and Figure 3-2I)

- Prior to the following procedure, remove the tray, the traverse mechanism assembly, and the elevator.
(1) Remove the belt from the pulley.
(2) Remove two screws $\mathbf{C}$ attaching the loading motor.
(3) Remove two solders $\mathbf{h}$ on the switch board.


Fig.3-2k


Fig.3-2l


Fig.3-3a


Fig.3-3b

# SECTION 4 <br> ADJUSTMENT 

### 4.1 Before adjustment

### 4.1.1 Precaution

- The adjustments of this unit include the mechanism compatibility and electrical adjustments. During the performance of this work, be sure to observe the precautions for each type of adjustment.
- If there is a reference to a signal input method in the signal column of the adjustment chart, "Ext. S-input" means the Y/C separated video signal and "Ext. input" means the composite video signal input.
- Unless otherwise specified, all measuring points and adjustment parts are located on the Main board.


### 4.1.2 Required test equipments

- Color (colour) television or monitor
- Oscilloscope: wide-band, dual-trace, triggered delayed sweep
- Signal generator: RF / IF sweep / marker
- Signal generator: stairstep, color (colour) bar [NTSC]
- Recording tape
- Digit-key remote controller(provided)


### 4.1.3 Required adjustment tools

|  | - : Used --- : Not used |  |
| :--- | :---: | :---: |
|  | Mechanism <br> compatibility <br> adjustment | Electrical <br> adjustment |
| Roller driver | $\bullet$ | --- |
| Jig RCU | --- | $\bullet$ |
| Back tension cassette gauge | $\bullet$ | --- |
| Alignment tape(MHP) | $\bullet$ | --- |
| Alignment tape(MHP-L) | $\bullet$ | $\bullet$ |


4.1.4 Color (colour) bar signal,Color (colour) bar pattern

- Color(colour) bar signal [NTSC] •Color(colour) bar pattern [NTSC]



### 4.1.5 Switch settings

When adjusting this unit, set the VCR mode and switches as described below.

- When using the Jig RCU, it is required to set the VCR to the Jig RCU mode (the mode in which codes from the Jig RCU can be received). (See "section 2 SPECIFIC SERVICE INSTRUCTIONS".)


Fig.4-1 Jig RCU [PTU94023B]

- Set the switches as shown below unless otherwise specified on the relevant adjustment chart. The switches that are not listed below can be set as desired.
If the VCR is not equipped with the functions detailed below, setup is not required.

| AUTO PICTURE/VIDEO CALIBRATION/ <br> B.E.S.T./D.S.P.C. | OFF |
| :--- | :--- |
| PICTURE CONTROL/SMART PICTURE | NORMAL/NATURAL |
| VIDEO STABILIZER | OFF |
| TBC | ON |
| Digital 3R | ON |
| VIDEO NAVIGATION/TAPE MANAGER | OFF |
| BLUE BACK | OFF |

### 4.1.6 Manual tracking mode (Auto tracking ON/OFF) setting

(1) In order to set to the manual tracking mode during tape playback, press the "SP/EP(LP)"button on the remote control unit.

- Each press of the button switches the auto tracking ON or OFF.
- When the manual tracking mode is set, the tracking is placed at the center position.
(2) Press "channel +/-" to adjust the tracking manually.


### 4.2 Mechanism compatibility adjustment (VHS SECTION)

## Notes:

- Although compatibility adjustment is very important, it is not necessary to perform this as part of the normal servicing work. It will be required when you have replaced the A/C head, drum assembly or any part of the tape transport system.
- To prevent damaging the alignment tape in the compatibility adjustment, prepare a cassette tape (for self-recording/playback), perform a test on it by transporting it and making sure that the tape is not bent by the tape transport mechanisms such as in the guide rollers.(See Fig.4-2b.)


### 4.2.1 Tension pole position

## Notes:

- This adjustment must be performed every time the tension band is replaced.

| Signal (A) | (A) | - Back tension cassette gauge [PUJ48076-2] |
| :---: | :---: | :---: |
| Mode | $\begin{aligned} & \text { (B1) } \\ & \text { (B2) } \end{aligned}$ | - PB <br> - Eject end |
| Adjustment part (F) |  | - Adjust pin [Mechansim assembly] |
| Specified value (G) |  | - 25-51 gf $\cdot \mathrm{cm}\left(2.45-5 \times 10^{-3} \mathrm{Nm}\right)$ |

(1) Play back the back tension cassette gauge (A).
(2) Check that the indicated value on the left side gauge is within the specified value (G).
(3) If the indicated value is not within the specified value (G), perform the adjustment in a following procedure.(See Fig.4-2a.)
a) Remove the top frame, cassette holder and side frames (L/R) all together. (Refer to the SERVICE MANUAL No. 86700 [MECHANISM ASSEMBLY].)
b) Rotate the loading motor gear to move the control plate so that the triangular stamping to the left of the " $P$ "stamping is aligned with the stamping (a) on the main deck. This positioning is mode (B1).
c) Adjust by turning the adjustment pin so that the tip of the tension arm is aligned with the stamping (b) on the main deck.
d) Rotate the reel disk (S) by about one turn clockwise and make sure that the round hole of the adjustment pin is located in the "OK" range. If it is outside this range, restart the adjustment from the beginning.
After completion of the adjustment, rotate the loading gear motor to return it to the mode (B2) position.


Fig.4-2a

### 4.2.2 FM waveform linearity

| Signal | $\begin{aligned} & \hline \text { (A1) } \\ & \text { (A2) } \end{aligned}$ | - Alignment tape(SP, stairstep, NTSC) [MHP] <br> - Alignment tape(EP,stairstep,NTSC) [MHP-L] |
| :---: | :---: | :---: |
| Mode | (B) | PB |
| Equipment | (C) | - Oscilloscope |
| Measuring point ( |  | - TP106 (PB. FM) |
| External trigger | (E) | - TP111 (D.FF) |
| Adjustment part ( | (F) | - Guide roller [Mechanism assembly] |
| Specified value ( |  | - Flat V.PB FM waveform |
| Adjustment tool |  | Roller driver [PTU94002] |

(1) Play back the alignment tape (A1).
(2) Apply the external trigger signal to D.FF (E), to observe the V.PB FM waveform at the measuring point (D).
(3) Set the VCR to the manual tracking mode.
(4) Make sure that there is no significant level drop of the V.PB FM waveform caused by the tracking operation, with its generally parallel and linear variation ensured. Perform the following adjustments when required. (See Fig. 4-2c.)
(5) Reduce the V.PB FM waveform by the tracking operation. If a drop in level is found on the left side, turn the guide roller of the pole base assembly (supply side) with the roller driver to make the V.PB FM waveform linear.
If a drop in level is on the right side, likewise turn the guide roller of the pole base assembly (take-up side) with the roller driver to make it linear. (See Fig. 4-2c.)
(6) Make sure that the V.PB FM waveform varies in parallel and linearly with the tracking operation again. When required, perform fine-adjustment of the guide roller of the pole base assembly (supply or take-up side).
(7) Unload the cassette tape once, play back the alignment tape (A1) again and confirm the V.PB FM waveform.
(8) After adjustment, confirm that the tape wrinkling does not occur at the roller upper or lower limits. (See Fig. 4-2b.) [Perform adjustment step (9) only for the models equipped with SP mode and EP (or LP) mode.]
[Perform adjustment step (9) only for the models equipped with SP mode and EP (or LP) mode.]
(9) Repeat steps (1) to (8) by using the alignment tape (A2).


Fig.4-2b


Fig.4-2c

### 4.2.3 Height and tilt of the A/C head

## Note:

- Set a temporary level of the height of the $\mathbf{A} / \mathbf{C}$ head in advance to make the adjustment easier after the A/C head has been replaced. (Refer to the SERVICE MANUAL No. 86700 [MECHANISM ASSEMBLY].)

| Signal | (A) | - Alignment tape(SP, stairstep, NTSC) [MHP] |
| :---: | :---: | :---: |
| Mode | (B) | - PB |
| Equipment | (C) | - Oscilloscope |
| Measuring point | $\begin{aligned} & \text { (D1) } \\ & \text { (D2) } \end{aligned}$ | - TP106 (PB. FM) |
| External trigger |  | - TP111 (D.FF) |
| Adjustment part |  | - A/C head [Mechanism assembly] |
| Specified value |  | - Maximum waveform |

(1) Play back the alignment tape (A).
(2) Apply the external trigger signal to D.FF (E), to observe the AUDIO OUT waveform and Control pulse waveform at the measuring points (D1) and (D2) in the ALT mode.
(3) Set the VCR to the manual tracking mode.
(4) Adjust the AUDIO OUT waveform and Control pulse waveform by turning the screws (1), (2) and (3) little by little until both waveforms reach maximum. The screw (1) and (3) are for adjustment of tilt and the screw (2) for azimuth.


Fig.4-2d

### 4.2.4 A/C head phase (X-value)


(1) Play back the alignment tape (A1).
(2) Apply the external trigger signal to D.FF (E), to observe the V.PB FM waveform at the measuring point (D).
(3) Set the VCR to the manual tracking mode.
(4) Loosen the screws (4) and (5), then set the Roller driver to the innermost projected part of the A/C head. (See Fig. 42e.)
(5) Rotate the roller driver so that the $A / C$ head comes closest to the capstan. From there, move the A/C head back gradually toward the drum until the point where the FM waveform is maximized for the second time, and then tighten the screws (4) and (5) temporarily.
(6) Play an alignment tape (A2) and set to the manual-tracking mode.
(7) Fine-adjust A/C head base position to maximize the FM waveform, and then tighten the screws (4) and (5) firmly.
(8) Play alignment tapes (A1) and (A2) and confirm that the FM waveforms are maximized when the tracking is at the center position.


Fig.4-2e


Fig.4-2f

### 4.3 Electrical adjustment (VHS SECTION)

## Note:

The following adjustment procedures are not only necessary after replacement of consumable mechanical parts or board assemblies, but are also provided as references to be referred to when servicing the electrical circuitry.
In case of trouble with the electrical circuitry, always begin a service by identifying the defective points by using the measuring instruments as described in the following electrical adjustment procedures. After this, proceed to the repair, replacement and/or adjustment. If the required measuring instruments are not available in the field, do not change the adjustment parts (variable resistor, etc.) carelessly.

### 4.3.1 Servo circuit

### 4.3.1.1 Switching point

| Signal (A) | $\begin{aligned} & \hline \text { (A1) } \\ & \text { (A2) } \end{aligned}$ | - Stairstep signal <br> - Alignment tape(EP,stairstep,NTSC) [MHP-L] |
| :---: | :---: | :---: |
| Mode | (B) | - PB |
| Equipment ( | (C) | - Oscilloscope |
| Measuring point ( |  | - VIDEO OUT terminal (75 ohm terminated) <br> - TP106 (PB. FM) |
| External trigger |  | - TP111 (D.FF) |
| Adjustment part ( |  | - Jig RCU: Code "5A" |
| Specified value |  | - $6.5 \pm 0.5 \mathrm{H}$ |
| Adjustment tool ( |  | - Jig RCU [PTU94023B] |

(1) Play back the signal (A1) of the alignment tape (A2).
(2) Apply the external trigger signal to D.FF (E) to observe the VIDEO OUT waveform and V.PB FM waveform at the measuring points (D1) and (D2).
(3) Set the VCR to the manual tracking mode.
(4) Adjust tracking so that the V.PB FM waveform becomes maximum.
(5) Set the VCR to the Auto adjust mode by transmitting the code (F) from the Jig RCU. When the VCR enters the stop mode, the adjustment is completed.
(6) If the VCR enters the eject mode, repeat steps (1) to (5) again.
(7) Play back the alignment tape (A2) again, confirm that the switching point is the specified value (G).


Fig.4-3a Switching point

### 4.3.1.2 Slow tracking preset

| Signal (A) | $\begin{aligned} & \hline \text { (A1) } \\ & \text { (A2) } \end{aligned}$ | - Ext. input <br> - Color (colour) bar signal [NTSC] |
| :---: | :---: | :---: |
| Mode (B) | $\begin{aligned} & (\mathrm{B} 1) \\ & (\mathrm{B2}) \end{aligned}$ | - VHS SP |
| Measuring point (D) |  | - TV-Monitor |
| Adjustment part (F) |  | - Jig RCU: Code "71"or "72" |
| Specified value (G) |  | - minimum noise |
| Adjustment tool ( |  | - Jig RCU [PTU94023B] |

(1) Record the signal (A2) in the mode (B1), and play back the recorded signal.
(2) Set the VCR to the manual tracking mode.
(3) Set the VCR to the FWD slow ( $+1 / 6 x$ ) mode.
(4) Transmit the code (F) from the Jig RCU to adjust so that the noise bar becomes the specified value ( $G$ ) on the TV monitor in the slow mode.
(5) Set the VCR to the Stop mode.
(6) Confirm that the noise bar is (G) on the TV monitor in the slow mode.
(7) Repeat steps (3) to (6) in the REV slow (+1/6x) mode.
(8) Repeat steps (1) to (7) in the mode (B2).

## Note:

- For FWD slow (+1/6x) playback, transmit the code " 08 " from the Jig RCU to enter the slow playback mode, and transmit the code "D0"for REV slow ( $-1 / 6 x$ ) mode.


### 4.4 Electrical adjustment (DVD SECTION)

### 4.4.1 Test mode setting method

(1) Press POWER button to turn off the unit.
(2) Press the following remocon keys continuously within 2 seconds "SET UP " $\rightarrow$ " 2 " $\rightarrow$ " 8 " $\rightarrow$ " ENTER ".
(3) The unit becomes JIG RCU mode.
(4) Press POWER button then press VCR/DVD repeatedly so that the DVD indicatorlights up.
(5) Press the POWER button again to turn off the unit.
(6) Transmit the code " FA " from the Jig RCU.
(7) The power supply of the unit turns on automatically then the FDP shows the region number.
(8) To release test mode, press POWER key of the front panel.


### 4.4.2 Method of displayed version of firmware

(1) Set the unit to the test mode.
(2) The version number is displayed in the monitor screen.

OPENING DISPLAY


### 4.4.3 Initialization method

Please initialize according to the following procedures in the following case:

- Just after you upgrade the firmware.
- After you confirm the symptoms that a customer points out. First Initialize, and then confirm whether the symptoms are improved or not.
- After servicing, before returning the main body to a customer. (Initialized unit should be returned to a customer.)
(1) Set the unit to the test mode.
(2) Press PAUSE key of the remote controller or transmit the code "6F" from the Jig RCU.
(3) When initialization is completed, the PLAY ( $\stackrel{)}{ }$. mark is indicated in the FDP.


### 4.4.4 All-initialization method

Please perform all-initialization according to the following procedures in the following case:

- Just after you exchange the pick-up.
- Just after you exchange the spindle motor.
- Just after you exchange the traverse mechanism base.


## NOTE:

Please perform all-initialization when you exchange the parts above and also when you remove the parts above.
(1) Set the unit to the test mode.
(2) Press the REVERSE SKIP/INDEX ( 14 ) key of the remote controller for more than 2 seconds.
(3) When initialization is completed, the PLAY ( $\stackrel{)}{ }$. mark is indicated in the FDP.

NOTE:
After all-initialization, be sure to perform optimization adjustment of Front End parameter.

### 4.4.5 Optimization adjustment of Front End parameter

Adjustment to optimize Front End parameter must be performed in each mechanism assembly of this model for high-speed starting.Please perform optimization according to the following procedures just after all-initialization is completed and when FDP shows anything except "0" (For example when FDP shows "1", "2", and "3") at test mode.
(1) Set the unit to the test mode.
(2) The FDP shows the region number first.
(3) Press the DISPLAY key of the remote controller and check that FDP shows the number.
(4) Press the DISPLAY key again to return the region number.

NOTE:
Status of this adjustment can be judged by the number displayed at test mode as follows:

| DVD adjustment | CD adjustment | FDP at test mode |
| :--- | :--- | :--- |
| Adjusted | Adjusted | 0 |
| Not adjusted | Adjusted | 1 |
| Adjusted | Not adjusted | 2 |
| Not adjusted | Not adjusted | 3 |

## NOTE:

As for a disc used for adjustment,

- Disc should be mounted. ("Mounting" means to display "READ" after the disc is inserted and then display the disc information.) Disc need not be played.
- If you do not have test disc either VT-501 (DVD) or CTS-1000 (CD-DA), use a commercial disc (for DVD, dual-layer software) after seeing and checking that the disc is neither curved nor foreseen that it may shake at the time of playback. If you use a disc with bad features, starting time may be slow or disc may not be read.



## SECTION 5 TROUBLESHOOTING

### 5.1 Manually removing the cassette tape

If you cannot remove the cassette tape which is loaded because of any electrical or mechanical failures, manually remove it by taking the following steps.
(1) Unplug the power cord plug from the power outlet.
(2) Refer to the disassembly procedure of the VCR and perform the disassembly of the major parts before removing the mechanism assembly. (See Fig. 5-1a)


Fig.5-1a


Fig.5-1b
(3) Unload the pole base assembly by manually turning the gear of the loading motor until the pole base assembly is hidden behind the cassette lid. In doing so, hold the tape by the hand to keep the slack away from any grease. (See Fig.5-1b )
In case of mechanical failures, while keeping the tension arm assembly free from tension, pull out the tape on the pole base assembly. Take the spring(a) of the pinch roller arm assembly off the hook, and detach it from the tape.
(4) Remove the screw (a) of the side frame (L/R).
(5) Hold the slack tape and cassette cover together, lift the cassette tape, top frame, cassette holder and side frames ( $L, R$ ) together from the rear and remove them by dis-engaging the hooks (a) and (b).


Fig.5-1c
(6) Take up the slack of the tape into the cassette. This completes removal of the cassette tape.

### 5.2 Manually removing the disk(DVD/CD)

If you cannot remove the disk which is loaded because of any electrical or mechanical failures, manually remove it by taking the following steps.
(1) Unplug the power cord plug from the power outlet.
(2) Remove the top cover and front panel assembly. (Refer to the disassembly procedure and perform the disassembly of the major parts before removing)
(3) Turn the Middle gear (a) by hand to open the disk tray.(See Fig. 5-2a)


Fig.5-2a

### 5.3 Emergency display function (VHS SECTION)

This unit saves details of the last two emergencies as the EMG history and allows the status of the VCR and the mechanism of each emergency to be shown both on the display and as OSD information.
When using the emergency function, it is required to set the VCR to the Jig RCU mode.


Fig.5-3a Jig RCU [PTU94023B]

### 5.3.1 Displaying the EMG information

The EMG detail of information can be displayed by transmitting the code "59" from the Jig RCU.

## Note:

- The EMG detail information <1><2> show the information on the latest EMG.
It becomes "--:--:--" when there is no latest EMG record.


EMG display of 7 FDP display model
Fig.5-3b

## EMG display of FDP display mode

(1) Transmit the code " 59 " from the Jig RCU.

The FDP shows the EMG content in the form of "E:**:**".

(2) Transmit the code " 59 " from the Jig RCU again.

The FDP shows the EMG detail information $<1>$ in the form of " *1: *2: 34 ".
*1 : Deck operation mode at the moment of EMG
*2 : Mechanism operation mode at the moment of EMG
3- : Mechanism sensor information at the moment of EMG
-4 : Mechanism mode position at the moment of EMG
(3) Transmit the code " 59 " from the Jig RCU once again.

The FDP shows the EMG detail information <2> in the form of " *5 : *6: *7".
*5 : Type of the cassette tape in use $<1>$.
${ }^{*} 6$ : Winding position of the cassette tape in use
*7 : Type of the cassette tape in use <2> (Winding area)
(4) Transmit the code " 59 " from the Jig RCU once again.

The FDP shows the EMG detail information $<3>$ in the form of "*8: *9 : *10".
*8 : Previous deck operation mode at the moment of EMG
*9 : The deck operation mode of the one before the last at the moment of EMG
*10: The deck operation mode of the one prior to one above at the moment of EMG
(5) Transmit the code " 59 " from the Jig RCU once again to reset the display.

### 5.3.2 Clearing the EMG history

(1) Display the EMG history.
(2) Transmit the code " 36 " from the Jig RCU.
(3) Reset the EMG display.

### 5.3.3 Details of the OSD display in the EMG display mode

During the EMG display, the OSD shows the data on the deck mode, etc. The details of the display contents are as follows.

## Notes:

- The display is variable depending on the part No. of the System Control microcomputer (IC3001) built into the VCR. In the following, refer to the figure carrying the same two characters as the top two characters of the part number of your IC.
- The sensor information in the OSD display contents is partially different from the mechanism sensor information in EMG detail information <1>.
[For MN* only]

| AA | BB | CC | DD | EE |
| :--- | :--- | :--- | :--- | :--- |
| FF | GG | HH | II | JJ |
| KK | LL | MM | NN | OO |
| PP | QQ | RR | SS | TT |
| UU | VV | WW | XX | YY |

AA : Deck operation mode (See EMG detail information <1>.)
BB : Mechanism operation mode
(See EMG detail of information <1>.)
CC : Mechanism transition flag
DD : Capstan motor control status
EE : Loading motor control status
FF : Sensor information (See sensor information details.)
GG : Capstan motor speed
HH : Key code (JVC code)
II : Supply reel winding diameter data higher 8 bits.
JJ : Supply reel winding diameter data lower 8 bits.
KK : Mechanism sensor information \& mechanism mode position(See EMG detail of information <1>.)
LL : Tape speed data higher 8 bits.
MM : Tape speed data lower 8 bits.
NN : Cassette tape type <2> higher 8 bits.
(See EMG detail of information $<2>$.)
OO : Cassette tape type <2> lower 8 bits.
(See EMG detail of information <2>.)
PP : General data display area
YY : General data display area

## *FF:Sensor information details


[For *HD only]

|  |  |  |
| :--- | :--- | :--- |
| AA | BB | CC |
| DD | EE | FF |
| GGGG | HHHH |  |
| II | JJJJ |  |
| KKKK | LLLL | MMMM |
| ROM No. |  |  |

AA : Key code (JVC code)
BB : Deck operation mode(See EMG detail information <1>.)
CC : Mechanism operation mode (See EMG detail information <1>.)
DD : Sensor information (See sensor information details.)
EE : Capstan motor speed (Search, double speed)
FF : Tracking value
GGGG: Cassette tape type <2>, 16 bits.
(See EMG detail information <2>.)
HHHH : Supply reel winding diameter data
II: Capstan motor speed (FF/REW, double speed)
JJJJ: Tape speed data, lower 8 bits.
KKKK : General data display area
LLLL : General data display area
MMMM : General data display area
*DD:Sensor information details


Cassette tab present = 1
Cassette tab broken $=0$
[For both MN*/HD*]
Mechanism mode sequence


### 5.3.4 EMG content description

## Note:

## EMG contents "E09" are for the model with Dynamic Drum (DD).

| FDP | CONTENT | CAUSE |
| :---: | :---: | :---: |
| E01: Loading EMG | If the mechanism mode does not change to the next mode within 4 seconds after the loading motor starts rotating in the loading direction, while the mechanism is in the after-loading position (with the tape up against the pole base), [ $\mathrm{E}: 01]$ is identified and the power is switched OFF. However, if the tape loading is not completed within 4 seconds after the loading motor starts rotating in the loading direction, the tape is simply unloaded and ejected. No EMG data is recorded in this case. | 1. The mechanism is locked in the middle of the mode transition during a tape loading operation. <br> 2. The mechanism overruns during the tape loading operation because the SYSCON cannot recognize the mechanism mode normally. This problem is due to a cause such as a rotary encoder failure. <br> 3. Power is not supplied to the loading MDA. (M12V/Vcc/Vref/ICP are disconnected in the middle.) |
| E02: Unloading EMG | When the mechanism mode cannot be changed to another mode even when the loading motor has rotated for more than 4 seconds in the unloading direction, $[\mathrm{E}: 02]$ is identified and the power is turned off. | 1. The mechanism is locked in the middle of mode transition. <br> 2. Without an eject signal being sent from the SYSCON, unloading is attempted (i.e. Ejection is attempted while the tape is still inside the mechanism.) because the SYSCON cannot recognize the mechanism mode normally. This is due to a cause such as a rotary encoder failure. (Mechanism position: UPPER) <br> 3. Power is not supplied to the loading MDA. (M12V/Vcc/Vref/ICP are disconnected in the middle.) |
| E03: Take Up Reel Pulse EMG | When the falling edje of the take-up reel pulse has not been generated for more than 4 seconds in the capstan rotating mode, [ $\mathrm{E}: 03$ ] is identified, the pinch rollers are turned off and stopped, and the power is turned off. In this case, however, the mechanism should be in position after tape loading. Note that the reel EMG is not detected during Slow/Frame advance operations. | 1. The take-up reel pulse is not generated in the FWD transport modes (PLAY/FWD SEARCH/FF, etc.) because; <br> 1) The idler gear is not meshed with the take-up reel gear because the mechanism mal-functions for some reason. <br> 2) The idler gear is meshed with the take-up reel gear, but incapable of winding due to too large mechanical load (abnormal tension); <br> 3) The reel is rotating normally but an FG pulse is not generated due to the take-up reel sensor failure. <br> 2. The supply reel pulse is not generated in the REV transport modes (REV SEARCH/REW, etc.) because; <br> 1) The idler gear is not meshed with the supply reel gear because the mechanism mal-functions for some reason. <br> 2) The idler gear is meshed with the supply reel gear, but incapable of winding due to too large a mechanical load (abnormal tension); <br> 3) The reel rotates normally but the FG pulse is not generated due to a supply reel sensor failure. <br> 3. Power(SW5V) is not supplied to the reel sensor on the tape winding side. |
| E04: Drum FG EMG | When the drum FG pulse has not been input for more than 3 seconds in the drum rotating mode, [ $\mathrm{E}: 04$ ] is identified, the pinch rollers are turned off and stopped, and the power is turned off. | 1. The drum could not start or the drum rotation has stopped due to too large a load on the tape, because; <br> 1) The tape tension is abnormally high; <br> 2) The tape is damaged or a foreign object (grease, etc.) adheres to the tape. <br> 2. The drum FG pulse did not reach the System controller CPU because; <br> 1) The signal circuit is disconnected in the middle; <br> 2) The FG pulse generator (hall device) of the drum is faulty. <br> 3. The drum control voltage (DRUM CTL V ) is not supplied to the MDA. <br> 4. Power (M12V) is not supplied to the drum MDA. |
| E05: Cassette Eject EMG | If the cassette does not reach the eject position within about 0.7 seconds after the cassette housing has started the cassette ejection operation, $[\mathrm{E}: 05]$ is identified, the drive direction is reversed to load the tape, the mode is switched to STOP mode with the pinch roller OFF, and the power is switched OFF. <br> During the cassette insertion process, the drive direction is reversed and the cassette is ejected if the tape is not up against the pole base within about 3 seconds after the start of the cassette pullingin operation. If the cassette does not reach the eject position within about 0.7 seconds after the drive mode reversal operation, [ $\mathrm{E}: 05$ ] is identified and the power is switched OFF immediately. | 1. The cassette cannot be ejected due to a failure in the drive mechanism of the housing. <br> 2. When the housing load increases during ejection, the loading motor is stopped because of lack of headroom in its drive torque. <br> Housing load increasing factors: Temperature environment (low temperature, etc.), mechanism wear or failure. <br> 3. The sensor/switch for detecting the end of ejection are not functioning normally. <br> 4. The loading motor drive voltage is lower than specified or power (M12V) is not supplied to the motor (MDA). <br> 5. When the user attempted to eject a cassette, a foreign object (or perhaps the user's hand) was caught in the opening of the housing. |
| E06: Capstan FG | When the capstan FG pulse has not been generated for more than 1 second in the capstan rotating mode, [E:06] is identified, the pinch rollers are turned off and stopped, and the power is turned off.However, the capstan EMG is not detected in SLOW/ STILL modes. <br> Note that, if the part number of the System Control IC begins with "MN" or "M3", the capstan EMG is not detected even during the FF/REW operation. | 1. The capstan could not start or the capstan rotation has stopped due to too large a load on the tape, because; <br> 1) The tape tension is abnormally high (mechanical lock); <br> 2) The tape is damaged or a foreign object (grease, etc.) is adhered to the tape (occurrence of tape entangling, etc.). <br> 2. The capstan FG pulse did not reach the System controller CPU because; <br> 1) The signal circuit is disconnected in the middle; <br> 2) The FG pulse generator (MR device) of the capstans is faulty. <br> 3. The capstan control voltage (CAPSTAN CTL V ) is not supplied to the MDA. <br> 4. Power (M12V, SW5V) are not supplied to the capstan MDA. |
| E07: SW Power Short-Circuit EMG | When short-circuiting of the SW power supply with GND has lasted for 0.5 second or more, [ $\mathrm{E}: 07]$ is identified, all the motors are stopped and the power is turned off. | 1. The SW 5 V power supply circuit is shorted with GND. <br> 2. The SW 12 V power supply circuit is shorted with GND. |
| E08: DVD EMG | When communication with a system computer of VHS side is not carried out because of the defective DVD unit, or when the DVD unit must be reset | 1. The DVD unit is defective. <br> 2. Contact failure of the wires in the DVD unit or VHS side. |
| E09: DD FG EMG | When the DD FG pulse is not generated within 2.5 seconds, [E:09] is identified, the tilt motor is stopped and the power is turned off. | 1. The FG sensor is defective. (The soldered parts have separated.) <br> 2. The pull-up resistor at the FG sensor output is defective. (The soldered parts have separated.) <br> 3. Contact failure or soldering failure of the pins of the connector (board-to-board) to the FG sensor. <br> 4. The power ( 5 V ) to the sensor is not supplied. (Connection failure/soldering failure) <br> 5. The FG pulse is not sent to the System Controller CPU. <br> 6. The tilt motor is defective. (The soldered parts have separated.) <br> 7. The drive power to the tilt motor is not supplied. (Connection failure/soldering failure) <br> 8. The tilt motor drive MDA - IC is defective. <br> 9. Auto-recovery of the DD tilting cannot take place due to overrun. |
| E0A: Supply Reel Pulse EMG | When the falling edge of the supply reel pulse has not been generated for more than 10 seconds in the capstan rotating mode, [ $\mathrm{E}: O \mathrm{~A}]$ is identified and the cassette is ejected (but the power is not turned off). In this case, however, the mechanism should be in the position after tape loading (with the tape up against the pole base). Also note that the reel EMG is not detected during Slow/ Frame advance operations. | 1. The supply reel pulse is not generated in the FWD transport mode (PLAY/FWD SEARCH/FF, etc.) because; <br> 1) PLAY/FWD or SEARCH/FF is started while the tape in the inserted cassette is cut in the middle; <br> 2) A mechanical factor caused tape slack inside and outside the supply reel side of the cassette shell. In this case, the supply reel will not rotate until the tape slack is removed by the FWD transport, so the pulse is not generated until then; <br> 3) The reel is rotating normally but the FG pulse is not generated due to a supply reel sensor failure. <br> 2. The take-up reel pulse is not generated in the REV transport mode (REV SEARCH/REW, etc.). <br> 1) REV SEARCH/REW is started when the tape in the inserted cassette has been cut in the middle; <br> 2) A mechanical factor caused tape slack inside and outside the take-up reel side of the cassette shell. In this case, the take up will not rotate until the tape slack is removed by the REV transport, so the pulse will not be generated until that time; <br> 3) The reel is rotating normally but the FG pulse is not generated due to a take-up reel sensor failure. <br> 3. The power (SW 5 V ) to a reel sensor is not supplied. |
| EU1: <br> Head clog warning history | Presupposing the presence of the control pulse output in the to the A.FM output) has remained below a certain thresho During the period in which the head clog is detected, the FD noise picture display" alternately. <br> EMG code : "E:C1" or "E:U1" / FDP : "U:01" / OSD : "T The head clog warning is reset when the above-mentioned than PLAY. | PLAY mode, when the value obtained by mixing the two V.FM output channels (without regard devel for more than 10 seconds, $[\mathrm{E}: \mathrm{U} 1]$ is identified and recorded in the emergency history. Phows "U:01" and the OSD repeats the " 3 seconds of warning display" and the " 7 seconds of <br> y cleaning tape." or "Use cleaning cassette." <br> reshold has been exceeded for more than 2 seconds or the mode is changed to another mode |

### 5.3.5 EMG detail information < 1>

The status (electrical operation mode) of the VCR and the status (mechanism operation mode/sensor information) of the mechanism in the latest EMG can be confirmed based on the figure in EMG detail information<1> .
[FDP/OSD display] *1 : *2 : 34
*1 : Deck operation mode at the moment of EMG
*2 : Mechanism operation mode at the moment of EMG
3- : Mechanism sensor information at the moment of EMG
-4 : Mechanism mode position at the moment of EMG
Note:

- For EMG detailed information <1>, the content of the code that is shown on the display (or OSD) differs depending on the parts number of the system control microprocessor (IC3001) of the VCR. The system control microprocessor parts number starts with two letters, refer these to the corresponding table.


## *1 : Deck operation mode

[Common table of $\mathrm{MN}^{*}$ and HD]

| Display |  | Deck operation mode |
| :---: | :---: | :---: |
| MN* | HD* |  |
| 00 | - | Mechanism being initialized |
| 01 | 00 | STOP with pinch roller pressure off (or tape present with P.OFF) |
| 02 | 01 | STOP with pinch roller pressure on |
| 03 | - | POWER OFF as a result of EMG |
| 04 | 04 | PLAY (Normal playback) |
| OC | 0E | REC |
| 10 | 11 | Cassette ejected |
| 20 | 22 | FF |
| 21 | - | Tape fully loaded, START sensor ON, short FF |
| 22 | - | Cassette identification FWD SEARCH before transition to FF (SPx7-speed) |
| 24 | 26 | FWD SEARCH (variable speed) including x2-speed |
| 2 C | 2E | INSERT REC |
| 40 | 43 | REW |
| 42 | - | Cassette identification REV SEARCH before transition to REW (SPx7-speed) |
| 44 | 47 | REV SEARCH (variable speed) |
| 4C | 4C | AUDIO DUB |
| 6C | 6E | INSERT REC (VIDEO + AUDIO) |
| 84 | 84 | FWD STILL / SLOW |
| 85 | 85 | REV STILL / SLOW |
| 8C | 8F | REC PAUSE |
| 8D | - | Back spacing |
| 8E | - | Forward spacing (FWD transport mode with BEST function) |
| AC | AF | INSERT REC PAUSE |
| AD | - | INSERT REC back spacing |
| CC | CD | AUDIO DUB PAUSE |
| CD | - | AUDIO DUB back spacing |
| EC | EF | INSERT REC (VIDEO + AUDIO) PAUSE |
| ED | - | INSERT REC (VIDEO + AUDIO) back spacing |

## *2 : Mechanism operation mode

[Table of $\mathrm{MN}^{*}$ ]

| Display |  |
| :---: | :--- |
| 00 | Command standby (No command to be executed) |
| 01 | Immediate Power OFF after EMG occurrence |
| 02 | Loading from an intermediate position during mechanism initialization |
| 03 | Unloading due to EMG occurrence during mechanism initialization |
| 04 | Ejecting cassette (ULSTOP to EJECT) |
| 05 | Inserting cassette (EJECT to ULSTOP) |
| 06 | Lading tape (ULSTOP to PLAY) |
| 07 | Unloading tape (PLAY to ULSTOP) |
| 08 | Transition from pinch roller ON to STOP |
| 09 | Transition from pinch roller OFF to STOP (PLAY to OFFSTOP) |
| OA | Transition from pinch roller OFF to STOP at power OFF |
| OB | Transition from pinch roller ON to STOP at power ON |
| 0C | Transition to PLAY |
| OD | Transition to Search FF |
| 0E | Transition to REC |
| OF | Transition to FWD STILL/SLOW |
| 10 | Transition to REV STILL/SLOW |
| 11 | Transition to Search REV |
| 12 | Transition from FF/REW to STOP |
| 13 | Transition to FF |
| 14 | Transition to REW |
| 15 | Tape end detection processing during loading |
| 16 | Short FWD/REV at tape sensor ON during unloading |
| 17 | Transition to FF/REW brake mode |

[Table of $\mathrm{HD}^{*}$ ]

| Display |  |
| :---: | :--- |
| 00 | STOP with pinch roller pressure off |
| 01 | STOP with pinch roller pressure on |
| 02 | U/L STOP (or tape being loaded) |
| 04 | PLAY (Normal playback) |
| 05 | PLAY (x1-speed playback using JOG) |
| $0 E$ | REC |
| 11 | Cassette ejected |
| 22 | FF |
| 26 | FWD SEARCH (variable speed) including x2-speed |
| $2 E$ | INSERT REC |
| 43 | REW |
| 47 | REV SEARCH |
| $4 C$ | AUDIO DUB |
| $6 E$ | INSERT REC (VIDEO + AUDIO) |
| 84 | FWD STILL/SLOW |
| 85 | REV STILL/SLOW |
| $8 F$ | REC PAUSE |
| AF | INSERT REC PAUSE |
| C7 | REV SEARCH (x1-speed reverse playback using JOG) |
| CD | AUDIO DUB PAUSE |
| EF | INSERT REC (VIDEO + AUDIO) PAUSE |
| F0 | Mechanism being initialized |
| F1 | POWER OFF as a result of EMG |
| F2 | Cassette being inserted |
| F3 | Cassette being ejected |
| F4 | Transition from STOP with pinch roller pressure on to STOP with pinch <br> roller pressure off |
| F5 | Transition from STOP with pinch roller pressure on to PLAY |
| F6 | Transition from STOP with pinch roller pressure on to REC |
| F7 | Cassette type detection SEARCH before FF/REW is being executed |
| F8 | Tape being unloaded |
| F9 | Transition from STOP with pinch roller pressure off to STOP with pinch <br> roller pressure on <br> FA <br> FB <br> Transition from STOP with pinch roller pressure off to FF/REW <br> FCTransition from STOP with pinch roller pressure off to REC.P (T.REC,etc.) <br> Transition from STOP with pinch roller pressure off to cassette type <br> $d$ detection SEARCH <br> FD |
| Short REV being executed after END sensor on during unloading |  |
| FF | Tension loosening being executed after tape loading (STOP with pinch <br> roller pressure on) |
| Tape being unloaded |  |
|  |  |

## 3- : Mechanism sensor information

[Common table of MN* and HD*]

| Display | Mechanism sensor informatio n |  |  |  |
| :---: | :--- | :---: | :---: | :---: |
|  | REC safety SW | Start sensor | End sensor | Mechansim <br> position sensor |
| $0-$ | Tab broken | ON | ON | ON |
| $1-$ | Tab broken | ON | ON | OFF |
| $2-$ | Tab broken | ON | OFF | ON |
| $3-$ | Tab broken | ON | OFF | OFF |
| $4-$ | Tab present | OFF | ON | ON |
| $5-$ | Tab present | OFF | ON | OFF |
| $6-$ | Tab present | OFF | OFF | ON |
| $7-$ | Tab present | OFF | OFF | OFF |
| $8-$ | Tab broken | ON | ON | ON |
| $9-$ | Tab broken | ON | ON | OFF |
| A- | Tab broken | ON | OFF | ON |
| B- | Tab broken | ON | OFF | OFF |
| C- | Tab present | OFF | ON | ON |
| D- | Tab present | OFF | ON | OFF |
| E- | Tab present | OFF | OFF | ON |
| F- | Tab present | OFF | OFF | OFF |

Tab broken = 0
Tab present = 1
Sensor ON = $0 \quad$ Sensor ON = 0
sensor OFF = 1 Sensor OFF = 1

## -4 : Mechanism mode position

[Common table of MN* and HD*]

| Mechanism sensor information | Display | Deck operation mode |  |
| :---: | :---: | :---: | :---: |
| Even number$\begin{aligned} & (0,2,4,6,8, \\ & \text { A, C, E) } \end{aligned}$ | -0 | Not established |  |
|  | -1 | EJECT | EJECT position |
|  | -2 | EJECT-EJECT1 | Intermodal position |
|  | -3 | EJECT1 | EJECT1 position |
|  | -4 | EJECT1-EJECT2 | Intermodal position |
|  | -5 | EJECT2 | EJECT2 position |
|  | -6 | EJECT2-ULSTOP | Intermodal position |
|  | -7 | ULSTOP | ULSTOP position |
|  | -8 | ULSTOP-UPPER | Intermodal position |
|  | -9 | UPPER | Loading (unloading) tape |
|  | -A | UPPER-ONSTOP | Intermodal position |
|  | -B | ONSTOP | PLAY position |
|  | -C | PLAY-FWD/SS | Intermodal position |
|  | -D | FWD/SS | FWD (FWD Still/Slow) position |
|  | -E | FWD/SS-REV | Intermodal position |
|  | -F | REV | REV (REV Still/Slow) position |
| Odd number$\begin{aligned} & (1,3,5,7,9, \\ & \text { B, D, F) } \end{aligned}$ | -0 | REV-OFFSTOP | Intermodal position |
|  | -1 | OFFSTOP | Pinch roller OFF position |
|  | -2 | OFFSTOP-FFREWB | Intermodal position |
|  | -3 | FFREWB | FF/REW Brake position |
|  | -4 | FFREWB-FFREW | Intermodal position |
|  | -5 | FFREW | FF/REW position |

### 5.3.6 EMG detail information <2>

The type of the cassette tape and the cassette tape winding position can be confirmed based on the figure in EMG detail information <2> .

## Note:

- EMG detail information <2> is the reference information stored using the remaining tape detection function of the cassette tape. As a result, it may not identify cassette correctly when a special cassette tape is used or when the tape has variable thickness.
*5 : Cassette tape type <1>

| Display | Cassette tape type <1> |
| :---: | :--- |
| 00 | Cassette type not identified |
| 16 | Large reel/small reel (T-0 to T-15/T-130 to T-210) not classified |
| 82 | Small reel, thick tape (T-120) identified/thin tape (T-140) identified |
| 84 | Large reel (T-0 to T-60) identified |
| 92 | Small reel, thick tape (T-130) identified/thin tape (T-160 to T-210) identified |
| 93 | Small reel, thick tape/C cassette (T-0 to T-100/C cassette) not classified |
| C3 | Small reel, thick tape/C cassette (T-0 to T-100/C cassette) being classified |
| D3 | Small reel, thick tape/C cassette (T-0 to T-100/C cassette) being classified |
| E1 | C cassette, thick tape (TC-10 to TC-20) identified |
| E2 | Small reel, thick tape (T-0 to T-100) identified |
| E9 | C cassette, thin tape (TC-30 to TC-40) identified |
| F1 | C cassette, thick tape/thin tape (TC-10 to TC-40) not classified |

## Notes:

- Cassette tape type <1> is identified a few times during mode transition and the identification count is variable depending on the cassette tape type. If an EMG occurs in the middle of identification, the cassette tape type may not be able to be identified.
- If other value than those listed in the above table is displayed, the cassette tape type is not identified.


## *6 : Cassette tape winding position

The cassette tape winding position at the moment of EMG is displayed by dividing the entire tape (from the beginning to the end) in 21 sections using a hex number from " 00 " to " 14 ".
00 : End of winding
14: Beginning of winding
FF: Tape position not identified
*7 : Cassette tape type <2> (Winding area)

| Display | Cassette tape type <2> | Reference) <br> (Beginning) |
| :--- | :--- | :--- | :---: |
| 00 | Wasd data |  |
| (End) |  |  |$|$

## Note:

- The values of cassette tape type <2> in the above table are typical values with representative cassette tapes.


### 5.3.7 EMG detail information <3>

Three deck operation modes preceding the deck operation mode in which the EMG occurs may be confirmed based on the figures in the EMG information detail <3>. For the contents of the displayed information, see the table "Deck operation mode" in section "5.3.5 EMG detail information <1>".

### 5.4 Check points for each error (DVD SECTION)

### 5.4.1 Spindle start error

(1) Defective spindle motor driver (IC201)

- Has motor drive voltage of a sine wave or a rectangular wave gone out to each terminal(WOUT,VOUT,UOUT) of CN201"2,3,4" and IC201"17,18,19"?
- Is FG pulse output from the terminal of IC201" 41 "(FG) according to the rotation of the motor?
(2) Has the control signal come from servo IC or the microcomputer?
- Is it " H " while the terminal of IC201"48"(/SPMUTE) is operating?
(3) Is the FG signal input to the servo IC?
- Is FG pulse input to the terminal of IC301"72"(FG) according to the rotation of the motor?


### 5.4.2 Disc Detection, Distinction error (no disc, no RFENV)

- Laser is defective.
- SODC is defective (IC301).
- APC circuit is defective. --- Q102,Q104.
- Pattern is defective. --- Lines for CN101 - All patterns which relate to pick-up and patterns between IC301.


### 5.4.3 Traverse movement NG

(1) Defective traverse driver

- Has the voltage come between terminal of CN101 "2" and "4" ?
(2) Defective BTL driver (IC201)
- Has the motor drive voltage gone out to IC201"11" or "14"?
(3) TRSDRV Is the signal input? (IC301 "75")
(4) TRVSW is the signal input from microcomputer? (IC301 "79")


### 5.4.4 Focus ON NG

- Is FODRV signal sent ? (R254) --- Pattern, IC301 "148"
- Is driving voltage sent? IC201 "9", "10" --- If NG, pattern, driver, mechanical unit .
- Mechanical unit is defective.


### 5.4.5 Tracking ON NG

- Mechanical unit is defective. Because the self adjustment cannot be normally adjusted, the thing which cannot be normally drawn in is thought.
- Periphery of driver (IC201) Constant or IC it self is defective.
- Servo IC (IC301) When improperly adjusted due to defective IC.


### 5.4.6 Spindle CLV NG

- Does not the input or the output of driver's spindle signal do the grip?
- Has the tracking been turned on?
- Spindle motor and driver is defective.


### 5.4.7 Address read NG

- Besides, the undermentioned cause is thought though specific of the cause is difficult because various factors are thought. Mechanism is defective. (jitter) IC301 The disc is dirty or the wound has adhered.


### 5.4.8 Between layers jump NG (double-layer disc only)

Mechanism defective Defect of driver's IC(IC201) Defect of servo control IC(IC301)

### 5.4.9 Neither picture nor sound is output

(1) It is not possible search

- Has the tracking been turned on?
- To " Tracking ON NG" in "Check points for each error" when the tracking is not normal.
- Is the feed operation normal?

To " traverse movement NG" in "Check points for each error" when it is not normal.Are not there caught of the feeding mechanism etc?

### 5.4.10 Picture is distorted or abnormal sound occurs at intervals of several seconds.

Is the feed operation normal?
Are not there caught of the feeding mechanism etc?

### 5.4.11 Others

- The image is sometimes blocked, and the image stops.
- The image is blocked when going to outer though it is normal in suroundings in the disk and the stopping sympton increases.

There is a possibility with bad jitter value for such a symptom.

### 5.4.12 CD During normal playback operation

(1) Is TOC reading normal?

- Displays total time for CD-DA.
- Shifts to double-speed mode for V-CD
(2) Is playback afterwards possible?
(3) When can not do a normal playback
- --:-- is displayed during FL search. According to [It is not possible to search ] for DVD, check the feed and tracking systems.
- No sound is output although the time is displayed.(CA-DA) DAC, etc, other than servo.
- The passage of time is not stable, or picture is abnormal.(V-CD)
- The wound of the disc and dirt are confirmed.


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## PARTS LIST

## SAFETY PRECAUTION

Parts identified by the $₫$ symbol are critical for safety. Replace only with specified part numbers.

## BEWARE OF BOGUS PARTS

Parts that do not meet specifications may cause trouble in regard to safety and performance. We recommend that genuine JVC parts be used.

## 1. EXPLODED VIEW

### 1.1 PACKING AND ACCESSORY ASSEMBLY <M1>

The instruction manual to be provided with this product will differ according to the destination.


### 1.2 FINAL ASSEMBLY <M2>




### 1.3 MECHANISM ASSEMBLY <M4>



### 1.4 DVD TRAVERSE MECHANISM ASSEMBLY <M5>



### 1.5 DVD LOADING MECHANISM ASSEMBLY <M6>

< BACK SIDE >


| MODEL | MARK | MODEL | MARK |
| :---: | :---: | :---: | :---: |
| HR-XVC22UC | A | HR-XVC27UC | D |
| HR-XVC23UC | B | HR-XVC27US | E |
| HR-XVC26US | C |  |  |

2. PARTS LIST

PACKING AND ACCESSORY ASSEMBLY <M1>

| $\triangle$ Symbol No. | Part No. | Part Name | Description | Local |
| :---: | :---: | :---: | :---: | :---: |
| 301 | LP31263-030A | PACKING CASE |  | A |
| 301 | LP31263-032A | PACKING CASE |  | B |
| 301 | LP31263-026A | PACKING CASE |  | C |
| 301 | LP31263-028A | PACKING CASE |  | D, E |
| 302 | LP31265-001D | CUSHION ASSY |  |  |
| 303 | LP41038-001A | POLY BAG |  |  |
| 306 | LP21036-038B | REMOCON |  | A, C |
| 306 | LP21036-039B | REMOCON |  | B,D,E |
| 306 A | LP40254-001B | COVER(BATTERY) |  | A,C |
| 306 A | LP40254-009A | COVER(BATTERY) |  | B, D, E |
| 307 |  | BATTERY | R6 TYPE(x2) |  |
| 308 | QPC02202230P | POLY BAG | $22 \mathrm{~cm} \times 22 \mathrm{~cm}$ |  |
| © 310 | LPT0894-001A | INST.BOOK | (ENGLISH) | A |
| © 310 | LPT0894-002A | INST.BOOK | (FRENCH) | A |
| © 310 | LPT0895-001A | INST.BOOK | (ENGLISH) | B |
| © 310 | LPT0895-002A | INST.BOOK | (FRENCH) | B |
| © 310 | LPT0892-001B | INST.BOOK | (ENGLISH) | C |
| $\triangle 310$ | LPT0893-002A | INST.BOOK | (FRENCH) | D |
| © 310 | LPT0893-001A | INST.BOOK | (ENGLISH) | D,E |
| 311 | QPC02503530P | POLY BAG | $25 \mathrm{~cm} \times 35 \mathrm{~cm}$ |  |
| 312 | QAM0501-003 | RF CABLE |  |  |
| 313 | QAM0498-005 | A/V CABLE |  | A,B |
| 316 | BT-52006-2 | WARRANTY CARD |  | A, B, D |
| 317 | BT-51034-1 | REGIST CARD |  | C, E |

$$
\begin{array}{r}
\mathrm{A} \\
\mathrm{~A} \\
\mathrm{~B} \\
\mathrm{~B} \\
\mathrm{C} \\
\mathrm{D} \\
\mathrm{D}, \mathrm{E} \\
\\
\mathrm{~A}, \mathrm{~B} \\
\mathrm{~B}, \mathrm{D} \\
\mathrm{C}, \mathrm{E}
\end{array}
$$

| FINAL ASSEMBLY <M2> |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| $\triangle$ Symbol No. | Part No. | Part Name | Description | Local |
| 501 | LP10492-013A | FRONT PANEL ASSY |  | A |
| 501 | LP10492-014A | FRONT PANEL ASSY |  | B |
| 501 | LP10492-011A | FRONT PANEL ASSY |  | C |
| 501 | LP10492-012A | FRONT PANEL ASSY |  | D,E |
| 501A | LP21188-001A | CASSETTE DOOR |  | A, C |
| 501A | LP21188-002A | CASSETTE DOOR |  | B,D,E |
| 501B | PQ46448 | TORSION SPRING |  |  |
| 502 | LP10488-004B | TOP COVER |  | A, C |
| 502 | LP10488-002B | TOP COVER |  | B, D, E |
| 503 | QYSBSG3006MA | TAP SCREW | M $3 \times 6 \mathrm{~mm}$ TOPSIDE( $\mathrm{x}^{2}$ ) | A, C |
| 503 | QYSBSG3006NA | TAP SCREW | M $3 \times 6 \mathrm{~mm} \mathrm{TOPSIDE(2)}$ | B, D, E |
| 504 | QYSBSG3006MA | TAP SCREW | M $3 \times 6 \mathrm{~mm}$ TOPREAR ( $\times 6$ ) | A, C |
| 504 | QYSBSG3006NA | TAP SCREW | M3 x 6 mm ( $\times 6$ ) | B, D, E |
| 505 | PDV2531D | DRUM FINAL ASSY |  |  |
| 506 | QYTDSF2608ZA | TAP SCREW | N26x8mIRRONTBOAPDASYY(0) |  |
| 507 | LP40990-001A | SPECIAL SCREW | FRONT PANEL(x2) | A, B |
| 507 | LP31391-001A | SPECIAL SCREW | FRONT PANEL(x2) | C,D,E |
| 508 | LP21190-001A | FITTING |  | A, C |
| 508 | LP21190-002A | FITTING |  | B,D,E |
| 509 | LP41077-002A | LABEL(CAUTION) |  |  |
| 510 | QYSPSPD3008ZA | SCREW | M3x8mm DRUM( $\times 3$ ) |  |
| 511 | LP10489-001B | BOTTOM CHASSIS |  |  |
| 514 | LP30002-0F1A | SPACER |  |  |
| 515 | LP31391-002A | SPECIAL SCREW | MECHANISM(x3) |  |
| 516 | LP31391-001A | SPECIAL SCREW | HOUSING |  |
| 517 | LP31391-001A | SPECIAL SCREW | $\operatorname{MAIN}(\mathrm{x} 3)$ |  |
| 518 | QYTDSF3008MA | TAP SCREW | M3x8mm JACK (x4) |  |
| 519 | LP21178-016B | REAR COVER |  |  |
| 520 | QYSBSG3006MA | TAP SCREW | M3x6mmREARCOVER |  |
| 521 | LP31348-001A | FOOT | (x2) |  |
| 560 | LP21177-001B | BRACKET(DVD) |  |  |
| 561 | LP31391-001A | SPECIAL SCREW | BRACKET(DVD)(x3) |  |
| 562 | LP30002-0E5A | SPACER | (x2) |  |
| 563 | LP31392-001A | BRACKET |  |  |
| 564 | QYSDSF2608ZA | TAP SCREW | M2.6 x 8mm DVD |  |
| 565 | QYSBSG3010ZA | TAP SCREW | M $3 \times 10 \mathrm{~mm}$ DVD( $\times 3$ ) |  |
| 566 | LP31153-013A | STICKER(TOP) |  | A, B |
| 566 | LP31153-012A | STICKER(TOP) |  | D |
| 566 | LP31153-011A | STICKER(TOP) |  | C,E |
| 570 | LP30002-0B7A | SPACER |  |  |
| WR1 | QUQ112-2212CG | FFC WIRE | DSPAY 0 OTOBMANCOB102 |  |
| WR2 | QUQ112-1010CG | FFC WIRE | JACKCN1911/ANNN3103 |  |
| WR3 | QUQ210-1916CC | FFC WIRE | DDDUNTCWEOTHANCN301 |  |



| $\triangle$ Symbol No. | Part No. | Part Name | Description | Local |
| :--- | :--- | :--- | ---: | :--- |
| WR4 | QUQ210-1716CC | FFC WIRE | DDUNTCWOOMONNON332 |  |

## MECHANISM ASSEMBLY <M4>

$\triangle$ Symbol No. Part No. Part Name Description Local

| 1 | LP21039-001X | MAIN DECK ASSY | A,D |
| :--- | :--- | :--- | ---: |
| 1 | LP21039-001Y | MAIN DECK ASSY | B,C,E |
| 3 | LP40097-002E | GUIDE POLE CAP |  |

$$
\begin{gathered}
4 \\
4 \\
15 \\
16 \\
17 \\
18 \\
188 \\
18 E \\
19 \\
20 \\
21 \\
22 \\
22 \\
23 \\
238 \\
23 E
\end{gathered}
$$

| MODEL | MARK | MODEL | MARK |
| :---: | :---: | :---: | :---: |
| HR-XVC22UC | A | HR-XVC27UC | D |
| HR-XVC23UC | B | HR-XVC27US | E |
| HR-XVC26US | C |  |  |


| $\triangle$ Symbol No. | Part No. | Part Name | Description |
| :---: | :---: | :---: | :---: |
| 93 | LP40934-001B | CLUTCH UNIT |  |
| 94 | PQM30017-47 | SLIT WASHER |  |
| 95 | LP30973-001A | DIRECT GEAR |  |
| 96 | LP40939-001A | COMPRESSION SPRING |  |
| 102 | LP30974-001C | CHANGE LEVER |  |
| 105 | LP21049-001A | REEL DISK | (x2) |
| 107 | LP30017-004A | SPACER | REEL DISK(x2) |
| 110 | LP10401-001L | SIDE FRAME(L) |  |
| 111 | LP10402-001M | SIDE FRAME(R) |  |
| 112 | QYTDST2606ZA | TAP SCREW | M2.6 x 6mm(x2) |
| 113 | LP40917-001D | TORSION SPRING |  |
| 114 | LP30976-001F | SIDE PLATE |  |
| 115 | LP30977-002D | LIMIT PLATE |  |
| 116 | LP40846-001C | LIMIT SPRING |  |
| 117 | LP31100-002A | DRIVE LEVER |  |
| 118 | LP30978-001B | DRIVE ARM(L) |  |
| 119 | LP30979-001S | DRIVE ARM(R) |  |
| 120 | LP40847-001B | TORSION SPRING |  |
| 121 | LP30980-001F | CONNECT PLATE |  |
| 122 | LP10403-001C | SIDE HOLDER(L) |  |
| 123 | LP10404-001E | SIDE HOLDER(R) |  |
| 124 | LP30983-001B | LOCK LEVER(L) |  |
| 125 | LP30984-001B | LOCK LEVER(R) |  |
| 126 | LP40924-001D | TENSION SPRING | (x2) |
| 128 | LP40857-001B | EARTH SPRING(2) |  |
| 130 | LP30981-001G | CASSETTE HOLDER ASSY |  |
| 134 | LP21051-002C | REC SAFETY LEVER |  |
| 137 | LP21052-001K | TOP FRAME |  |
| 140 | LP41153-001A | EARTH SPRING(3) |  |
| 151 | LP30985-002M | DOOR OPENER |  |
| WR1 | WJT0117-001A | E-CARD WIRE |  |
| WR2 | WJT0067-001B | E-CARD WIRE | A/C HEAD CN2001 |
| WR3 | WJS0022-001A | E-FL/RB WIRE | LOADING MOTOR |

## DVD TRAVERSE MECHANISM ASSEMBLY <M5>

| $\triangle$ Symbol No. | Part No. | Part Name | Description |
| :---: | :---: | :---: | :---: |
| 1 | LE20727-001A | MECHA BASE |  |
| 2 | LE20699-002A | SPINDLE BASE |  |
| 3 | QYSDST2605M | TAP SCREW | M2.6 x 5mm( $\times 2$ ) |
| 4 | LE40931-001A | SHAFT |  |
| 5 | LV33991-001A | ADJUST SPRING |  |
| 6 | QYSPSFU2040M | TAP SCREW | M2 x 4mm |
| 7 | LE20698-004A | FEED HOLDER |  |
| 8 | QAR0215-001 | FEED MOTOR |  |
| 9 | LV41510-001A | FEED GEAR T |  |
| 10 | QYSPSPU2040M | SCREW | M2 x 4 mm ( $\times 2$ ) |
| 11 | QYSDST2605M | TAP SCREW | M2.6 x 5mm(x2) |
| 12 | QAL0507-001 | PICK UP |  |
| 13 | LE20700-001A | SW ACTUATOR |  |
| 14 | LE31067-002A | LEAD SPRING |  |
| 15 | QYSPSFU1740Z | TAP SCREW | $\mathrm{M} 1.7 \times 4 \mathrm{~mm}(\mathrm{x} 2)$ |
| 16 | LE40929-001A | SW.LEVER |  |
| 17 | QYSPSFU1740Z | TAP SCREW | M1.7 $\times 4 \mathrm{~mm}$ |
| 18 | QUQ105-2411AC | FFC |  |
| 19 | LE40931-001A | SHAFT |  |
| 20 | LE40855-001A | FEED GEAR E |  |
| 21 | LE40918-001A | LEAD SCREW |  |
| 22 | LE40930-001A | FEED GEAR M |  |
| 23 | LE40928-001A | THURUST SPRING |  |
| 24 | LE40927-001A | PLATE |  |
| 25 | QYSDST2614Z | TAPPING SCREW | M2.6 x 14mm |
| 26 | QAR0316-001 | SPINDLE MOTOR |  |
| 27 | QYSPSPU1740Z | SCREW | M1.7 $\times 4 \mathrm{~mm}$ ( $\times 3$ ) |
| 28 | LE40858-002A | SPECIAL SCREW | (x3) |
| 29 | QYSDST2004Z | SCREW | $2 \mathrm{~mm} \times 4 \mathrm{~mm}(\mathrm{x} 2)$ |


| $\triangle$ Symbol No . | Part No. | Part Name | Description |
| :---: | :---: | :---: | :---: |
| 1 | LE10283-012A | LOADER SUB ASSY |  |
| 2 | QAR0197-001 | MOTOR | MABUCHI |
| 3 | LV42087-002A | MOTOR PULLEY |  |
| 4 | QYSPSPU1730Z | SCREW | FOR MOTOR(x2) |
| 5 | LE40897-001A | BELT |  |
| 6 | LE31046-003A | CLAMPER |  |
| 7 | LV42930-003A | P.C.MAGNET |  |
| 8 | LE40899-001A | YOKE |  |
| 9 | LE40906-001A | SPECIAL SCREW |  |
| 11 | LE40900-003A | INSULATOR | (x2) |
| 12 | LE40900-005A | INSULATOR | (x2) |
| 13 | LE40901-001A | SPECIAL SCREW | (x4) |
| 14 | QYWFM419025 | WASHER | $1.9 \mathrm{~mm} 21.4 \mathrm{~mm} \times 0.02 \mathrm{~mm}$ |


| $\triangle$ Symbol No. | Part No. | Part Name | Description | Local |
| :---: | :---: | :---: | :---: | :---: |
| PW1 | LPA10227-02C | MAIN BOARD ASSY |  | A, B |
| PW1 | LPA10227-01C | MAIN BOARD ASSY |  | C,D,E |
| IC1 | JCP8060-NVA | IC |  |  |
| IC2201 | AN3663FBP | IC |  |  |
| IC3001 | HD6432199RB04F | IC(MCU) | MASK |  |
| IC3002 | IC-PST3427U-X | IC |  |  |
| IC3003 | LPN0864-002B-01 | IC(EEPROM) | *(REFER TO BELOW) | A, B |
| IC3003 | LPN0864-001B-02 | IC(EEPROM) | *(REFER TO BELOW) | C,D,E |



| MODEL | MARK | MODEL | MARK |
| :---: | :---: | :---: | :---: |
| HR-XVC22UC | A | HR-XVC27UC | D |
| HR-XVC23UC | B | HR-XVC27US | E |
| HR-XVC26US | C |  |  |


| $\triangle$ Symbol No. | Part No. | Part Name | Description | Local | $\triangle$ Symbol No. | Part No. | Part Name | Description | Local |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| C201 | NDC31HJ-220X | C CAPACITOR | 22 pF 50 V J |  | C4010 | NCB31EK-223X | C CAPACITOR | 0.022 F 25 V K |  |
| C202 | QEKJ1HM-475Z | E CAPACITOR | 4.7 F 50V M |  | C4011 | NCB31CK-104X | C CAPACITOR | 0.14 F 16 V K |  |
| C203 | NCB31HK-102X | C CAPACITOR | 1000 pF 50 V K |  | C4012 | QEKJ1HM-224Z | E CAPACITOR | 0.22 uF 50 V M |  |
| C204 | NCB31HK-681X | C CAPACITOR | 680 pF 50 V K |  | C4014 | NDC31HJ-101X | C CAPACITOR | 100pF 50V J |  |
| C205 | QEKJ1HM-475Z | E CAPACITOR | 4.7uF 50V M |  | C4015 | NCB31HK-221X | C CAPACITOR | 220pF 50V K |  |
| C206 | NCB31HK-681X | C CAPACITOR | 680 pF 50 V K |  | $\triangle$ C5001 | QF29077-473 | MPP CAPACITOR | 0.047 uF 275 V M |  |
| C207 | QEKJ1HM-475Z | E CAPACITOR | 4.7uF 50V M |  | $\triangle$ C5003 | QCZ9079-101 | C CAPACITOR | 100pF AC250V K |  |
| C209 | QEKJOJM-476Z | E CAPACITOR | 47uF 6.3 V M |  | $\triangle$ C5004 | QCZ9079-472 | C CAPACITOR | 4700pF AC250VM |  |
| C210 | NCB31EK-103X | C CAPACITOR | 0.01 uF 25 V K |  | C5006 | QETM2DM-157 | E CAPACITOR | 150uF 200V M |  |
| C212 | NCF31EZ-104X | C CAPACITOR | 0.14 F 25 V Z |  | C5101 | QCZ0336-330Z | C CAPACITOR | 33 pF 1 kV J |  |
| C213 | NCF31EZ-104X | C CAPACITOR | 0.14 F 25 V Z |  | C5102 | QCZ0333-472 | C CAPACITOR | 4700 pF 1 kV K |  |
| C2001 | QEKJ1HM-475Z | E CAPACITOR | 4.74 F 50 V M |  | C5104 | QETN1HM-105Z | E CAPACITOR | 1 uF 50 V M |  |
| C2002 | QEKJ1HM-105Z | E CAPACITOR | 1uF 50V M |  | C5106 | NCB31HK-821X | C CAPACITOR | 820pF 50V K |  |
| C2005 | QEKJ1HM-475Z | E CAPACITOR | 4.7uF 50V M |  | C5108 | NCB31HK-104X | C CAPACITOR | 0.14 F 50 VK |  |
| C2006 | NCB31EK-682X | C CAPACITOR | 6800 pF 25 V K |  | C5109 | NCB31HK-183X | C CAPACITOR | 0.018 F 50 V K |  |
| C2007 | QEKJ1CM-226Z | E CAPACITOR | 22uF 16V M |  | C5202 | QEMT1AM-128 | E CAPACITOR | 1200uF 10V M |  |
| C2008 | QEKJ1HM-475Z | E CAPACITOR | 4.7uF 50V M |  | C5204 | QEMT1AM-128 | E CAPACITOR | 1200uF 10V M |  |
| C2009 | NCB31HK-102X | C CAPACITOR | 1000pF 50V K |  | C5205 | QEMU1CM-397Z | E CAPACITOR | 390 uF 16 V M |  |
| C2010 | NCB31HK-681X | C CAPACITOR | 680 pF 50 V K |  | C5207 | QETN2AM-475Z | E CAPACITOR | 4.7 CFF 100 V M |  |
| C2011 | QEKJ1HM-475Z | E CAPACITOR | 4.7uF 50V M |  | C5209 | QETN1AM-107Z | E CAPACITOR | 100 uF 10 V M |  |
| C2012 | QEKJ1HM-475Z | E CAPACITOR | 4.7uF 50V M |  | C5210 | QETN1CM-107Z | E CAPACITOR | 100uF 16V M |  |
| C2051 | NCB31HK-331X | C CAPACITOR | 330 pF 50 V K |  | C5211 | QETN1AM-107Z | E CAPACITOR | 100uF 10V M |  |
| C2052 | QFV61HJ-823Z | MF CAPACITOR | 0.082 uF 50 V J |  | C5214 | NCB31AK-154X | C CAPACITOR | 0.15 F 10V K |  |
| C2053 | NCB31HK-472X | C CAPACITOR | 4700 pF 50 V K |  | C5303 | QETN1HM-225Z | E CAPACITOR | 2.2 uF 50 V M |  |
| C2054 | NCB31EK-223X | C CAPACITOR | 0.022 uF 25 V K |  | C5304 | QETN1CM-107Z | E CAPACITOR | 100uF 16V M |  |
| C2055 | QEKJ1EM-106Z | E CAPACITOR | 10uF 25V M |  | C5305 | QETN1AM-107Z | E CAPACITOR | 100 uF 10 V M |  |
| C2201 | QEKJ1EM-106Z | E CAPACITOR | 10uF 25V M |  | C5306 | NCF31AZ-105X | C CAPACITOR | 1uF 10V Z |  |
| C2202 | QEKJ1HM-475Z | E CAPACITOR | 4.7uF 50V M |  | C5307 | NCB31HK-471X | C CAPACITOR | 470pF 50V K |  |
| C2203 | QEKJ1HM-475Z | E CAPACITOR | 4.7uF 50V M |  | C5309 | QETN1AM-107Z | E CAPACITOR | 100 uF 10 V M |  |
| C2204 | QEKJOJM-336Z | E CAPACITOR | 33uF 6.3V M |  | C5310 | QETN1AM-107Z | E CAPACITOR | 100uF 10V M |  |
| C2205 | QEKJ1EM-106Z | E CAPACITOR | 10 F 25 V M |  | C5314 | QETN1CM-107Z | E CAPACITOR | 100 uF 16 V M |  |
| C2206 | QEKJ1EM-106Z | E CAPACITOR | 10uF 25V M |  | C6013 | NCB31HK-102X | C CAPACITOR | 1000pF 50V K |  |
| C2207 | NCB31EK-153X | C CAPACITOR | 0.015 F 25 V K |  | C6021 | NCB31HK-331X | C CAPACITOR | 330 pF 50 V K | C,D,E |
| C2208 | NCB31EK-153X | C CAPACITOR | 0.015 F 25 V K |  | C6053 | NDC31HJ-120X | C CAPACITOR | 12 pF 50 V J | C,D,E |
| C2209 | QEKJ1EM-106Z | E CAPACITOR | 10uF 25V M |  | C6054 | NDC31HJ-100X | C CAPACITOR | 10pF 50V J | C,D,E |
| C2210 | QEKJ1EM-106Z | E CAPACITOR | 10uF 25V M |  | C6501 | NCB31CK-104X | C CAPACITOR | 0.14 F 16 V K |  |
| C2211 | QEKJOJM-336Z | E CAPACITOR | 33uF 6.3V M |  | C6502 | QEKJ1EM-106Z | E CAPACITOR | 10uF 25V M |  |
| C2212 | QEKJOJM-476Z | E CAPACITOR | 47uF 6.3V M |  | C6503 | QEKJ1HM-105Z | E CAPACITOR | 1 uF 50 V M |  |
| C2214 | QEKJ1EM-106Z | E CAPACITOR | 10 uF 25 V M |  | C6504 | NCF31EZ-104X | C CAPACITOR | 0.14 F 25 V Z |  |
| C2215 | QEKJ1EM-106Z | E CAPACITOR | 10 F 25 V M |  | C6505 | QEKJ1HM-335Z | E CAPACITOR | 3.34F 50V M |  |
| C2218 | QEKJ1EM-106Z | E CAPACITOR | 10 F 25V M | C,D,E | C6508 | NCB31EK-223X | C CAPACITOR | 0.022 F 25 V K |  |
| C2219 | QEKJ1CM-226Z | E CAPACITOR | 22 FF 16 V M | C,D,E | C6509 | NCB31CK-104X | C CAPACITOR | 0.14 F 16 V K |  |
| C2220 | QEKJ1EM-106Z | E CAPACITOR | 10uF 25V M |  | C6511 | NCF31EZ-104X | C CAPACITOR | 0.14 F 25 V Z |  |
| C2221 | NCB31EK-223X | C CAPACITOR | 0.022 FF 25 V K |  | C6512 | NCB31EK-223X | C CAPACITOR | 0.022 F 25 V K |  |
| C2222 | NCF31EZ-104X | C CAPACITOR | 0.1uF 25V Z |  | C6513 | QEKJ1HM-225Z | E CAPACITOR | 2.2 F 50 V M |  |
| C2234 | NCB30JK-105X | C CAPACITOR | 1 UF 6.3 V K |  | C6514 | NCB31EK-223X | C CAPACITOR | 0.022 F 25 V K |  |
| C2235 | NCB30JK-105X | C CAPACITOR | 1uF 6.3V K |  | C6515 | QEKJ1HM-335Z | E CAPACITOR | 3.3 F 50 V M |  |
| C2251 | NCB31EK-103X | C CAPACITOR | 0.01 uF 25 V K |  | C6516 | QEKJ1EM-475Z | E CAPACITOR | 4.7uF 25 V M |  |
| C2252 | NCB31EK-103X | C CAPACITOR | 0.01 F F 25 V K |  | C6517 | NCB31AK-224X | C CAPACITOR | 0.22 FF 10 V |  |
| C2253 | NCB31EK-103X | C CAPACITOR | 0.01 uF 25 V K |  | C6532 | NCF31EZ-104X | C CAPACITOR | 0.1uF 25V Z |  |
| C2254 | QEKJOJM-476Z | E CAPACITOR | 47uF 6.3V M |  | C7114 | QETJOJM-477Z | E CAPACITOR | 470uF 6.3 V M |  |
| C2255 | NCF31EZ-104X | C CAPACITOR | 0.1uF 25V Z |  | C7117 | QEKJ1EM-106Z | E CAPACITOR | 10 FF 25 V M |  |
| C2256 | NCB31EK-103X | C CAPACITOR | 0.01 uF 25 V K |  | C7118 | QEKJ1EM-106Z | E CAPACITOR | 10uF 25V M |  |
| C2257 | NCB31EK-103X | C CAPACITOR | 0.01 uF 25 V K |  | C7119 | NCF31EZ-104X | C CAPACITOR | 0.14 F 25 V Z |  |
| C2259 | QEKJ1HM-334Z | E CAPACITOR | 0.33 uF 50 V M |  | C7120 | QETJOJM-477Z | E CAPACITOR | 470 uF 6.3 V M |  |
| C3011 | QETN1AM-477Z | E CAPACITOR | 470uF 10V M |  | C7121 | NCB31EK-103X | C CAPACITOR | 0.01 uF 25 V K |  |
| C3012 | QEKJOJM-476Z | E CAPACITOR | 47uF 6.3 V M |  | C7123 | QETJOJM-477Z | E CAPACITOR | 470 uF 6.3 V M |  |
| C3014 | QEKJOJM-476Z | E CAPACITOR | 47uF 6.3 V M |  | C7124 | QETJOJM-477Z | E CAPACITOR | 470 uF 6.3 V M |  |
| C3016 | NCF31EZ-104X | C CAPACITOR | 0.1uF 25V Z |  | C7125 | QETJOJM-477Z | E CAPACITOR | 470uF 6.3V M |  |
| C3022 | NCF31EZ-104X | C CAPACITOR | 0.14 F 25 V Z |  | C7129 | NCF31EZ-104X | C CAPACITOR | 0.14F 25V Z |  |
| C3024 | NDC31HJ-120X | C CAPACITOR | 12 pF 50 V J |  | C7131 | NCB31EK-103X | C CAPACITOR | 0.01 uF 25 V K |  |
| C3030 | QEKJOJM-476Z | E CAPACITOR | 47uF 6.3V M |  | C7132 | NCF31EZ-104X | C CAPACITOR | 0.1uF 25V Z |  |
| C3031 | NCF31EZ-104X | C CAPACITOR | 0.14 F 25 V Z |  | C7133 | QEKJ1CM-226Z | E CAPACITOR | 22uF 16V M |  |
| C3033 | NCF31EZ-104X | C CAPACITOR | 0.1uF 25V Z |  | C7134 | NCF31EZ-104X | C CAPACITOR | 0.1uF 25V Z |  |
| C3036 | NDC31HJ-180X | C CAPACITOR | 18pF 50V J |  | C7135 | NCF31AZ-105X | C CAPACITOR | 1uF 10V Z |  |
| C3037 | NDC31HJ-120X | C CAPACITOR | 12 pF 50 V J |  | C7136 | NCF31AZ-105X | C CAPACITOR | 1 uF 10 V Z |  |
| C3041 | NDC31HJ-180X | C CAPACITOR | 18pF 50V J |  | C7502 | NCF31EZ-104X | C CAPACITOR | 0.1uF 25V Z |  |
| C3045 | NCB31EK-103X | C CAPACITOR | 0.01 uF 25 V K |  | C7503 | QEKJ1HM-475Z | E CAPACITOR | 4.7uF 50V M |  |
| C3050 | NCF31EZ-104X | C CAPACITOR | 0.1uF 25V Z |  | C7504 | NDC31HJ-151X | C CAPACITOR | 150pF 50V J |  |
| C3052 | QEKJ1EM-106Z | E CAPACITOR | 10 F 25 V M |  | C8001 | QEKJ1CM-226Z | E CAPACITOR | 22 uF 16 V M |  |
| C3054 | NCB31HK-222X | C CAPACITOR | 2200 pF 50 V K |  | C8002 | QEKJ1CM-226Z | E CAPACITOR | 22 FF 16 V M |  |
| C3071 | QETJ1HM-336Z | E CAPACITOR | 33 FF 50 V M |  | C8003 | NCB31HK-821X | C CAPACITOR | 820 pF 50 V |  |
| C4002 | NCF31EZ-104X | C CAPACITOR | 0.14 F 25 V Z |  | C8004 | NCB31HK-821X | C CAPACITOR | 820 pF 50 V |  |
| C4004 | QEKJ1CM-226Z | E CAPACITOR | 22 FF 16 V M |  | C8005 | NCB31HK-821X | C CAPACITOR | 820 pF 50 V K |  |
| C4005 | NDC31HJ-181X | C CAPACITOR | 180 pF 50 V J |  | C8006 | NCB31HK-821X | C CAPACITOR | 820 pF 50 VK |  |
| C4006 | QEKJOJM-476Z | E CAPACITOR | 47uF 6.3V M |  | C8007 | QEKJ1CM-226Z | E CAPACITOR | 22 uF 16 V M |  |
| C4008 | QEQF1HM-105Z | E CAPACITOR | 1uF 50V M |  | C8008 | QEKJ1CM-226Z | E CAPACITOR | 22 FF 16 V M |  |
| C4009 | NRSA63J-OR0X | MG RESISTOR | $0 \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | C8052 | QEKJOJM-107Z | E CAPACITOR | 100uF 6.3V M |  |


| $\triangle$ Symbol No. | Part No. | Part Name | Description | Local | $\triangle$ Symbol No. | Part No. | Part Name | Description | Local |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| C8201 | QEKJOJM-476Z | E CAPACITOR | 47uF 6.3 Vm |  | R3054 | NRSA63J-102X | MG RESISTOR | $1 \mathrm{k} \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  |
| C8202 | NCF31EZ-104X | C CAPACITOR | 0.14 F 25 V Z |  | R3058 | NRSA63J-472X | MG RESISTOR | $4.7 \mathrm{k} \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  |
| C8203 | NCF31EZ-104X | C CAPACITOR | 0.14 F 25 V Z |  | R3061 | QRE141J-331Y | C RESISTOR | $330 \Omega 1 / 4 \mathrm{~W}$ J |  |
| C8301 | QETN1CM-107Z | E CAPACITOR | 100uF 16V M |  | R3062 | QRE141J-331Y | C RESISTOR | $330 \Omega 1 / 4 \mathrm{~W} \mathrm{~J}$ |  |
| C8302 | NCB31EK-103X | C CAPACITOR | 0.01 uF 25 V K |  | R3063 | NRSA63J-102X | MG RESISTOR | $1 \mathrm{k} \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  |
| C8303 | NCF31EZ-104X | C CAPACITOR | 0.1uF 25V Z |  | R3064 | NRSA63J-102X | MG RESISTOR | $1 \mathrm{k} \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  |
|  |  |  |  |  | R3065 | NRSA63J-271X | MG RESISTOR | 270 $1 / 16 \mathrm{~W}$ J |  |
| R1 | NRSA63J-622X | MG RESISTOR | $6.2 \mathrm{k} \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | R3069 | QRE141J-102Y | C RESISTOR | $1 \mathrm{k} \Omega 1 / 4 \mathrm{~W} \mathrm{~J}$ |  |
| R2 | NRSA63J-152X | MG RESISTOR | $1.5 \mathrm{k} \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | R3074 | NRSA63J-103X | MG RESISTOR | $10 \mathrm{k} \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  |
| R3 | NRSA63J-822X | MG RESISTOR | $8.2 \mathrm{k} \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | R3077 | NRSA63J-102X | MG RESISTOR | $1 \mathrm{k} \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  |
| R11 | NRSA63J-472X | MG RESISTOR | $4.7 \mathrm{k} \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | R3080 | NRSA63J-101X | MG RESISTOR | $100 \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  |
| R12 | NRSA63J-102X | MG RESISTOR | $1 \mathrm{k} \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | R3082 | NRSA63J-102X | MG RESISTOR | $1 \mathrm{k} \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  |
| R36 | NRSA63J-472X | MG RESISTOR | $4.7 \mathrm{k} \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | R3085 | NRSA63J-182X | MG RESISTOR | $1.8 \mathrm{k} \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  |
| R37 | NRSA63J-103X | MG RESISTOR | 10k $1 / 16 \mathrm{~W} \mathrm{~J}$ |  | R3098 | QRE141J-102Y | C RESISTOR | $1 \mathrm{k} \Omega 1 / 4 \mathrm{~W} \mathrm{~J}$ |  |
| R201 | NRSA63J-471X | MG RESISTOR | $470 \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | R3099 | NRSA63J-102X | MG RESISTOR | $1 \mathrm{k} \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  |
| R202 | NRSA63J-103X | MG RESISTOR | $10 \mathrm{k} \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | R3101 | NRSA63J-472X | MG RESISTOR | $4.7 \mathrm{k} \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  |
| R203 | NRSA63J-103X | MG RESISTOR | 10k $1 / 16 \mathrm{~W} \mathrm{~J}$ |  | R3201 | NRSA63J-103X | MG RESISTOR | 10k $\Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  |
| R204 | NRSA63J-474X | MG RESISTOR | 470k $1 / 116 \mathrm{~W} \mathrm{~J}$ |  | R3202 | NRSA63J-393X | MG RESISTOR | 39k $\Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  |
| R205 | NRSA63J-301X | MG RESISTOR | $300 \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | R3205 | QRE141J-181Y | C RESISTOR | $180 \Omega 1 / 4 \mathrm{~W} \mathrm{~J}$ |  |
| R206 | NRSA63J-474X | MG RESISTOR | $470 \mathrm{k} \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | R3207 | QRE141J-183Y | C RESISTOR | $18 \mathrm{k} \Omega 114 \mathrm{~W} \mathrm{~J}$ |  |
| R210 | NRSA63J-OR0X | MG RESISTOR | $0 \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | R3208 | NRSA63J-121X | MG RESISTOR | $120 \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  |
| R212 | NRSA63J-471X | MG RESISTOR | $470 \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | R3209 | NRSA63J-183X | MG RESISTOR | 18k $\Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  |
| R2007 | NRSA63J-123X | MG RESISTOR | $12 \mathrm{k} \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | R3210 | NRSA63J-121X | MG RESISTOR | $120 \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  |
| R2010 | NRSA63J-123X | MG RESISTOR | $12 \mathrm{k} \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | R3211 | NRSA63J-183X | MG RESISTOR | $18 \mathrm{k} \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  |
| R2013 | NRSA63J-123X | MG RESISTOR | 12k $21 / 16 \mathrm{~W}$ J |  | R3212 | QRE141J-474Y | C RESISTOR | $470 \mathrm{k} \Omega 1 / 4 \mathrm{~W} \mathrm{~J}$ |  |
| R2014 | NRSA63J-394X | MG RESISTOR | 390ks 1/16W J |  | R3213 | NRSA63J-334X | MG RESISTOR | 330 k ת 1/16W J |  |
| R2015 | NRSA63J-271X | MG RESISTOR | $270 \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | R3214 | NRSA63J-103X | MG RESISTOR | 10k $\Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  |
| R2016 | NRSA63J-333X | MG RESISTOR | $33 \mathrm{k} \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | R3215 | NRSA63J-103X | MG RESISTOR | 10k $\Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  |
| R2017 | NRSA63J-223X | MG RESISTOR | $22 \mathrm{k} \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | R3216 | NRSA63J-103X | MG RESISTOR | 10k $\Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  |
| R2018 | NRSA63J-472X | MG RESISTOR | $4.7 \mathrm{k} \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | R3217 | NRSA63J-103X | MG RESISTOR | 10k $\Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  |
| R2019 | NRSA63J-472X | MG RESISTOR | $4.7 \mathrm{k} \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | R3218 | NRSA63J-472X | MG RESISTOR | $4.7 \mathrm{k} \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  |
| R2021 | NRSA63J-333X | MG RESISTOR | $33 \mathrm{k} \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | R3219 | NRSA63J-472X | MG RESISTOR | $4.7 \mathrm{k} \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  |
| R2022 | NRSA63J-103X | MG RESISTOR | 10k $\Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | R3220 | QRE141J-104Y | C RESISTOR | 100 k ¢ 1/4W J |  |
| R2023 | QRE141J-103Y | C RESISTOR | $10 \mathrm{k} \Omega 1 / 4 \mathrm{~W} \mathrm{~J}$ |  | R3222 | NRSA63J-103X | MG RESISTOR | 10k $\Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  |
| R2024 | NRSA63J-103X | MG RESISTOR | 10k $\Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | R3223 | NRSA63J-332X | MG RESISTOR | $3.3 \mathrm{k} \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  |
| R2053 | NRSA63J-103X | MG RESISTOR | 10k $1 / 16 \mathrm{~W} \mathrm{~J}$ |  | R3224 | NRSA63J-332X | MG RESISTOR | $3.3 \mathrm{k} \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  |
| R2054 | NRSA63J-123X | MG RESISTOR | 12k $1 / 16 \mathrm{~W}$ J |  | R3225 | NRSA63J-103X | MG RESISTOR | 10k $\Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  |
| R2055 | NRSA63J-3R3X | MG RESISTOR | $3.3 \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | R3229 | NRSA63J-105X | MG RESISTOR | $1 \mathrm{M} \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  |
| R2056 | QRE141J-820Y | C RESISTOR | $82 \Omega 1 / 4 \mathrm{~W} \mathrm{~J}$ |  | R3234 | NRSA63J-473X | MG RESISTOR | $47 \mathrm{k} \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  |
| R2057 | NRSA63J-473X | MG RESISTOR | $47 \mathrm{k} \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | R3235 | QRE141J-332Y | C RESISTOR | $3.3 \mathrm{k} \Omega 114 \mathrm{~W} \mathrm{~J}$ |  |
| R2058 | NRSA63J-183X | MG RESISTOR | 18k $\Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | R3236 | QRE141J-332Y | C RESISTOR | $3.3 \mathrm{k} \Omega 114 \mathrm{~W} \mathrm{~J}$ |  |
| R2059 | NRSA63J-473X | MG RESISTOR | $47 \mathrm{k} \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | R3244 | NRSA63J-333X | MG RESISTOR | $33 \mathrm{k} \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  |
| R2060 | NRSA63J-183X | MG RESISTOR | $18 \mathrm{k} \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | R3246 | NRSA63J-103X | MG RESISTOR | 10k $\Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  |
| R2201 | NRSA63J-473X | MG RESISTOR | $47 \mathrm{k} \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | R3248 | NRSA63J-472X | MG RESISTOR | $4.7 \mathrm{k} \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  |
| R2202 | NRSA63J-682X | MG RESISTOR | $6.8 \mathrm{k} \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | R3256 | NRSA63J-222X | MG RESISTOR | $2.2 \mathrm{k} \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  |
| R2205 | NRSA63J-473X | MG RESISTOR | $47 \mathrm{k} \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | R4001 | NRSA63J-472X | MG RESISTOR | $4.7 \mathrm{k} \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  |
| R2206 | NRSA63J-682X | MG RESISTOR | $6.8 \mathrm{k} \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | R4003 | NRSA63J-561X | MG RESISTOR | $560 \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  |
| R2209 | QRE141J-101Y | C RESISTOR | $100 \Omega 1 / 4 \mathrm{~W} \mathrm{~J}$ |  | R4004 | NRSA63J-561X | MG RESISTOR | $560 \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  |
| R2210 | NRSA63J-472X | MG RESISTOR | $4.7 \mathrm{k} \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | R4005 | NRSA63J-562X | MG RESISTOR | $5.6 \mathrm{k} \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  |
| R2211 | NRSA63J-332X | MG RESISTOR | $3.3 \mathrm{k} \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | R4007 | NRSA63J-102X | MG RESISTOR | $1 \mathrm{k} \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  |
| R2212 | NRSA63J-332X | MG RESISTOR | $3.3 \mathrm{k} \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | R4009 | NRSA63J-102X | MG RESISTOR | $1 \mathrm{k} \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  |
| R2213 | NRSA63J-472X | MG RESISTOR | $4.7 \mathrm{k} \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | R4012 | NRSA63J-222X | MG RESISTOR | $2.2 \mathrm{k} \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  |
| R2214 | QRE141J-101Y | C RESISTOR | $100 \Omega 1 / 4 \mathrm{~W} \mathrm{~J}$ |  | R4015 | NRSA63J-223X | MG RESISTOR | 22k $\Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  |
| R2216 | NRSA63J-OROX | MG RESISTOR | $0 \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ | C,D,E | R4017 | NRSA63J-102X | MG RESISTOR | $1 \mathrm{k} \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  |
| R2218 | NRSA63J-392X | MG RESISTOR | $3.9 \mathrm{k} \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | $\triangle$ R5001 | QRZ9046-475Z | C RESISTOR | 4.7M $\Omega 1 / 2 \mathrm{~W} \mathrm{~K}$ |  |
| R2219 | NRSA63J-102X | MG RESISTOR | 1k $\Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | R5101 | QRE141J-224Y | C RESISTOR | 220 k ¢ 1/4W J |  |
| R2220 | NRSA63J-102X | MG RESISTOR | $1 \mathrm{k} \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | R5102 | QRE141J-224Y | C RESISTOR | $220 \mathrm{k} \Omega 1 / 4 \mathrm{~W} \mathrm{~J}$ |  |
| R2221 | NRSA63J-392X | MG RESISTOR | $3.9 \mathrm{k} \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | R5103 | QRE141J-683Y | C RESISTOR | $68 \mathrm{k} \Omega 1 / 4 \mathrm{~W} \mathrm{~J}$ |  |
| R2222 | NRSA63J-392X | MG RESISTOR | $3.9 \mathrm{k} \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | R5104 | QRG02GJ-683 | OMF RESISTOR | $68 \mathrm{k} \Omega 2 \mathrm{~W} \mathrm{~J}$ |  |
| R2223 | NRSA63J-561X | MG RESISTOR | $560 \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | R5106 | QRT01DJ-R27X | MF RESISTOR | $0.27 \Omega 1 \mathrm{~W} \mathrm{~J}$ |  |
| R2224 | NRSA63J-561X | MG RESISTOR | $560 \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | R5107 | QRE121J-331Y | C RESISTOR | $330 \Omega 1 / 2 \mathrm{~W} \mathrm{~J}$ |  |
| R2230 | NRSA63J-471X | MG RESISTOR | $470 \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | R5108 | NRSA63J-152X | MG RESISTOR | $1.5 \mathrm{k} \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  |
| R2231 | NRSA63J-471X | MG RESISTOR | $470 \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | R5109 | NRSA63J-681X | MG RESISTOR | $680 \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  |
| R2251 | NRSA63J-472X | MG RESISTOR | $4.7 \mathrm{k} \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | R5110 | NRSA63J-224X | MG RESISTOR | 220kS 1/16W J |  |
| R2252 | NRSA63J-332X | MG RESISTOR | $3.3 \mathrm{k} \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | R5111 | NRSA63J-101X | MG RESISTOR | $100 \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  |
| R2255 | NRSA63J-273X | MG RESISTOR | $27 \mathrm{k} \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | R5112 | NRSA63J-221X | MG RESISTOR | $220 \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  |
| R2257 | NRSA63J-684X | MG RESISTOR | $680 \mathrm{k} \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | R5113 | NRSA63J-104X | MG RESISTOR | 100k $\mathrm{1}^{1 / 16 \mathrm{~W} \mathrm{~J}}$ |  |
| R3033 | QRE141J-472Y | C RESISTOR | $4.7 \mathrm{k} \Omega 1 / 4 \mathrm{~W} \mathrm{~J}$ |  | R5201 | NRSA63J-221X | MG RESISTOR | $220 \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  |
| R3034 | QRE141J-472Y | C RESISTOR | $4.7 \mathrm{k} \Omega 1 / 4 \mathrm{~W} \mathrm{~J}$ |  | R5202 | NRSA63J-102X | MG RESISTOR | $1 \mathrm{k} \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  |
| R3043 | NRSA63J-102X | MG RESISTOR | $1 \mathrm{k} \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | R5203 | NRSA63J-102X | MG RESISTOR | $1 \mathrm{k} \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  |
| R3045 | NRSA63J-102X | MG RESISTOR | $1 \mathrm{k} \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | R5204 | NRSA63J-332X | MG RESISTOR | $3.3 \mathrm{k} \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  |
| R3046 | NRSA63J-102X | MG RESISTOR | $1 \mathrm{k} \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | R5205 | NRSA63J-123X | MG RESISTOR | $12 \mathrm{k} \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  |
| R3047 | NRSA63J-102X | MG RESISTOR | $1 \mathrm{k} \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | R5206 | NRSA63J-332X | MG RESISTOR | $3.3 \mathrm{k} \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  |
| R3048 | NRSA63J-331X | MG RESISTOR | $330 \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | R5311 | NRSA63J-103X | MG RESISTOR | 10k $\Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  |
| R3049 | NRSA63J-331X | MG RESISTOR | $330 \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | R5312 | NRSA63J-102X | MG RESISTOR | $1 \mathrm{k} \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  |
| R3051 | NRSA63J-102X | MG RESISTOR | $1 \mathrm{k} \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | R5313 | NRSA63J-122X | MG RESISTOR | $1.2 \mathrm{k} \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  |
| R3052 | NRSA63J-102X | MG RESISTOR | $1 \mathrm{k} \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | R5316 | QRE141J-181Y | C RESISTOR | $180 \Omega 1 / 4 \mathrm{~W} \mathrm{~J}$ |  |
| R3053 | NRSA63J-102X | MG RESISTOR | $1 \mathrm{k} \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | R5317 | NRSA63J-473X | MG RESISTOR | $47 \mathrm{k} \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  |


| MODEL | MARK | MODEL | MARK |
| :---: | :---: | :---: | :---: |
| HR-XVC22UC | A | HR-XVC27UC | D |
| HR-XVC23UC | B | HR-XVC27US | E |
| HR-XVC26US | C |  |  |


| $\triangle$ Symbol No. | Part No. | Part Name | Description | Local | $\triangle$ Symbol No. | Part No. | Part Name | Description | Local |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| R5319 | NRSA63J-560X | MG RESISTOR | $56 \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  |  |  |  |  |  |
| R5320 | NRSA63J-153X | MG RESISTOR | $15 \mathrm{k} \Omega 1 / 16 \mathrm{~W}$ J |  | L5 | QQL29BJ-100Z | P COIL | $0.40 \Omega 10 \mathrm{uH} \mathrm{J}$ |  |
| R5321 | NRSA63J-473X | MG RESISTOR | $47 \mathrm{k} \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | L7 | QQL071J-120Y | COIL | $1.50 \Omega 12 \mathrm{HH} \mathrm{J}$ |  |
| R5325 | NRSA63J-101X | MG RESISTOR | $100 \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | L10 | QQL29BJ-100Z | P COIL | $0.40 \Omega 10 \mathrm{uH} \mathrm{J}$ |  |
| R6020 | NRSA63J-102X | MG RESISTOR | $1 \mathrm{k} \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | L201 | QQL231J-150Y | COIL | $2.50 \Omega 15 \mathrm{uH} \mathrm{J}$ |  |
| R6021 | NRSA63J-102X | MG RESISTOR | $1 \mathrm{k} \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | L2251 | QQL29BJ-100Z | P COIL | $0.40 \Omega 10 \mathrm{uH} \mathrm{J}$ |  |
| R6030 | NRSA63J-332X | MG RESISTOR | $3.3 \mathrm{k} \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | L4001 | QQL231K-1ROY | COIL | $0.80 \Omega$ 1uH K |  |
| R6031 | NRSA63J-101X | MG RESISTOR | $100 \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | L5201 | PELN1184 | CHOKE COIL |  |  |
| R6050 | NRSA63J-OR0X | MG RESISTOR | $0 \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ | C,D,E | L5202 | PELN1184 | CHOKE COIL |  |  |
| R6051 | QRE141J-102Y | C RESISTOR | $1 \mathrm{k} \Omega 1 / 4 \mathrm{~W} \mathrm{~J}$ | C,D,E | L5203 | PELN1184 | CHOKE COIL |  |  |
| R6054 | NRSA63J-122X | MG RESISTOR | $1.2 \mathrm{k} \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ | C,D,E | L5303 | QQL231J-220Y | COIL | $3.4 \Omega 22 \mathrm{uH} \mathrm{J}$ |  |
| R6055 | NRSA63J-472X | MG RESISTOR | $4.7 \mathrm{k} \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ | C,D,E | L7101 | QQL29BJ-100Z | P COIL | $0.40 \Omega 10 \mathrm{uH} \mathrm{J}$ |  |
| R6502 | NRSA63J-332X | MG RESISTOR | $3.3 \mathrm{k} \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | L7103 | QQL29BJ-100Z | P COIL | $0.40 \Omega 10 \mathrm{uH} \mathrm{J}$ |  |
| R7134 | NRSA63J-750X | MG RESISTOR | $75 \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | L7501 | QQL231K-1ROY | COIL | $0.80 \Omega$ 1uH K |  |
| R7135 | NRSA63J-221X | MG RESISTOR | $220 \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | T2051 | PELN0832 | OSC TRANS |  |  |
| R7137 | NRSA63J-221X | MG RESISTOR | $220 \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | © T5001 | QQS0219-001 | SW TRANSF |  |  |
| R7154 | QRE141J-750Y | C RESISTOR | $75 \Omega 1 / 4 \mathrm{~W} \mathrm{~J}$ |  |  |  |  |  |  |
| R7155 | NRSA63J-750X | MG RESISTOR | $75 \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | B10 | NRSA63J-OR0X | MG RESISTOR | $0 \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  |
| R7156 | NRSA63J-103X | MG RESISTOR | 10k $\Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | B3003 | NRSA63J-OROX | MG RESISTOR | $0 \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  |
| R7164 | QRE141J-750Y | C RESISTOR | $75 \Omega 1 / 4 \mathrm{~W} \mathrm{~J}$ |  | B5301 | NRSA63J-OR0X | MG RESISTOR | $0 \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  |
| R7165 | QRE141J-750Y | C RESISTOR | $75 \Omega 1 / 4 \mathrm{~W} \mathrm{~J}$ |  | B5303 | NRSA63J-OR0X | MG RESISTOR | $0 \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  |
| R7166 | QRE141J-750Y | C RESISTOR | $75 \Omega 1 / 4 \mathrm{~W} \mathrm{~J}$ |  | B5393 | NRSA63J-OROX | MG RESISTOR | $0 \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  |
| R7173 | NRSA63J-181X | MG RESISTOR | $180 \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | B6024 | NRSA63J-OR0X | MG RESISTOR | $0 \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  |
| R7174 | NRSA63J-222X | MG RESISTOR | $2.2 \mathrm{k} \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | B6025 | NRSA63J-OR0X | MG RESISTOR | $0 \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  |
| R7175 | NRSA63J-181X | MG RESISTOR | $180 \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | B7501 | NRSA63J-OROX | MG RESISTOR | $0 \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  |
| R7176 | NRSA63J-222X | MG RESISTOR | $2.2 \mathrm{k} \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | B7502 | NRSA63J-OR0X | MG RESISTOR | $0 \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  |
| R7177 | NRSA63J-820X | MG RESISTOR | $82 \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | $\triangle$ CD1 | QMPD530-172-JD | POWERCORD(US/CA) | 1.72 m BLACK |  |
| R7179 | NRSA63J-820X | MG RESISTOR | $82 \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | CN1 | QGF1201C2-09 | CONNECTOR | FFC/FPC (1-9) |  |
| R7183 | NRSA63J-181X | MG RESISTOR | $180 \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | CN2001 | QGF1207C1-06 | CONNECTOR | FFC/FPC (1-6) |  |
| R7184 | NRSA63J-222X | MG RESISTOR | $2.2 \mathrm{k} \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | CN2002 | QGB2532J1-02 | CONNECTOR | B-B (1-2) |  |
| R7501 | NRSA02J-100X | MG RESISTOR | $10 \Omega 1 / 10 \mathrm{~W} \mathrm{~J}$ |  | CN3001 | QGB2032M4-12 | CONNECTOR | B-B (1-12) |  |
| R7502 | NRSA63J-301X | MG RESISTOR | $300 \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | CN3102 | QGF1207C1-22 | CONNECTOR | FFC/FPC (1-22) |  |
| R7503 | NRSA63J-301X | MG RESISTOR | $300 \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | CN7103 | QGF1207C1-10 | CONNECTOR | FFC/FPC (1-10) |  |
| R7504 | NRSA63J-820X | MG RESISTOR | $82 \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | CN7301 | QGF1016C3-19 | CONNECTOR | FFC/FPC (1-19) |  |
| R7506 | NRSA63J-330X | MG RESISTOR | $33 \Omega 1116 \mathrm{~W} \mathrm{~J}$ |  | CN7302 | QGF1016C3-17 | CONNECTOR | FFC/FPC (1-17) |  |
| R8001 | NRSA63J-472X | MG RESISTOR | $4.7 \mathrm{k} \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | CN8301 | QGF1016C3-05 | CONNECTOR | FFC/FPC (1-5) |  |
| R8002 | NRSA63J-472X | MG RESISTOR | $4.7 \mathrm{k} \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | © CP3002 | NMFZ012-1R0X-M | FUSE | 1A 50V |  |
| R8003 | NRSA63J-102X | MG RESISTOR | $1 \mathrm{k} \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | $\triangle$ CP3101 | NMFZ012-1ROX-M | FUSE | 1A 50V |  |
| R8004 | NRSA63J-102X | MG RESISTOR | $1 \mathrm{k} \Omega$ 1/16W J |  | © CP4002 | NMFZ012-1ROX-M | FUSE | 1A 50V |  |
| R8005 | NRSA63J-272X | MG RESISTOR | $2.7 \mathrm{k} \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | $\triangle$ CP5303 | NMFZ012-1ROX-M | FUSE | 1A 50V |  |
| R8006 | NRSA63J-272X | MG RESISTOR | $2.7 \mathrm{k} \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | $\triangle$ CP5304 | NMFZ012-1ROX-M | FUSE | 1A 50V |  |
| R8007 | NRSA63J-332X | MG RESISTOR | $3.3 \mathrm{k} \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | $\triangle$ F5001 | QMF51N2-1R25-J1 | FUSE | 1.25A AC250V |  |
| R8008 | NRSA63J-332X | MG RESISTOR | $3.3 \mathrm{k} \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | FC5001 | QNG0020-001Z | FUSE CLIP |  |  |
| R8009 | NRSA63J-392X | MG RESISTOR | $3.9 \mathrm{k} \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | FC5002 | QNG0020-001Z | FUSE CLIP |  |  |
| R8010 | NRSA63J-392X | MG RESISTOR | $3.9 \mathrm{k} \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | HS1 | LP40090-001A | HEAT SINK | Q5101 |  |
| R8013 | NRSA63J-273X | MG RESISTOR | 27k $1 / 16 \mathrm{~W} \mathrm{~J}$ |  | J7002 | QNN0586-001 | PIN JACK | AVV IN OUT |  |
| R8014 | NRSA63J-273X | MG RESISTOR | $27 \mathrm{k} \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | J7004 | QNZ0652-001 | AV JACK | DVD/VCR OUT |  |
| R8015 | NRSA63J-821X | MG RESISTOR | $820 \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | J7005 | QNN0587-002 | PIN JACK | COMPONENTVDEEOUT |  |
| R8016 | NRSA63J-821X | MG RESISTOR | $820 \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | J7009 | QNN0347-001 | SURROUND JACK | COAX OUT |  |
| R8017 | NRSA63J-103X | MG RESISTOR | $10 \mathrm{k} \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | JS3001 | QSW0954-003 | ROTARY ENCODER |  |  |
| R8018 | NRSA63J-103X | MG RESISTOR | $10 \mathrm{k} \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | K5101 | QQR0678-001Z | FERRITE BEADS |  |  |
| R8052 | NRSA63J-562X | MG RESISTOR | $5.6 \mathrm{k} \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | © LF5002 | QQR0932-001 | LINE FILTER |  |  |
| R8053 | NRSA63J-562X | MG RESISTOR | $5.6 \mathrm{k} \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | OT1 | LP31158-001A | BOSS(MECHA) 1 |  |  |
| R8054 | NRSA63J-473X | MG RESISTOR | $47 \mathrm{k} \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | OT2 | LP31185-001A | BOSS(MECHA) 2 | (x2) |  |
| R8055 | NRSA63J-473X | MG RESISTOR | $47 \mathrm{k} \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | OT3 | QYTDST3006Z | TAP SCREW | 3M x6mm Q5101 |  |
| R8201 | NRSA63J-182X | MG RESISTOR | $1.8 \mathrm{k} \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | S3001 | QSW0602-004 | PUSH SWITCH | REC.SAFETY |  |
| R8202 | NRSA63J-182X | MG RESISTOR | $1.8 \mathrm{k} \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | SD1 | LP31179-001A | SHILD PLATE(PREREC) |  |  |
| R8203 | NRSA63J-182X | MG RESISTOR | $1.8 \mathrm{k} \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | TU6001 | QAU0336-001 | TUNER |  |  |
| R8204 | NRSA63J-473X | MG RESISTOR | $47 \mathrm{k} \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | VA5001 | QAF0039-431Z | VARISTOR | 430V |  |
| R8205 | NRSA63J-103X | MG RESISTOR | 10k $\Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | W2 | NRSA63J-OR0X | MG RESISTOR | $0 \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  |
| R8206 | NRSA63J-103X | MG RESISTOR | 10k $\Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | W3 | NRSA63J-OR0X | MG RESISTOR | $0 \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  |
| R8207 | NRSA63J-103X | MG RESISTOR | $10 \mathrm{k} \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | W4 | NRSA63J-OROX | MG RESISTOR | $0 \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  |
| R8214 | NRSA63J-102X | MG RESISTOR | $1 \mathrm{k} \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | W5 | NRSA63J-OR0X | MG RESISTOR | $0 \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  |
| R8215 | NRSA63J-102X | MG RESISTOR | $1 \mathrm{k} \Omega 1116 \mathrm{~W} \mathrm{~J}$ |  | W6 | NRSA63J-OR0X | MG RESISTOR | $0 \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  |
| R8216 | NRSA63J-102X | MG RESISTOR | $1 \mathrm{k} \Omega 1116 \mathrm{~W} \mathrm{~J}$ |  | W7 | NRSA63J-OR0X | MG RESISTOR | $0 \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  |
| R8217 | NRSA63J-102X | MG RESISTOR | $1 \mathrm{k} \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | W8 | NRSA63J-OR0X | MG RESISTOR | $0 \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  |
| R8221 | NRSA63J-102X | MG RESISTOR | $1 \mathrm{k} \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | W9 | NRSA63J-OR0X | MG RESISTOR | $0 \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  |
| R8222 | NRSA63J-102X | MG RESISTOR | $1 \mathrm{k} \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | W11 | NRSA63J-OR0X | MG RESISTOR | $0 \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  |
| R8223 | NRSA63J-102X | MG RESISTOR | $1 \mathrm{k} \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | W12 | NRSA63J-OR0X | MG RESISTOR | $0 \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  |
| R8227 | NRSA63J-102X | MG RESISTOR | $1 \mathrm{k} \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | W13 | NRSA63J-OR0X | MG RESISTOR | $0 \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  |
| R8250 | NRSA63J-222X | MG RESISTOR | $2.2 \mathrm{k} \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | W14 | NRSA63J-OROX | MG RESISTOR | $0 \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  |
| R8251 | NRSA63J-222X | MG RESISTOR | $2.2 \mathrm{k} \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | W15 | NRSA63J-OR0X | MG RESISTOR | $0 \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  |
| R8252 | NRSA63J-222X | MG RESISTOR | $2.2 \mathrm{k} \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | W18 | NRSA63J-OR0X | MG RESISTOR | $0 \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  |
| R8259 | NRSA63J-OR0X | MG RESISTOR | $0 \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | W20 | NRSA63J-OR0X | MG RESISTOR | $0 \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  |
| R8260 | NRSA63J-OR0X | MG RESISTOR | $0 \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | W22 | NRSA63J-OR0X | MG RESISTOR | $0 \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  |
| R8262 | NRSA63J-222X | MG RESISTOR | $2.2 \mathrm{k} \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | W23 | NRSA63J-OR0X | MG RESISTOR | $0 \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  |
| R8263 | NRSA63J-222X | MG RESISTOR | $2.2 \mathrm{k} \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | W24 | NRSA63J-OROX | MG RESISTOR | $0 \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  |
| R8301 | QRE141J-4R7Y | C RESISTOR | $4.7 \Omega 1 / 4 \mathrm{~W} \mathrm{~J}$ |  | W25 | NRSA63J-OR0X | MG RESISTOR | $0 \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  |


|  |  |  |  |  |  |  | MODEL | MARK | MODEL | MARK |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  |  |  | HR-XVC22UC | A | HR-XVC27UC | D |
|  |  |  |  |  |  |  | HR-XVC23UC | B | HR-XVC27US | E |
|  |  |  |  |  |  |  | HR-XVC26US | C |  |  |
| $\triangle$ Symbol No. | Part No. | Part Name | Description | Local | $\triangle$ Symbol No. | Part No. | Part Name |  | Description | Local |
| W26 | NRSA63J-OR0X | MG RESISTOR | $0 \Omega 1 / 16 \mathrm{~W}$ J |  | Q7011 | or 2SD601A/QRS/-X | TRANSISTOR |  |  |  |
| W27 | NRSA63J-0R0X | MG RESISTOR | $0 \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | Q7011 | or 2SC3928A/QRS/-X | TRANSISTOR |  |  |  |
| W28 | NRSA63J-OR0X | MG RESISTOR | $0 \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | Q7012 | 2SC2412K/QRS/-X | TRANSISTOR |  |  |  |
| W29 | NRSA63J-OR0X | MG RESISTOR | $0 \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | Q7012 | or 2SD601A/QRS/-X | TRANSISTOR |  |  |  |
| W30 | NRSA63J-OR0X | MG RESISTOR | $0 \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | Q7012 | or 2SC3928A/QRS/-X | TRANSISTOR |  |  |  |
| W31 | NRSA63J-OR0X | MG RESISTOR | $0 \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | Q7013 | 2SC2412K/QRS/-X | TRANSISTOR |  |  |  |
| W32 | NRSA63J-OR0X | MG RESISTOR | $0 \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | Q7013 | or 2SD601A/QRS/-X | TRANSISTOR |  |  |  |
| W33 | NRSA63J-OR0X | MG RESISTOR | $0 \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | Q7013 | or 2SC3928A/QRS/-X | TRANSISTOR |  |  |  |
| W34 | NRSA63J-OR0X | MG RESISTOR | $0 \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | Q7014 | 2SC2412K/QRS/-X | TRANSISTOR |  |  |  |
| W35 | NRSA63J-OR0X | MG RESISTOR | $0 \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | Q7014 | or 2SD601A/QRS/-X | TRANSISTOR |  |  |  |
| W36 | NRSA63J-OR0X | MG RESISTOR | $0 \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | Q7014 | or 2SC3928A/QRS/-X | TRANSISTOR |  |  |  |
| W37 | NRSA63J-OR0X | MG RESISTOR | $0 \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  |  |  |  |  |  |  |
| W39 | NRSA63J-OR0X | MG RESISTOR | $0 \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | D7006 | SLR-343MC-T | LED |  | DVD |  |
| W40 | NRSA63J-OR0X | MG RESISTOR | $0 \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  |  |  |  |  |  |  |
| W42 | NRSA63J-OR0X | MG RESISTOR | $0 \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | C7011 | QEKJOJM-476Z | E CAPACITOR |  | 47uF 6.3V M |  |
| W44 | NRSA63J-OR0X | MG RESISTOR | $0 \Omega 1 / 16 \mathrm{~W}$ J |  |  |  |  |  |  |  |
| W45 | NRSA63J-0R0X | MG RESISTOR | $0 \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | R7001 | NRSA63J-151X | MG RESISTOR |  | 50 $1 / 16 \mathrm{~W}$ J |  |
| W48 | NRSA63J-OR0X | MG RESISTOR | $0 \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | R7002 | NRSA63J-151X | MG RESISTOR |  | 50 $1 / 16 \mathrm{~W}$ J |  |
| W49 | NRSA63J-OR0X | MG RESISTOR | $0 \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | R7003 | NRSA63J-151X | MG RESISTOR |  | 50 $1 / 16 \mathrm{~W}$ J |  |
| W51 | NRSA63J-OR0X | MG RESISTOR | $0 \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  | R7004 | NRSA63J-151X | MG RESISTOR |  | $50 \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  |
| WR6 | QUB351-08Z4Z4 | SIN TWIST WIRE |  |  | R7005 | NRSA63J-151X | MG RESISTOR |  | 50 $1 / 16 \mathrm{~W}$ J |  |
| X2 | QAX0739-001 | CRYSTAL | 3.57 MHz |  | R7006 | NRSA63J-151X | MG RESISTOR |  | $50 \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  |
| X3001 | QAX0444-001 | CRYSTAL | 32.768 kHz |  | R7007 | NRSA63J-151X | MG RESISTOR |  | 50 1 1/16W J |  |
| X3002 | QAX0527-001 | CRYSTAL | 10.000000 MHz |  | R7010 | NRSA63J-103X | MG RESISTOR |  | $10 \mathrm{k} \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  |
| X8201 | QAX0246-001Z | C RESONATOR | 8.00 MHz |  | R7011 | NRSA63J-122X | MG RESISTOR |  | .2k $\Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  |
|  |  |  |  |  | R7012 | NRSA63J-182X | MG RESISTOR |  | . $8 \mathrm{k} \Omega$ 1/16W J |  |
|  |  |  |  |  | R7013 | NRSA63J-222X | MG RESISTOR |  | .2k $\Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  |
|  |  |  |  |  | R7014 | NRSA63J-272X | MG RESISTOR |  |  |  |
|  | A/C HEAD | ARD ASSE | LY <12> |  | R7015 | NRSA63J-472X | MG RESISTOR |  | $.7 \mathrm{k} \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  |
|  |  |  |  |  | R7020 | NRSA63J-103X | MG RESISTOR |  | $10 \mathrm{k} \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  |
| $\triangle$ Symbol No. | Part No. | Part Name | Description | Local | R7021 | NRSA63J-122X | MG RESISTOR |  | . $2 \mathrm{k} \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  |
|  |  |  |  |  | R7022 | NRSA63J-182X | MG RESISTOR |  | .8k $\Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  |
|  |  |  |  |  | R7023 | NRSA63J-222X | MG RESISTOR |  | .2k $\Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  |
| PW1 | LPA10158-01A1 | A/C HEAD BOARD |  |  | R7031 | NRSA63J-472X | MG RESISTOR |  | . $7 \mathrm{k} \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  |
|  |  |  |  |  | R7032 | NRSA63J-472X | MG RESISTOR |  | .7k $\Omega 1 / 16 \mathrm{~W}$ J |  |
|  |  |  |  |  | R7033 | NRSA63J-472X | MG RESISTOR |  | .7k $\Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  |
|  |  |  |  |  | R7034 | NRSA63J-472X | MG RESISTOR |  | . $\mathrm{k} \Omega$ ת 1/16W J |  |
|  | DISPLAY B | ARD ASSEN | Y <28> |  | R7035 | NRSA63J-472X | MG RESISTOR |  | $.7 \mathrm{k} \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  |
|  | DISPLAY B | ARD ASSEM | - |  | R7036 | NRSA63J-472X | MG RESISTOR |  | $.7 \mathrm{k} \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  |
| $\triangle$ Symbol No. | Part No. | Part Name | Description | Local | R7037 | NRSA63J-472X | MG RESISTOR |  | $.7 \mathrm{k} \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  |
| Smbo. |  | Par Name | Description |  | R7040 | NRSA63J-OROX | MG RESISTOR |  | $0 \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  |
|  |  |  |  |  | R7041 | NRSA63J-331X | MG RESISTOR |  | $330 \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  |
| PW1 | LPA10228-01A1 | DISPLAY BOARD |  |  |  |  |  |  |  |  |
|  |  |  |  |  | CN7003 | QGF1208F1-22 | CONNECTOR |  | C/FPC (1-22) |  |
| IC7002 | GP1UM281XK |  |  |  | DI7001 | LTG-0376M-J | LED |  |  |  |
| IC7002 | or PNA4652M00XB | IR DETECT UNIT | $38 \mathrm{kHz}$ |  | S7001 | QSW1061-001Z | TACT SWITCH |  | OPEN/CLOSE |  |
|  |  |  |  |  | S7002 | QSW1061-001Z | TACT SWITCH |  | GRESSIVESCAN |  |
| Q7001 | 2SA1037AK/QR/-X | TRANSISTOR |  |  | S7003 | QSW1061-001Z | TACT SWITCH |  | $\mathrm{CH}+$ |  |
| Q7001 | or 2SB709A/QR/-X | TRANSISTOR |  |  | S7004 | QSW1061-001Z | TACT SWITCH |  | FF |  |
| Q7001 | or 2SA1530A/QR/-X | SI TRANSISTOR |  |  | S7005 | QSW1061-001Z | TACT SWITCH |  | REW |  |
| Q7002 | 2SA1037AK/QR/-X | TRANSISTOR |  |  | S7006 | QSW1061-001Z | TACT SWITCH |  | REC |  |
| Q7002 | or 2SB709A/QR/-X | TRANSISTOR |  |  | S7010 | QSW1061-001Z | TACT SWITCH |  | CH- |  |
| Q7002 | or 2SA1530A/QR/-X | SI TRANSISTOR |  |  | S7011 | QSW1061-001Z | TACT SWITCH |  | PLAY |  |
| Q7003 | 2SA1037AK/QR/-X | TRANSISTOR |  |  | S7012 | QSW1061-001Z | TACT SWITCH |  | STOP |  |
| Q7003 | or 2SB709A/QR/-X | TRANSISTOR |  |  | S7013 | QSW1061-001Z | TACT SWITCH |  | VCR/DVD |  |
| Q7003 | or 2SA1530A/QR/-X | SI TRANSISTOR |  |  |  |  |  |  |  |  |
| Q7004 | 2SA1037AK/QR/-X | TRANSISTOR |  |  |  |  |  |  |  |  |
| Q7004 | or 2SB709A/QR/-X | TRANSISTOR |  |  |  |  |  |  |  |  |
| Q7004 | or 2SA1530A/QR/-X | SI TRANSISTOR |  |  |  | DVD BRACKE | BOARD ASS | EMB | LY <31> |  |
| Q7005 | 2SA1037AK/QR/-X | TRANSISTOR |  |  |  |  |  |  |  |  |
| Q7005 | or 2SB709A/QR/-X | TRANSISTOR |  |  | $\triangle$ Symbol No. | . Part No. | Part Name |  | Description | Local |
| Q7005 | or 2SA1530A/QR/-X | SI TRANSISTOR |  |  |  |  |  |  |  |  |
| Q7006 | 2SA1037AK/QR/-X | TRANSISTOR |  |  |  |  |  |  |  |  |
| Q7006 | or 2SB709A/QR/-X | TRANSISTOR |  |  | PW1 | LPA10228-01A3 | DVD BRACKET BOA | ARD AS | SSY |  |
| Q7006 | or 2SA1530A/QR/-X | SI TRANSISTOR |  |  |  |  |  |  |  |  |
| Q7007 | 2SA1037AK/QR/-X | TRANSISTOR |  |  |  |  |  |  |  |  |
| Q7007 | or 2SB709A/QR/-X | TRANSISTOR |  |  |  |  |  |  |  |  |
| Q7007 | or 2SA1530A/QR/-X | SI TRANSISTOR |  |  |  | JACK BO | RD ASSEMBL | LY <3 | 36> |  |
| Q7008 | 2SC2412K/QRS/-X | TRANSISTOR |  |  |  | JACK BOA | ARD ASSEMBLY | LY |  |  |
| Q7008 | or 2SD601A/QRS/-X | TRANSISTOR |  |  | $\triangle$ Symbol No. | . Part No. | Part Name |  | Description | Local |
| Q7008 | or 2SC3928A/QRS/-X | TRANSISTOR |  |  |  |  |  |  |  |  |
| Q7009 | 2SC2412K/QRS/-X | TRANSISTOR |  |  |  |  |  |  |  |  |
| Q7009 | or 2SD601A/QRS/-X | TRANSISTOR |  |  | PW1 | LPA10228-01A2 | JACK BOARD ASSY |  |  |  |
| Q7009 | or 2SC3928A/QRS/-X | TRANSISTOR |  |  |  |  |  |  |  |  |
| Q7010 | 2SC2412K/QRS/-X | TRANSISTOR |  |  | D7005 | SLR-343MC-T | LED |  | VHS |  |
| Q7010 | or 2SD601A/QRS/-X | TRANSISTOR |  |  |  |  |  |  |  |  |
| Q7010 | or 2SC3928A/QRS/-X | TRANSISTOR |  |  | R7025 | NRSA63J-472X | MG RESISTOR |  | . $7 \mathrm{k} \Omega 1 / 16 \mathrm{~W}$ J |  |
| Q7011 | 2SC2412K/QRS/-X | TRANSISTOR |  |  | R7042 | NRSA63J-331X | MG RESISTOR |  | $330 \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  |


| © Symbol No. | Part No. | Part Name | Description |
| :--- | :--- | :--- | ---: |
| R7191 | NRSA63J-750X | MG RESISTOR | 75 $1 / 16 \mathrm{~W}$ J |
|  |  |  |  |
| CN7191 | QGF1201F2-10 | CONNECTOR | FFC/FPC (1-10) |
| J7191 | QNN0591-002 | PIN JACK | AV IN |
| S7014 | QSW1061-001Z | TACT SWITCH | POWER |
| S7015 | QSW1061-001Z | TACT SWITCH | EJECT |
|  |  |  |  |
|  |  |  |  |


| $\triangle$ Symbol No. | Part No. | Part Name | Description | Local |
| :--- | :--- | :--- | :--- | :--- |
| PW1 | LPA10158-01A2 | LOADING MOTOR BOARD ASSY |  |  |
|  |  |  |  |  |
|  | SWITCH BOARD ASSEMBLY <98> |  |  |  |


| $\triangle$ Symbol No. | Part No. | Part Name | Description |
| :---: | :---: | :---: | :---: |
| IC201 | LA6502-X | IC |  |
| IC301 | MN2DS0003AA-H | IC |  |
| IC302 | LM1117MP-ADJ-X | IC | 1.5 v REG |
| IC453 | S-80827CNNB-W | IC |  |
| IC505 | K4S641632F-TC75 | IC(DIGITAL) | CMOS SDRAM |
| IC505 | or K4S641632H-TC75 | IC(DIGITAL) |  |
| IC505 | or HY57V641620HGT7 | IC |  |
| IC509 | AT49LV1614R0012 | IC (FLASH) | (SERVICE) |
| IC701 | AK4384VT-X | IC |  |
| Q101 | KTA1001/Y/-X | TRANSISTOR |  |
| Q101 | or 2SB1424/R/-W | TRANSISTOR |  |
| Q102 | 2SC4617/R/-X | TRANSISTOR |  |
| Q103 | KTA1001/Y/-X | TRANSISTOR |  |
| Q103 | or 2SB1424/R/-W | TRANSISTOR |  |
| Q104 | 2SC4617/R/-X | TRANSISTOR |  |
| Q105 | UN2119-X | TRANSISTOR |  |
| C101 | NCB31CK-104X | C CAPACITOR | 0.1uF 16V K |
| C102 | NCB31CK-104X | C CAPACITOR | 0.14 F 16 V K |
| C103 | NCB31CK-104X | C CAPACITOR | 0.1 uF 16 V K |
| C104 | NCB31CK-104X | C CAPACITOR | 0.1uF 16V K |
| C105 | NEA70JM-476X | E CAPACITOR | 47uF 6.3V M |
| C106 | NEA70JM-476X | E CAPACITOR | 47uF 6.3 V M |
| C107 | NCB31CK-104X | C CAPACITOR | 0.1 uF 16 V K |
| C108 | NEA70JM-476X | E CAPACITOR | 47uF 6.3V M |
| C111 | NCB31CK-104X | C CAPACITOR | 0.1 uF 16 V K |
| C204 | NCB31CK-104X | C CAPACITOR | 0.1uF 16V K |
| C205 | NCB31HK-271X | C CAPACITOR | 270pF 50V K |
| C206 | NDC31HJ-151X | C CAPACITOR | 150 pF 50 V J |
| C208 | NCB31HK-561X | C CAPACITOR | 560 pF 50 V K |
| C211 | NCB31HK-223X | C CAPACITOR | 0.022 uF 50 V K |
| C212 | NCB31CK-103X | C CAPACITOR | 0.01 uF 16 V K |
| C217 | NCB31CK-104X | C CAPACITOR | 0.14 F 16 V K |
| C251 | NCB31AK-474X | C CAPACITOR | 0.47uF 10V K |
| C253 | NCB31HK-561X | C CAPACITOR | 560pF 50V K |
| C255 | NCB31CK-153X | C CAPACITOR | 0.015uF 16V K |
| C256 | NCB31CK-104X | C CAPACITOR | 0.1uF 16V K |
| C257 | NCB31HK-822X | C CAPACITOR | 8200 pF 50 V K |
| C258 | NCB31CK-153X | C CAPACITOR | 0.015 uF 16 V K |
| C259 | NCB31CK-153X | C CAPACITOR | 0.015 uF 16 V K |
| C260 | NCB31EK-223X | C CAPACITOR | 0.022 uF 25 V K |
| C261 | NCB31EK-223X | C CAPACITOR | 0.022 uF 25 V K |
| C262 | NCB31EK-223X | C CAPACITOR | 0.022 uF 25 V K |
| C264 | NEA70JM-227X | E CAPACITOR | 220uF 6.3V M |


| $\triangle$ Symbol No. | Part No. | Part Name | Description | Local |
| :---: | :---: | :---: | :---: | :---: |
| C301 | NEA70GM-227X | E CAPACITOR | 220uF 4V M |  |
| C302 | NEA70GM-476X | E CAPACITOR | 47uF 4V M |  |
| C303 | NEA70GM-476X | E CAPACITOR | 47uF 4V M |  |
| C304 | NCB31CK-105X | C CAPACITOR | 1 uF 16 V K |  |
| C305 | NCB31CK-104X | C CAPACITOR | 0.14 F 16 V K |  |
| C306 | NCB31CK-104X | C CAPACITOR | 0.14 F 16 V K |  |
| C307 | NCB31CK-104X | C CAPACITOR | 0.14 F 16 V K |  |
| C308 | NCB31CK-104X | C CAPACITOR | 0.14 F 16 V K |  |
| C309 | NCB31CK-104X | C CAPACITOR | 0.14 F 16 V K |  |
| C310 | NCB31CK-104X | C CAPACITOR | 0.14 F 16 V K |  |
| C311 | NCB31CK-104X | C CAPACITOR | 0.14 F 16 V K |  |
| C312 | NCB31CK-104X | C CAPACITOR | 0.14 F 16 V K |  |
| C313 | NCB31CK-104X | C CAPACITOR | 0.14 F 16 V K |  |
| C314 | NCB31CK-104X | C CAPACITOR | 0.14 F 16 V K |  |
| C315 | NCB31CK-104X | C CAPACITOR | 0.1 uF 16 V K |  |
| C316 | NCB31CK-104X | C CAPACITOR | 0.14 F 16 V K |  |
| C317 | NCB31CK-104X | C CAPACITOR | 0.1 uF 16 V K |  |
| C318 | NCB31CK-104X | C CAPACITOR | 0.14 F 16 V K |  |
| C319 | NCB31CK-104X | C CAPACITOR | 0.14 F 16 V K |  |
| C320 | NCB31CK-104X | C CAPACITOR | 0.14 F 16 V K |  |
| C321 | NCB31CK-104X | C CAPACITOR | 0.14 F 16 V K |  |
| C322 | NCB31CK-104X | C CAPACITOR | 0.14 F 16 V K |  |
| C323 | NCB31CK-104X | C CAPACITOR | 0.14 F 16 V K |  |
| C324 | NCB21CK-105X | C CAPACITOR | 1uF 16V K |  |
| C325 | NDC31HJ-180X | C CAPACITOR | 18 pF 50 V J |  |
| C326 | NDC31HJ-150X | C CAPACITOR | 15 pF 50 V J |  |
| C327 | NCB31HK-103X | C CAPACITOR | 0.01 uF 50 V K |  |
| C330 | NCB31CK-104X | C CAPACITOR | 0.1uF 16V K |  |
| C331 | NCB31CK-333X | C CAPACITOR | 0.033 uF 16 V K |  |
| C332 | NCB31CK-104X | C CAPACITOR | 0.14 F 16 V K |  |
| C333 | NCB31CK-104X | C CAPACITOR | 0.14 F 16 V K |  |
| C334 | NCB31CK-104X | C CAPACITOR | 0.1uF 16V K |  |
| C335 | NCB31CK-104X | C CAPACITOR | 0.14 F 16 V K |  |
| C337 | NCB31CK-183X | C CAPACITOR | 0.018 uF 16 V K |  |
| C338 | NCB31HK-562X | C CAPACITOR | 5600 pF 50 V K |  |
| C339 | NCB31CK-104X | C CAPACITOR | 0.1uF 16V K |  |
| C340 | NCB21CK-105X | C CAPACITOR | 1uF 16V K |  |
| C341 | NCB30JK-105X | C CAPACITOR | 1uF 6.3V K |  |
| C347 | NCB31CK-104X | C CAPACITOR | 0.14 F 16 V K |  |
| C348 | NCB31CK-104X | C CAPACITOR | 0.14 F 16 V K |  |
| C349 | NCB31CK-104X | C CAPACITOR | 0.14 F 16 V K |  |
| C350 | NCB31CK-104X | C CAPACITOR | 0.14 F 16 V K |  |
| C356 | NCB21CK-105X | C CAPACITOR | 1 uF 16 V K |  |
| C359 | NCB31CK-104X | C CAPACITOR | 0.14 F 16 V K |  |
| C371 | NCB21CK-105X | C CAPACITOR | 1uF 16V K |  |
| C374 | NCB31CK-104X | C CAPACITOR | 0.14 F 16 V K |  |
| C391 | NCB31CK-104X | C CAPACITOR | 0.14 F 16 V K |  |
| C392 | NCB31CK-104X | C CAPACITOR | 0.14 F 16 V K |  |
| C455 | NCB31CK-103X | C CAPACITOR | 0.01 uF 16V K |  |
| C505 | NDC31HJ-330X | C CAPACITOR | 33 pF 50 V J |  |
| C506 | NDC31HJ-330X | C CAPACITOR | 33 pF 50 V J |  |
| C507 | NDC31HJ-330X | C CAPACITOR | 33 pF 50 V J |  |
| C508 | NDC31HJ-330X | C CAPACITOR | 33 pF 50 V J |  |
| C509 | NDC31HJ-330X | C CAPACITOR | 33 pF 50 V J |  |
| C510 | NDC31HJ-330X | C CAPACITOR | 33 pF 50 V J |  |
| C547 | NCB31CK-104X | C CAPACITOR | 0.14 F 16 V K |  |
| C551 | NCB31CK-104X | C CAPACITOR | 0.14 F 16 V K |  |
| C552 | NCB31CK-104X | C CAPACITOR | 0.14 F 16 V K |  |
| C553 | NBE20JM-226X | TA E CAPACITOR | 22uF 6.3 V M |  |
| C554 | NCB31CK-104X | C CAPACITOR | 0.1 uF 16 V K |  |
| C555 | NCB31CK-104X | C CAPACITOR | 0.14 F 16 V K |  |
| C556 | NCB31CK-104X | C CAPACITOR | 0.14 F 16 V K |  |
| C557 | NCF31AZ-105X | C CAPACITOR | 1uF 10V Z |  |
| C558 | NCB31CK-104X | C CAPACITOR | 0.14 F 16 V K |  |
| C559 | NCB31CK-104X | C CAPACITOR | 0.14 F 16 V K |  |
| C701 | NCB31CK-104X | C CAPACITOR | 0.14 F 16 V K |  |
| C704 | NEA70JM-227X | E CAPACITOR | 220uF 6.3V M |  |
| C706 | NEA71CM-106X | E CAPACITOR | 10uF 16V M |  |
| C707 | NCB31CK-104X | C CAPACITOR | 0.1 uF 16 V K |  |
| C721 | NCB31HK-102X | C CAPACITOR | 1000pF 50V K |  |
| C902 | NCB31CK-104X | C CAPACITOR | 0.14 F 16 V K |  |
| C903 | NCB31CK-104X | C CAPACITOR | 0.14 F 16 V K |  |
| C904 | NCB31CK-104X | C CAPACITOR | 0.14 F 16 V K |  |
| C906 | NCB31CK-104X | C CAPACITOR | 0.14 F 16 V K |  |
| R101 | NRSA63J-101X | MG RESISTOR | $100 \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  |
| R102 | NRSA63J-101X | MG RESISTOR | $100 \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  |
| R103 | NRSA63J-243X | MG RESISTOR | $24 \mathrm{k} \Omega 1 / 16 \mathrm{~W} \mathrm{~J}$ |  |



# DVD PLAYER \＆ VIDEO CASSETTE RECORDER 

## HR－XVC26U



凡吅吅 VHS SQPB


## For Customer Use：

Enter below the Model No．and Serial No．which are located on the rear of cabinet．Retain this information for future reference．

Model No．
Serial No．

## Dear Customer,

Thank you for purchasing the JVC DVD player \& VHS video cassette recorder. Before use, please read the safety information and precautions to ensure safe use of your new unit.

## CAUTIONS



The lightning flash with arrowhead symbol,
 within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

## WARNING: <br> TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS UNIT TO RAIN OR MOISTURE.

## CAUTION:

This unit should be used with AC $120 \mathrm{~V} \sim, 60 \mathrm{~Hz}$ only. To prevent electric shocks and fire hazards, DO NOT use any other power source.

## CAUTION:

TO PREVENT ELECTRIC SHOCK, MATCH WIDE BLADE OF PLUG TO WIDE SLOT, FULLY INSERT.

## ATTENTION:

POUR ÉVITER LES CHOCS ÉLECTRIQUES, INTRODUIRE LA LAME LA PLUS LARGE DE LA FICHE DANS LA BORNE CORRESPONDANTE DE LA PRISE ET POUSSER JUSQU'AU FOND.

## Note to CATV system installer:

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.

## CAUTION:

THIS PRODUCT USES A LASER SYSTEM.
USE OF CONTROLS OR ADJUSTMENTS OR PERFORMANCE OF PROCEDURES OTHER THAN THOSE SPECIFIED HEREIN MAY RESULT IN HAZARDOUS RADIATION EXPOSURE.

## DO NOT OPEN COVERS AND DO NOT REPAIR YOURSELF. REFER SERVICING TO QUALIFIED PERSONNEL.

CLASS 1 LASER PRODUCT
REPRODUCTION OF LABELS
WARNING LABEL INSIDE OF THE UNIT

## CAUTION - VISIBLE OR INVISIBLE LASER RADIATION WHEN OPEN. DO NOT STARE INTO BEAM. <br> ATTENTION - RAYONNEMENT LASER VISIBLE OU INVISIBLE EN CAS D'OUVERTURE. NE PAS REGARDER DANS LE FAISCEAU.

Declaration of Conformity<br>Model Number: HR-XVC26U<br>Trade Name: JVC<br>Responsible Party: JVC Americas Corp.<br>Address: $\quad 1700$ Valley Road Wayne, N.J. 07470<br>Telephone Number: 973-317-5000<br>This device complies with Part 15 of FCC Rules.<br>Operation is subject to the following two conditions:<br>(1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

Reorient or relocate the receiving antenna.
Increase the separation between the equipment and receiver.
Connect the equipment into an outlet on a circuit different from that to which the receiver is connected. Consult the dealer or an experienced radio/TV technician for help.

## CAUTION:

Changes or modifications not approved by JVC could void user's authority to operate the equipment.

## IMPORTANT PRODUCT SAFETY INSTRUCTIONS

Electrical energy can perform many useful functions. But improper use can result in potential electrical shock or fire hazards. This product has been engineered and manufactured to assure your personal safety. In order not to defeat the built-in safeguards, observe the following basic rules for its installation, use and servicing.

## ATTENTION

Follow and obey all warnings and instructions marked on your product and its operating instructions. For your safety, please read all the safety and operating instructions before you operate this product and keep this booklet for future reference.

## INSTALLATION

## 1. Grounding or Polarization

(A) Your product may be equipped with a polarized alternatingcurrent line plug (a plug having one blade wider than the other). This plug will fit into the power outlet only one way. This is a safety feature.
If you are unable to insert the plug fully into the outlet, try reversing the plug. If the plug should still fail to fit, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the polarized plug.
(B) Your product may be equipped with a 3-wire grounding-type plug, a plug having a third (grounding) pin. This plug will only fit into a grounding-type power outlet. This is a safety feature.
If you are unable to insert the plug into the outlet, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the grounding-type plug.

## 2. Power Sources

Operate your product only from the type of power source indicated on the marking label. If you are not sure of the type of power supply to your home, consult your product dealer or local power company. If your product is intended to operate from battery power, or other sources, refer to the operating instructions.

## 3. Overloading

Do not overload wall outlets, extension cords, or integral convenience receptacles as this can result in a risk of fire or electric shock.

## 4. Power Cord Protection

Power supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords at plugs, convenience receptacles, and the point where they exit from the product.

## 5. Ventilation

Slots and openings in the cabinet are provided for ventilation. To ensure reliable operation of the product and to protect it from overheating, these openings must not be blocked or covered.

- Do not block the openings by placing the product on a bed, sofa, rug or other similar surface.
- Do not place the product in a built-in installation such as a bookcase or rack unless proper ventilation is provided or the manufacturer's instructions have been adhered to.


## 6. Wall or Ceiling Mounting

The product should be mounted to a wall or ceiling only as recommended by the manufacturer.

## ANTENNA INSTALLATION INSTRUCTIONS

## 1. Outdoor Antenna Grounding

If an outside antenna or cable system is connected to the product, be sure the antenna or cable system is grounded so as to provide some protection against voltage surges and built-up static charges. Article 810 of the National Electrical Code, ANSI/ NFPA 70, provides information with regard to proper grounding of the mast and supporting structure, grounding of the lead-in wire to an antenna discharge unit, size of grounding connectors, location of antenna discharge unit, connection to grounding electrodes, and requirements for the grounding electrode.

## 2. Lightning

For added protection for this product during a lightning storm, or when it is left unattended and unused for long periods of time, unplug it from the wall outlet and disconnect the antenna or cable system. This will prevent damage to the product due to lightning and power-line surges.

## 3. Power Lines

An outside antenna system should not be located in the vicinity of overhead power lines or other electric light or power circuits, or where it can fall into such power lines or circuits. When installing an outside antenna system, extreme care should be taken to keep from touching such power lines or circuits as contact with them might be fatal.

## EXAMPLE OF ANTENNA GROUNDING AS PER NATIONAL ELECTRICAL CODE, ANSI/NFPA 70



NEC - NATIONAL ELECTRICAL CODE

## USE

## 1. Accessories

To avoid personal injury:

- Do not place this product on an unstable cart, stand, tripod, bracket, or table. It may fall, causing serious injury to a child or adult, and serious damage to the product.
- Use only with a cart, stand, tripod, bracket, or table recommended by the manufacturer or sold with the product.
- Use a mounting accessory recommended by the manufacturer and follow the manufacturer's instructions for any mounting of the product.
- Do not try to roll a cart with small casters across thresholds or deep-pile carpets.


## 2. Product and Cart Combination

A product and cart combination should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the product and cart combination to overturn.

PORTABLE CART WARNING (Symbol provided by RETAC)


## 3. Water and Moisture

Do not use this product near water-for example, near a bath tub, wash bowl, kitchen sink or laundry tub, in a wet basement, or near a swimming pool and the like.

## 4. Object and Liquid Entry

Never push objects of any kind into this product through openings as they may touch dangerous voltage points or shortout parts that could result in a fire or electric shock. Never spill liquid of any kind on the product.

## 5. Attachments

Do not use attachments not recommended by the manufacturer of this product as they may cause hazards.

## 6. Cleaning

Unplug this product from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.

## 7. Heat

The product should be situated away from heat sources such as radiators, heat registers, stoves, or other products (including amplifiers) that produce heat.

## SERVICING

## 1. Servicing

If your product is not operating correctly or exhibits a marked change in performance and you are unable to restore normal operation by following the detailed procedure in its operating instructions, do not attempt to service it yourself as opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel.

## 2. Damage Requiring Service

Unplug this product from the wall outlet and refer servicing to qualified service personnel under the following conditions:
a. When the power supply cord or plug is damaged.
b. If liquid has been spilled, or objects have fallen into the product.
c. If the product has been exposed to rain or water.
d. If the product does not operate normally by following the operating instructions. Adjust only those controls that are covered by the operating instructions as an improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the product to its normal operation.
e. If the product has been dropped or damaged in any way.
f. When the product exhibits a distinct change in performance-this indicates a need for service.

## 3. Replacement Parts

When replacement parts are required, be sure the service technician has used replacement parts specified by the manufacturer or which have the same characteristics as the original part. Unauthorized substitutions may result in fire, electric shock or other hazards.

## 4. Safety Check

Upon completion of any service or repairs to this product, ask the service technician to perform safety checks to determine that the product is in safe operating condition.

## HOW TO USE THIS INSTRUCTION MANUAL

- All major sections and subsections are listed in the Table Of Contents on page 6 . Use this when searching for information on a specific procedure or feature.
- The Index on pages $10-13$ lists frequently-used terms, and the number of the page on which they are used or explained in the manual. This section also illustrates the controls and connections on the front and rear panel, the front display panel and the remote control.
- The to mark signals a reference to another page for instructions or related information.
- Operation buttons necessary for the various procedures are clearly indicated through the use of illustrations at the beginning of each major section.


## BEFORE YOU INSTALL YOUR NEW UNIT . . .

. . . please read the sections/literature listed below.

- "CAUTIONS" on page 2
- "IMPORTANT PRODUCT SAFETY INSTRUCTIONS" on pages 3 - 4

DSS $^{\text {IM }}$ is an official trademark of DIRECTV, Inc., a unit of GM Hughes Electronics. DISH Network ${ }^{1 M}$ is a trademark of Echostar Communications Corporation.


DODOLBY
DIGITAL

## VHS SQPB 1 -IE

- Manufactured under license from Dolby Laboratories. "Dolby" and the double-D symbol are trademarks of Dolby Laboratories.
- "DTS" and "DTS 2.0 + Digital Out" are trademarks of Digital Theater Systems, Inc.
- Cassettes marked "VHS" (or "S-VHS") can be used with this unit. However, S-VHS recording is not possible with this model.
- This model is equipped with SQPB (S-VHS QUASI PLAYBACK) that makes it possible to play back S-VHS recordings with regular VHS resolution.
- HQ VHS is compatible with existing VHS equipment.
- This product incorporates copyright protection technology that is protected by method claims of certain U.S. patents and other intellectual property rights owned by Macrovision Corporation and other rights owners. Use of this copyright protection technology must be authorized by Macrovision Corporation, and is intended for home and other limited viewing users only unless otherwise authorized by Macrovision Corporation. Reverse engineering or disassembly is prohibited.

When the equipment is installed in a cabinet or a shelf, make sure that it has sufficient space on all sides to allow for ventilation ( 10 cm or more on both sides, on top and at the rear.)

When discarding batteries, environmental problems must be considered and the local rules or laws governing the disposal of these batteries must be followed strictly.

Failure to heed the following precautions may result in damage to the unit, Remote or video cassette.

1. DO NOT place the unit -

- in an environment prone to extreme temperatures or humidity.
- in direct sunlight.
- in a dusty environment.
- in an environment where strong magnetic fields are generated.
- on a surface that is unstable or subject to vibration.

2. DO NOT block the unit's ventilation openings or holes.
(If the ventilation openings or holes are blocked by a newspaper or cloth, etc., the heat may not be able to get out.)
3. DO NOT place heavy objects on the unit or Remote.
4. DO NOT place anything which might spill on top of the unit or Remote.
(If water or liquid is allowed to enter this equipment, fire or electric shock may be caused.)
5. DO NOT expose the apparatus to dripping or splashing.
6. DO NOT use this equipment in a bathroom or places with water. Also DO NOT place any containers filled with water or liquids (such as cosmetics or medicines, flower vases, potted plants, cups, etc.) on top of this unit.
7. DO NOT place any naked flame sources, such as lighted candles, on the apparatus.
8. AVOID violent shocks to the unit during transport.

## MOISTURE CONDENSATION

Moisture in the air will condense on the unit when you move it from a cold place to a warm place, or under extremely humid conditions-just as water droplets form in the surface of a glass filled with cold liquid. Moisture condensation on the head drum will cause damage to the tape. In conditions where condensation may occur, keep the unit turned on for a few hours to let the moisture dry.

## ATTENTION

## To mobile phone users:

Using a mobile phone in the vicinity of the unit may cause picture vibration on the TV screen or change the screen to a blue back display.

## On placing the unit:

Some TVs or other appliances generates strong magnetic fields. Do not place such appliance on top of the unit as it may cause picture disturbance.
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## About Discs

## Playable Discs

You can use the discs with the following logos for playback only.

| DVD VIDEO <br> ( $8 \mathrm{~cm} / 12 \mathrm{~cm}$ disc) | Video CD/Super Video CD ( $8 \mathrm{~cm} / 12 \mathrm{~cm}$ disc) |
| :---: | :---: |
| $\sum_{V I D E O}$ |  |
| Audio CD ( $8 \mathrm{~cm} / 12 \mathrm{~cm}$ disc) |  |
|  | CD |

- The following discs also can be played back.
- DVD-R/RW discs recorded in DVD VIDEO format and finalized
- CD-R/RW discs recorded in Super Video CD, Video CD or Audio CD format and finalized.
- CD-R/RW discs recorded in MP3 format in accordance with the "ISO 9660" format. (See page 62 for details.)
- CD-R/RW discs recorded in JPEG format in accordance with the "ISO 9660 " format. (See page 65 for details.)
- Discs other than the above cannot be played back.
- Operation and audio quality of this unit are not guaranteed for discs that do not conform to the Compact Disc specification (CD-DA).
Before you play back a CD, check for the CD logo and read the notes on the package to confirm that it conforms to the Compact Disc specification.
- Depending on the intentions of the author of the software, recording conditions of DVD discs and Video CD discs may be restricted. Since this unit plays back discs according to the intentions of the author of the software as indicated on the disc, some functions may not operate as commanded.
- When switching from the first layer to the second layer of double-layered DVD VIDEO discs, the image and sound may be momentarily distorted. This is not a malfunction.


## Unplayable Discs

The following types of discs cannot be played using this unit. Do not attempt to play back any kind of disc that is damaged (cracked, warped, or repaired with adhesive tape) or discs in unusual shapes (heart-shaped, octagonal, or other forms). If such discs are accidentally played back, it may cause noise that can lead to speaker damage.

- CD-ROM discs (including PHOTO-CD)
- DVD AUDIO discs
- Super Audio CDs (SACD)
- DVD-RW discs recorded in VR format
- DVD-RAM
- Discs which have a region number other than "1"


## Region Number

The world is divided into 6 regions for DVD VIDEO discs. DVD VIDEO discs are assigned a region number to indicate which region they may be played back in. A disc cannot be played back on this unit unless the region number of the disc matches that of the unit. The region number for this unit is " 1 ". Only discs whose region number includes " 1 " can be played back such as shown below.
Examples of DVD VIDEO labels which can be played back using this unit.


## Marks of discs in this instruction manual

## DVD

VIDEO
with a disc
including MP3 files.

Allows operation with a Audio CD disc.

Allows operation with a SVCD disc.

Allows operation with a disc including JPEG files.

DISC INFORMATION (cont.)

## DVD VIDEO Marks

Sometimes marks are printed on a DVD disc and/or on its packaging to indicate information regarding the contents and functions of a disc. Check marks indicating the contents and functions of a disc. Note, however, that in some cases a disc may not include a mark even for a function it supports.

## Marks related to video

| Mark | Description |
| :---: | :---: |
| $2$ | Number of subtitles |
| $\begin{aligned} & 0 \\ & 3 \end{aligned}$ | Number of angles |
| $4: 3$ | Recorded under the standard 4:3 aspect ratio |
|  | Screen includes black bands at top and bottom of image which has a standard 4:3 aspect ratio (letter box) |
| 16:9 LB | Video playback is in Wide video mode (16:9) on wide televisions, but in letter box on televisions with standard 4:3 aspect ratio. |
| 16:9 PS | Video playback is in Wide video mode (16:9) on wide televisions, but pan and scan is used on televisions with standard 4:3 aspect ratio (either the left or right side of the image is cut-out). |

## Marks related to audio

| Mark | Description |
| :---: | :---: |
| (3)) | Number of audio tracks |
| $\frac{D Q}{D O L B Y}$ | Dolby Digital mark <br> Dolby Laboratories has developed a digital surround system for the home. This mark indicates that you may enjoy 5.1channel audio (front left and right, center, rear left and right, and a channel for LFE (Low-Frequency Effects)). |
|  | DTS (Digital Theater System) <br> The DTS decoder on this unit enables you to enjoy DTS audio with the connected TV's speakers by converting 5.1 channel audio signals into 2 channel signals (DTS Down Mixing). The decoder also outputs the original DTS 5.1 channel audio signals from the DIGITAL AUDIO OUT connector on this unit. |

## File Structure of Discs

## DVD VIDEO

Typically, DVD VIDEO discs are made up of larger units called "titles". Each title has a number (title number) that can be used to select desired titles. Titles are further divided into units called "chapters". Each chapter has a number (chapter number) that can also be used to select desired chapters. Note that some discs are not divided into titles and chapters.


## Audio CD/Video CD

Typically, Audio CD discs are divided into separate tracks each containing one song. Each track is assigned a number. For example, the third track is Track 3. The same is true for Video CD discs.


## NOTE:

Video CD discs that support Playback Control (PBC)
The still image or motion image which follows a menu screen is called a "scene". Each scene has a scene number. For more details, refer to "Locating a desired scene using the menu of the Video CD with PBC" (忬 pg. 43).

## Placing a Disc

## 1 Open the disc tray.

Press OPEN/CLOSE (승 $)$ on the DVD deck to open the disc tray.


- Pressing the button again closes the disc tray.
- Do not block the disc tray with your hand while it is opening or closing as this may result in hardware failure.
- Do not place unplayable discs or any object other than a disc in the disc tray.
- Do not press down strongly on the disc tray or place any heavy objects on it.


## 2 Place the disc.

Place the disc in the disc tray with the label side facing up.

- Since disc size changes depending on the disc to be played back, be sure to correctly align the disc with the grooves for its size. If the disc is not in its groove, it may be scratched or otherwise damaged.



## Care and Handling of Discs

How to handle discs
When handling a disc, do not touch the surface of the disc. Since discs are made of plastic, they are easily damaged. If a disc gets dirty, dusty, scratched or warped,
 the images and sound will
 not be picked up correctly, and such a disc may cause the unit to malfunction.

## Label side

Do not damage the label side, stick paper to or use any adhesive on its surface.

## Storage

Make sure that discs are kept in their cases. If discs are piled on top of one another without their protective cases, they can be damaged. Do not put discs in a location where they may be exposed to direct sunlight, or in a place where the humidity or temperature is high. Avoid leaving discs in your car!

## Maintenance of discs

If there are fingerprints or other dirt adhering to a disc, wipe with a soft dry cloth, moving from the center outwards. If a disc is difficult to clean, wipe with a cloth moistened with water. Never use record cleaners, petrol, alcohol or any
 anti-static agents.

## CAUTION

Sometimes during playback, noise or images may be garbled. This is sometimes due to the disc. (It may not be up to industry standards.)
These symptoms are caused by the discs, not by the malfunction of the unit.

## FRONT VIEW


（1）Power Button（POWER（J／l））富 pg． 18
（2）VCR Indicator 家 pg．28， 33
（3）VHS Cassette Loading Slot
（4）VCR／DVD Button 幏 pg．28，33， 42
（5）Disc Tray
6 Stop Button（STOP（■））馆 pg．28，33， 42
$(7$ DVD Indicator $\square$ 买 pg． 42
8 Play Button（PLAY（ ））
0 DVD Open／Close Button（OPEN／CLOSE（스））嘕 pg． 42

（11）Video／Audio Input Connectors（VIDEO／AUDIO）捾 pg． 68
（12）Remote Sensor
（13）Front Display Panel $\mathbb{E}$ pg． 11
（1）Record Button（REC（ $\mathbf{( 1 )}$ ） 汿 pg． 33
（5）Rewind Button（REW（＜4））唍 pg．28，29， 44

（17）Channel Button（ $\mathrm{CH}+/-$ ） 综 pg． 33
（18）Progressive Scan Button（PROGRESSIVE SCAN）
$\square$ pg． 80

## REAR VIEW


(1) Region Number Label
(2) AC Power Cord
(3) S-video Output Connector (S VIDEO OUTPUT)* as. pg. 15
(4) Audio/Video Output Connectors (AUDIO/ VIDEO OUTPUT) 扫 pg. 14, 15, 16, 69
(5) Antenna Input Connector (VHF/UHF IN) as pg. 14

6 Digital Audio Output Connector
(DIGITAL AUDIO OUT)*
(7) Component Video Output Connectors
(COMPONENT VIDEO OUT)*
8 Audio Output Connectors (AUDIO OUTPUT (L/R))*
(9) Antenna Output Connector (VHF/UHF OUT)

L5. pg. 14

* These connectors are only for DVD deck.


## FRONT DISPLAY PANEL


(1) Operation Mode Indicators
(2) Channel/Clock

Auxiliary Input Mode Display (F-1) (VCR deck only)
Counter Display (VCR deck)
Tape Speed (SP/EP) (VCR deck only)
Multi-information window* (DVD deck)

* The current group/title/track/chapter number(s), time and status information.
(3) VCR Indicator 呵 pg. 34
(4) Progressive Mode Indicator $\square$ pg. 80

5 "Timer" Indicator (VCR deck only) 0 pg. 37
6 Satellite Auto Recording Indicator ( $\$$ ) (VCR deck only) 0 pg. 41

## ON-SCREEN DISPLAY (VCR deck)

If you press ON SCREEN on the Remote when "SUPERIMPOSE" is set to "ON" ([ङ pg .75 ), various operational indicators appear on the TV screen.
For On-screen display for DVD deck, refer to "Using the on-screen bar" ( ( $\mathfrak{F}$ pg. 48).

(1) Operation Mode Indicators
(2) Tape Speed (SP/EP)
(3) Tape Position Indicator

The tape position indicator appears on the TV screen when you press REW (<<<) or $\mathbf{F F} \rightarrow$ ) from the Stop mode or perform an Index Search. (0.5 pg. 30) The position of " $\mathbf{1}$ " in relation to " B " (beginning) or " E " (end) shows you where you are on the tape.

## NOTE:

Depending on the type of tape being used, the tape position indicator may not appear correctly.
(4) Index number

5 Tape Remaining Time Indicator $\square$ pg. 35
(6) Counter Display
$(7$ Audio Mode Display 呵 pg. 32
6 SAP Indicator 0
(9) Stereo Program Indicator
(1) Day/Clock Display
(11) Channel Position Number/Auxiliary Input Indicator (F-1)
(12 "Cassette Loaded" Mark

## To recall an indication

1 Press ON SCREEN.

- All indications corresponding to the current status are displayed for 5 seconds. After that, the counter information and RECORD/PAUSE if in the Record Pause mode, remain on the screen.
2 Press ON SCREEN again to clear the display.
- The RECORD/PAUSE indication remains on the screen.


## REMOTE



Buttons with a small dot on the left side of the name（POWER （山／I），TV／VCR，TV／VCR CH＋／－，TV VOL＋／－，MUTE）can also be used to operate a JVC＇s TV after setting the TV／VCR／ DVD switch to the left．
（1）VCR Button
（2）TV／VCR／DVD switch 1 家 pg． 18
3 Menu Button（MENU）跼 pg． 43
（4）SP／EP Button © 5 pg． 33
Top Menu Button（TOP MENU）膤 pg． 43
5 Stop Time Button（STOP＋／－）扫 pg． 36 On－Screen Button（ON SCREEN）垤 pg．12， 48
6 Start Time Button（START＋／－）家 pg． 36
Repeat Button（REPEAT）实 pg．50， 6467
Zooming Button（ZOOM）哣 pg． 45
$(7$ Number Keys 桪 pg．27，33， 64
8 Daily Button（DAILY）■ pg． 37
（9）Reset Button（C．RESET）喼 pg． 35
Cancel Button（CANCEL）晾 pg． 39
10 Button
（10）Play Button（PLAY（ $\boldsymbol{-}$ ））pg．28， 42
（1）Rewind Button（REW（＜＜））侸 pg．28，29， 44
（12）Stop Button（STOP（■））哣 pg．28，33， 42
（13）Record Button（REC（O））跋 pg． 33
（1）Reverse Skip／Index Button（SKIP／INDEX（I㽰 pg．30， 43
Review Button（ creview ）
（5）$\triangle \nabla$ Button 㖨 pg． 18
TV／VCR Channel Button（TV／VCR CH＋／－）
鲐 See the left column
（16）Set Up Button（SET UP）实 pg． 18
（1）3D－Phonic Button（3D－PHONIC）
（18）TV Volume Button（TV VOL＋／－）$⿰ 丿 ⿱ 丄 𠃍 冖 \mathcal{B}$ See the left column
（19）DVD Button $\mathbb{G}$ pg． 42
（20）Power Button（POWER（J／l））实 pg．18，left column
（21）TV Muting Button（MUTE）准 See the left column Audio Monitor Button（A．MONITOR）
圄 pg．32，56， 57
（22）TV／NCR Button
（23）Date Button（DATE＋／－）
Subtitle Button（SUB TITLE）閁 pg． 54
Angle Button（ANGLE）扫 pg． 55
（24）Channel Button（ $\mathrm{CH}+/-$ ）实 pg． 33
（25）Programing Button（PROG．）
（29）Timer Button（TIMER）跋 pg． 37
（27）Weekly Button（WEEKLY）모 pg． 37
（23）Program Check Button（PROG．CHECK）
扫 pg． 38
Return Button（RETURN）㖨 pg． 43
29）Satellite Auto Recording Button（REC LINK）
实 pg． 41
（30 +10 Button
（31）Auxiliary Button（AUX）
（32）Fast Forward Button（FF（ ））ç pg．28，29， 44
（33）Pause Button（PAUSE（II））阽 pg．29， 33
（34）Forward Skip／Index Button（SKIP／INDEX（ $\rightarrow$ ））实 pg．30， 43
（35）ENTER Button 实pg． 18
$33 \triangle D$ Button 绿 pg． 18
（37）Display Button（DISPLAY）
（38 Skip Search Button（SKIP SEARCH）ter pg． 30
DVD Picture Button（DVD PICTURE）㖨pg． 47

## How To Use

Before use，insert two AA size batteries into the Remote with the polarity（ $\Theta$ and $\ominus$ ）matched correctly as indicated on the battery compartment or on the lid．
The Remote can operate most of your unit＇s functions，as well as basic functions of TV sets of JVC．（鲐 See the left column）
－Point the Remote toward the remote sensor．
－The maximum operating distance of the remote control is about 8 m ．

## NOTE：

If the Remote doesn＇t work properly，remove its batteries， wait a short time，replace the batteries and then try again．

## Basic Connections



It's essential that your unit be properly connected.
THESE STEPS MUST BE COMPLETED BEFORE ANY VIDEO OPERATION CAN BE PERFORMED.

## 1 Check the contents.

Make sure the package contains all of the accessories listed in "SPECIFICATIONS" on page 87.

## 2 situate the unit.

Place the unit on a stable, horizontal surface.

## 3 Connect the unit to TV.

The connection method you use depends on the type of TV you have.

## RF Connection

## ■ To connect to a TV with NO AV input connectors -

1 Disconnect the TV antenna from the TV.
2 Connect the TV antenna cable to the VHF/UHF IN connector on the rear panel of the unit.
3 Connect the supplied RF cable between the VHF/UHF OUT connector on the rear panel of the unit and the TV's antenna terminal.

## AV Connection

To connect to a TV with AV input connectors -Connect the antenna, unit and TV as per "RF Connection".
2 Connect an optional audio/video cable between the AUDIO/VIDEO OUTPUT connectors on the rear panel of the unit and the TV's audio/video input connectors.

- Set your TV to AV mode.
- For switching the TV's mode, refer to the instruction manual of your television.
- To obtain high-quality pictures, you can also use the S-VIDEO connection or Component Video Connection. (DVD deck only) ( 1 宗 pg. 15, 16)


## 4 Connect the unit to power source.

Plug the end of the AC power cord into an AC outlet. This unit performs Plug \& Play Set automatically. (LT pg. 17)

- The clock and tuner channels will automatically be set when the antenna is connected and when the AC power cord is first connected to an AC outlet. (If "AUTO" and the channel indicator are displayed on the front display panel before the unit is powered on, the clock and tuner channels are being set automatically. Wait for the time to be displayed on the front display panel before turning on the unit.)


## 5 Set the VCR channel.

The VCR channel is the channel on which you can watch the picture from the unit on the TV when only using RF connection.
With RF connection, set the VCR channel to " $3 \mathrm{CH}^{\prime \prime}$ or " $4 \mathrm{CH}^{\prime}$ ".

- The VCR channel is preset to " $3 \mathrm{CH}^{\prime}$. Set to " $4 \mathrm{CH}^{\prime}$ " if the Channel 3 is used for broadcasting in your area.
With AV connection, set the VCR channel to "- $\mathrm{CH}^{\prime \prime}$ (off). To set the VCR channel, perform the following steps:


## Before performing the following steps:

- Make sure there is no cassette inserted in the unit.
- Make sure the unit is turned on, then press VCR/ DVD on the unit or VCR on the Remote so that the VCR indicator lights up.

1 Press POWER (山/l) to turn off the unit, then press
STOP (■) on the unit for more than 5 seconds. " $3 \mathrm{CH}^{\prime \prime}$ appears on the front display panel.
2 Press $\mathbf{C H}+/-$ on the Remote to select " $3 \mathrm{CH}^{\prime \prime}$, " $4 \mathrm{CH}^{\prime \prime}$ or " $-\mathrm{CH}^{\prime}$ (off), then press ENTER.

## S-VIDEO

 Connection
## (DVD deck only)

## ATTENTION

Be sure to connect the unit's VIDEO OUTPUT (DVD/ VCR) connector to the TV's VIDEO input connector.


■ To connect to a TV with S-VIDEO/AUDIO input connectors . . .

## 1 Connect the unit to TV.

1 Connect the antenna, unit and TV as per "AV Connection". (bs pg. 14)
2 Connect the unit's S VIDEO OUTPUT (DVD) connector to the TV's S-VIDEO input connector.

## 2 Connect the unit to power source.

Plug the end of the AC power cord into an AC outlet. This unit performs Plug \& Play Set automatically. ( 5 实 pg. 17)

- The clock and tuner channels will automatically be set when the antenna is connected and when the AC power cord is first connected to an AC outlet. (If "AUTO" and the channel indicator are displayed on the front display panel before the unit is powered on, the clock and tuner channels are being set automatically. Wait for the time to be displayed on the front display panel before turning on the unit.)


## 3 Set the VCR channel to off.

## Before performing the following steps:

- Make sure there is no cassette inserted in the unit.
- Make sure the unit is turned on, then press VCR/ DVD on the unit or VCR on the Remote so that the VCR indicator lights up.

Press POWER (山/l) to turn off the unit, then press STOP (■) on the unit for more than 5 seconds. " $3 \mathrm{CH}^{\prime \prime}$ appears on the front display panel.
2 Press $\mathbf{C H}+/-$ on the Remote to select "- $\mathrm{CH}^{\prime \prime}$ (off), then press ENTER.

## NOTES:

- You can obtain high-quality S-VIDEO pictures.
- If your TV is not stereo-capable, use the unit's AUDIO OUTPUT connectors to connect to an audio amplifier for $\mathrm{Hi}-\mathrm{Fi}$ stereo sound reproduction.
- To operate the unit with your TV using the S-VIDEO connection, set your TV to its AV mode. You can also use the TV/VCR button on the unit's Remote to set your TV to the AV mode.
- For switching the TV's mode, refer to the instruction manual of your television.
- Only DVD picture is output from S-VIDEO OUTPUT connector. (VCR picture is not output.)


## Component Video Connection

## （DVD deck only）

## ATTENTION

Be sure to connect the unit＇s VIDEO OUTPUT（DVD／ VCR）connector to the TV＇s VIDEO input connector．

## Antenna or Cable



To connect to a TV with component video input connectors ．．．

## 1 Connect the unit to TV．

1 Connect the aerial，unit and TV as per＂AV Connection＂．（（0）pg．14）
2 Connect the unit＇s COMPONENT VIDEO OUT connectors to the TV＇s component video input connectors．

## 2 Connect the unit to power source．

Plug the end of the AC power cord into an AC outlet．This unit performs Plug \＆Play Set automatically．（ 5 实 pg．17）
－The clock and tuner channels will automatically be set when the antenna is connected and when the AC power cord is first connected to an AC outlet．（If＂AUTO＂and the channel indicator are displayed on the front display panel before the unit is powered on，the clock and tuner channels are being set automatically．Wait for the time to be displayed on the front display panel before turning on the unit．）

## 3 Set the VCR channel to off．

## Before performing the following steps：

－Make sure there is no cassette inserted in the unit．
－Make sure the unit is turned on，then press VCR／ DVD on the unit or VCR on the Remote so that the VCR indicator lights up．

1 Press POWER（山／l）to turn off the unit，then press STOP（■）on the unit for more than 5 seconds．＂ $3 \mathrm{CH}^{\prime \prime}$ appears on the front display panel．
2 Press $\mathbf{C H}+$／－on the Remote to select＂$-\mathrm{CH}^{\prime \prime}$（off）， then press ENTER．

## NOTES：

－You can obtain high－quality component video pictures．
－If your TV is not stereo－capable，use the unit＇s AUDIO OUTPUT connectors to connect to an audio amplifier for Hi － Fi stereo sound reproduction．
－To operate the unit with your TV using the Component Video connection，set your TV to its AV mode．You can also use the TV／VCR button on the unit＇s Remote to set your TV to the AV mode．
－For switching the TV＇s mode，refer to the instruction manual of your television．
－By using the component video connection，you can view the images in the progressive mode．For switching to the progressive mode，refer to＂Scan Mode Set（DVD deck）＂ （受 pg．80）．

# Plug \＆Play Set Auto Clock Set／Auto Tuner Set 

## ATTENTION

－If you use a cable box，Plug\＆Play will not function；set the clock and tuner channels separately．（LT pg． 24 －27）
－Depending on areas or reception conditions，the unit may not receive the Auto clock setting data from the PBS channel．If this function is taking a considerable amount of time，it may be necessary to perform the Semiauto or Manual Clock Set procedure．


This unit sets the clock and tuner channels automatically when AC power cord is first connected to an AC outlet． The antenna cable must be connected for the Plug \＆Play setting．
The time and date can be set automatically by the clock setting data transmitted from one of the regular TV broadcast channels．We call this TV channel the＂host channel＂and it is a PBS channel in your area．

## 1 Perform Plug \＆Play setup．

Connect the antenna cable to the unit．（ 5 connect the AC power cord to an AC outlet．Do not turn on the unit．
The clock and tuner channels will be set automatically．

## NOTES：

－Auto Clock Set is performed first．
＂AUTO＂blinks on the front display panel during Auto Clock Set．
－Auto Channel Set is performed next．Auto Channel Set scans all the channels that are receivable by your unit．During Auto Channel Set，the channel numbers are displayed as they are scanned and set．
－When Plug \＆Play setting has been complete successfully，the correct clock time is displayed．If you perform Plug \＆Play setting successfully，there is no need to perform＂Clock Set＂ （嫁 pg．24）and＂Tuner Set＂（LT pg．26）．If，however，you want to add or delete channels，refer to＂Manual Channel Set＂ （（L）pg．27）．


During Initial Auto Clock Set ＂AUTO＂blinks．


During Auto Channel Set
The channel numbers are displayed as they are scanned and set．


Plug\＆Play Completed
The current time is displayed．
＊If an incorrect clock time or＂－－：－－＂appears on the front display panel，see＂What to do if Plug \＆Play setting failed＂below．

## INFORMATION

－If＂AUTO CLOCK＂is set to＂ON＂（L马 pg．25），the clock will be adjusted automatically by the host channel every hour（except 11：00 PM，midnight，1：00 AM and 2：00 AM）using the incoming PBS channel clock setting data．（This automatic clock adjustment can only be performed when the unit is turned off．The clock will be adjusted just on these hours－on the time displayed on the front display panel，not on the actual real time．）The default setting of＂AUTO CLOCK＂is＂ON＂．（LS pg．25）
－If the memory backup fails，because a power outage occurs or because the AC power cord is unplugged，Plug \＆Play will be performed when power is restored to the unit．

## What to do if Plug \＆Play setting failed

－If an incorrect time is displayed on the front display panel，you may be receiving the clock setting data of a PBS channel from an adjacent time zone，or an incorrect PBS channel from a cable TV system．In this case，perform＂Semiauto Clock Set＂（LI pg．25） or＂Manual Clock Set＂（ 0 汿 pg．25）．
－If＂－－：－－＂＂appears on the front display panel，your antenna cable may not be connected to the unit or there may not be a Host PBS signal available in your area．Ensure that the antenna cable is connected correctly．Then turn on and off the unit；the Plug \＆ Play setting will be automatically reactivated．If Plug \＆Play setting is not performed though the antenna cable is connected correctly，perform＂Manual Clock Set＂（忬 pg．25）and＂Auto Channel Set＂（忬 pg．26）or＂Manual Channel Set＂（忬 pg．27）．

## Monitor Set

## (DVD deck)

You can select the monitor type depending the TV used when you play back DVD VIDEO discs recorded for wide-screen TVs.

- Turn on the TV and select the VCR channel (or AV mode).
- Slide the TV/VCR/DVD switch to the right.


1 Turn on the unit.
Press POWER (山/l).

## 2 Select the DVD deck.

## On the unit

Press VCR/DVD repeatedly so that the DVD indicator lights up.

## On the Remote

Press DVD so that the DVD indicator lights up.

## 3 Access the DVD Set Up menu screen.

Press SET UP.
Press $\triangleleft D$ to select " $\square$ PICTURE".


## 4 Select the mode.

Press $\Delta \nabla$ to move the highlight to "MONITOR TYPE", then press ENTER.


## 5 <br> Select the mode setting.

Press $\Delta \nabla$ to select the desired setting, then press ENTER.

## 6 Return to the normal screen.

* The default setting is bold in the table below.


## MONITOR TYPE

16:9 (Wide television conversion):
Select this when the aspect ratio of your TV is fixed to 16:9 (wide TV). The unit automatically adjusts the screen width of the output signal correctly when playing back a picture whose aspect ratio is $4: 3$.
4:3 LB (Letter Box conversion):
Select this when the aspect ratio of your TV is 4:3 (conventional TV). While viewing a wide screen picture, the black bars appear on the top and the bottom of the screen.
4:3 PS (Pan\&Scan):
Select this when the aspect ratio of your TV is 4:3 (conventional TV). While viewing a wide screen picture, the black bars do not appear; however, the left and right edges of the pictures will not be shown on the screen.

## Pan\&Scan/Letter Box

In general, DVD VIDEO disc are produced for a wide-screen TV with 16:9 aspect ratio.
Material with this ratio will not fit to a TV with 4:3 aspect
ratio. There are two styles to display the image, "Pan\&Scan" (PS) and "Letter Box" (LB).

## Pan\&Scan

The right and left side of the image are cut off. The image fills the screen.

## Letter Box

Black bands appear at the top and bottom of the image. The image itself appears in 16:9 aspect ratio.


## Language

- Turn on the TV and select the VCR channel (or AV mode).
- Slide the TV/VCR/DVD switch to the right.



## On-screen Language Set (VCR deck)

This VCR deck offers you the choice to view on-screen messages in 3 different languages.

## 1 Turn on the unit.

Press POWER (山/I).

## 2 Select the VCR deck.

On the unit
Press VCR/DVD repeatedly so that the VCR indicator lights up.

On the Remote
Press VCR so that the VCR indicator lights up.

## 3 Access the Main Menu screen.

Press SET UP.

## 4 Access the Initial Set screen.

Press $\Delta \nabla$ to move the highlight bar (arrow) to "INITIAL SET", then press ENTER or $D$.


## 5 Select the language.

Press $\Delta \nabla$ to move the highlight bar (arrow) to "LANGUAGE", then press ENTER or $\triangleright$ repeatedly until the desired language is selected.

| INITIAL SET |
| :--- |
| CLOCK SET |
| $\rightarrow$ LANGUAGE |
|  |
|  |
| SELECT WITH $(A, \nabla) \rightarrow$ (ENTER) <br> PRESS (SET UP) TO END |

Return to the normal screen.
Press SET UP.

## On-screen Language Set (DVD deck)

This DVD deck offers you the choice to view on-screen messages in 3 different languages. You can change the language setting manually as required.

## 1 Turn on the unit.

Press POWER (山/l).

## 2 Select the DVD deck.

On the unit
Press VCR/DVD repeatedly so that the DVD indicator lights up.

## On the Remote

Press DVD so that the DVD indicator lights up.

## 3 Access the DVD Set Up menu screen.

Press SET UP.
2 Press $\triangleleft D$ to select
" $\mathbf{A}$ LANGUAGE".


## 4 Select the mode.

Press $\Delta \nabla$ to move the hightlight to "ON SCREEN LANGUAGE", then press ENTER.


## 5 Select the mode setting.

Press $\Delta \nabla$ to select the desired setting, then press ENTER.

## 6 Return to the normal screen.



## Menu/Audio/Subtitle Language Set (DVD deck only)

Some DVD discs contain the DVD menu display, audio, subtitle in the multiple languages. With these discs, you can set the default language as you like.

- The procedure shows how to set "MENU LANGUAGE" on the DVD Set Up menu screen as an example.


## 1 Turn on the unit.

Press POWER (山/l).

## 2 Select the DVD deck.

On the unit
Press VCR/DVD repeatedly so that the DVD indicator lights up.

## On the Remote

Press DVD so that the DVD indicator lights up.

## 3 Access the DVD Set Up menu screen.

1 Press SET UP.
2. Press $\triangleleft \triangleright$ to select "A LANGUAGE".


## 4 Select the mode.

Press $\triangle \nabla$ to move the hightlight to "MENU LANGUAGE", then press ENTER.


## 5 Select the mode setting.

Press $\Delta \nabla$ to select the desired setting, then press ENTER.

- See "Language Code List" ( $L$ 家 pg. 23).


## 6 Return to the normal screen.

Press SET UP.

## NOTE:

When the selected language is not available on the disc, the disc's default menu language is played back.

## Language Code List

| AA | Afar |
| :--- | :--- |
| AB | Abkhazian |
| AF | Afrikaans |
| AM | Ameharic |
| AR | Arabic |
| AS | Assamese |
| AY | Aymara |
| AZ | Azerbaijani |
| BA | Bashkir |
| BE | Byelorussian |
| BG | Bulgarian |
| BH | Bihari |
| BI | Bislama |
| BN | Bengali, Bangla |
| BO | Tibetan |
| BR | Breton |
| CA | Catalan |
| CO | Corsican |
| CS | Czech |
| CY | Welsh |
| DA | Danish |
| DZ | Bhutani |
| EL | Greek |
| EO | Esperanto |
| ET | Estonian |
| EU | Basque |
| FA | Persian |
| FI | Finnish |
| FJ | Fiji |
| FO | Faroese |
| FY | Frisian |
| GA | Irish |
| GD | Scots Gaelic |
| GL | Galician |
| GN | Guarani |
| GU | Gujarati |
| HA | Hausa |
| HI | Hindi |
| HR | Croatian |
| HU | Hungarian |
| HY | Armenian |
| IA | Interlingua |
| IE | Interlingue |
|  |  |
|  |  |


| IK | Inupiak |
| :--- | :--- |
| IN | Indonesian |
| IS | Icelandic |
| IW | Hebrew |
| JI | Yiddish |
| JW | Javanese |
| KA | Georgian |
| KK | Kazakh |
| KL | Greenlandic |
| KM | Cambodian |
| KN | Kannada |
| KO | Korean (KOR) |
| KS | Kashmiri |
| KU | Kurdish |
| KY | Kirghiz |
| LA | Latin |
| LN | Lingala |
| LO | Laothian |
| LT | Lithuanian |
| LV | Latvian, Lettish |
| MG | Malagasy |
| MI | Maori |
| MK | Macedonian |
| ML | Malayalam |
| MN | Mongolian |
| MO | Moldavian |
| MR | Marathi |
| MS | Malay (MAY) |
| MT | Maltese |
| MY | Burmese |
| NA | Nauru |
| NE | Nepali |
| NL | Dutch |
| NO | Norwegian |
| OC | Occitan |
| OM | (Afan) Oromo |
| OR | Oriya |
| PA | Panjabi |
| PL | Polish |
| PS | Pashto, Pushto |
| PT | Portuguese |
| QU | Quechua |
| RM | Rhaeto-Romance |
|  |  |
|  |  |


| RN | Kirundi |
| :--- | :--- |
| RO | Rumanian |
| RU | Russian |
| RW | Kinyarwanda |
| SA | Sanskrit |
| SD | Sindhi |
| SG | Sangho |
| SH | Serbo-Croatian |
| SI | Singhalese |
| SK | Slovak |
| SL | Slovenian |
| SM | Samoan |
| SN | Shona |
| SO | Somali |
| SQ | Albanian |
| SR | Serbian |
| SS | Siswati |
| ST | Sesotho |
| SU | Sundanese |
| SV | Swedish |
| SW | Swahili |
| TA | Tamil |
| TE | Telugu |
| TG | Tajik |
| TH | Thai |
| TI | Tigrinya |
| TK | Turkmen |
| TL | Tagalog |
| TN | Setswana |
| TO | Tonga |
| TR | Turkish |
| TS | Tsonga |
| TT | Tatar |
| TW | Twi |
| UK | Ukrainian |
| UR | Urdu |
| UZ | Uzbek |
| VI | Vietnamese |
| VO | Volapuk |
| WO | Wolof |
| XH | Xhosa |
| YO | Yoruba |
| ZU | Zulu |
|  |  |
|  |  |

## Clock Set

- Turn on the TV and select the VCR channel (or AV mode).
- Slide the TV/VCR/DVD switch to the right.


Perform clock setting only if the clock has not been set correctly by the Plug\&Play setting.

## Preparations

## 1 Turn on the unit.

Press POWER (山ノ).

## 2 Select the VCR deck.

On the unit
Press VCR/DVD repeatedly so that the VCR indicator lights up.

## On the Remote

Press VCR so that the VCR indicator lights up.

## 3 Access the Main Menv screen.

Press SET UP.

## 4 Access the Initial Set screen.

Press $\Delta \nabla$ to move the highlight bar (arrow) to "INITIAL SET", then press ENTER or $\triangleright$.


## 5 Access the Clock Set screen.

Press $\triangle \nabla$ to move the highlight bar (arrow) to "CLOCK SET", then press ENTER or $\triangleright$.


## Semiauto Clock Set

You can change the host channel/D.S.T. (Daylight Saving Time)/ time zone setting manually. First follow steps $\mathbf{I}$ to $\mathbf{5}$ in
"Preparations" ( 0 率 pg. 24), then go to the following steps.

## NOTE:

The time set previously will be erased when "AUTO CLOCK", "HOST CH", "D.S.T." or "TIME ZONE" setting is changed.

## 1 Set "AUTO CLOCK" to "ON".

Press ENTER or $\triangleright$ repeatedly to move the highlight bar to "AUTO CLOCK", then press $\Delta \nabla$ so that " ON " is selected.


## 2 Select the host channel.

You can either select "AUTO" or enter a PBS channel number.
Press ENTER or $\triangleright$ to move the highlight bar to "HOST $\mathrm{CH}^{\prime \prime}$, then press $\triangle \nabla$ repeatedly until "AUTO" or the desired PBS channel number is selected.

## NOTE:

Some PBS channels do not transmit clock setting data.

## 3 Select the D.S.T. mode.

Press ENTER or $\triangleright$ to move the highlight bar to "D.S.T.", then press $\Delta \nabla$ repeatedly until the desired setting is selected.

AUTO: Select if you want to adjust your VCR's clock automatically by the incoming signal from the host channel. Be sure to select the correct time zone manually in step 4 .
ON: Adjustment will be made by the built-in clock itself.
OFF: Select when Daylight Saving Time does not apply to you.

## 4 Select the time zone.

Press ENTER or $\triangleright$ to move the highlight bar to "TIME ZONE", then press $\Delta \nabla$ repeatedly until "AUTO" or the desired time zone is selected. Each time you press the button, the time zone changes as follows:
$\leftrightarrow$ AUTO $\leftrightarrow$ ATLANTIC $\leftrightarrow$ EASTERN $\leftrightarrow$ CENTRAL $\leftrightarrow$ MOUNTAIN $\leftrightarrow$ PACIFIC $\leftrightarrow$ ALASKA $\leftrightarrow$ HAWAII $\leftrightarrow$ (back to the beginning)

## NOTE:

If an incorrect time is displayed by the Plug \& Play function, you may be receiving the clock setting data of a PBS channel from an adjacent time zone or from an incorrect PBS channel from a cable TV system. If you selected "AUTO" for the host channel in step 【 , be sure to select the correct time zone manually.

## 5 Complete the Semiauto Clock Set.

Press SET UP to return to normal screen.

## IMPORTANT

Turn off the unit after performing Semiauto Clock. "AUTO" will appear on the front display panel while the clock is being set. The current clock time will appear automatically when the clock setting is complete.

## AUTO DAYLIGHT SAVING TIME

This function enables automatic adjustment of the unit's clock at the start and end of Daylight Saving Time.
With Auto DST activated, -

- on the first Sunday of April at 2:00 AM, the clock is adjusted to 3:00 AM.
- on the last Sunday of October at 2:00 AM, the clock is adjusted to 1:00 AM.


## Manual Clock Set

First follow steps $\boldsymbol{\Pi}$ to $\mathbf{5}$ in "Preparations" ( (IFP pg. 24), then go to the following steps.

## 1 Set time, date and year.

Press $\Delta \nabla$ until the desired time appears, then press ENTER or $\triangleright$. Set the date and year in the same way.

- Holding $\Delta \nabla$ changes the time in 30-minute intervals, or changes the date in 15-day
 intervals.


## 2 Select D.S.T. mode.

Press ENTER or $\triangleright$ to move the highlight bar to "D.S.T.", then press $\Delta \nabla$ to select the desired setting.
ON: Adjustment will be made by the built-in clock itself.


OFF: Select when Daylight Saving Time does not apply to you.

## 3 Start lock.

Press SET UP and normal screen appears.
To make corrections any time during the process
Press ENTER or $\triangleright$ repeatedly until the item you want to change blinks, then press $\Delta \nabla$.

## Tuner Set

－Turn on the TV and select the VCR channel（or AV mode）．
－Slide the TV／VCR／DVD switch to the right．


## INFORMATION

The unit selects the correct band（TV or CATV）automatically during Auto Channel Set．The selected band will be displayed on the right side of＂BAND＂on the Tuner Set screen．

## Auto Channel Set

Perform Auto Channel Set only if channels have not been set correctly by the Plug\＆Play setting．

## 1 Turn on the unit．

Press POWER（山ノノ）．

## 2 Select the VCR deck．

On the unit
Press VCR／DVD repeatedly so that the VCR indicator lights up．

## On the Remote

Press VCR so that the VCR indicator lights up．
3 Access the Main Menu screen．
Press SET UP．

## 4 Access the Tuner Set screen．

Press $\Delta \nabla$ to move the highlight bar（arrow）to ＂TUNER SET＂，then press ENTER or $D$ ．


## 5 Perform Auto Channel Set．

Press $\Delta \nabla$ to move the highlight bar（arrow）to ＂AUTO CHANNEL SET＂，then press ENTER or $D$ ．You can automatically set the receivable channels in your area in the order of their frequencies．
－When Auto Channel Set is complete，＂SCAN COMPLETED＂appears on the TV screen．
－If the scan was unsuccessful， ＂SCAN COMPLETED－NO SIGNAL－＂appears on screen．
 Check the connections and start again．

## 6 <br> Return to the normal screen．

Press SET UP．

## Manual Channel Set



You can add the channels you want or delete the channels you do not want manually.

## 1 Turn on the unit.

Press POWER (山/ノ).

## 2 Select the VCR deck.

On the unit
Press VCR/DVD repeatedly so that the VCR indicator lights up.
On the Remote
Press VCR so that the VCR indicator lights up.
3 Access the Main Menu screen. Press SET UP.

## 4 Access the Tuner Set screen.

Press $\triangle \nabla$ to move the highlight bar (arrow) to "TUNER SET", then press ENTER or $\triangleright$.


Access the Manual Channel Set screen.
Press $\Delta \nabla$ to move the highlight bar (arrow) to "MANUAL CHANNEL SET", then press ENTER or $D$.

| TUNER SET |
| :---: |
| BAND $\rightarrow$ AUTO CHANNEL SET $\rightarrow$ MATV |
| SELECT WITH ( $\mathbf{A}, \mathbf{V}$ ) $\rightarrow$ (ENTER) PRESS (SET UP) TO END |

## Add or skip the desired channels.

To add channels
1 Press the number keys to input a channel number you want to add.
2 Press ENTER or $D$ to set to "ADD".
3 Repeat 1 to 2 to add other
MANUAL CHANNEL SET
(SATY)
CH 45 ADD

PRESS NUMBER KEY (0-9)
OR ( $\Delta, \boldsymbol{T})$, THEN (ENTER)
PRESS (SET UP) TO END channels.
To skip channels
1 Press $\Delta \nabla$ or the number keys to select a channel number you want to skip.
2 Press ENTER or $D$ to set to "SKIP".
3 Repeat 1 and 2 to skip other channels.

## 7 Return to the normal screen.

Press SET UP.

## Basic Playback

- Turn on the TV and select the VCR channel (or AV mode).
- Slide the TV/VCR/DVD switch to the right.



## Clean the video heads using a dry cleaning cassette - ECL-3F - when:

- Rough, poor picture appears while a tape is played back.
- The picture is unclear or no picture appears.
- "USE CLEANING CASSETTE" appears on the screen (only with "SUPERIMPOSE" set to "ON"). ([כ pg. 75)


## NOTE:

The heads get dirty in the following cases:

- in an environment prone to extreme temperature or humidity
- in a dusty environment
- flaw, dirt or mold on video tapes
- continuous usage for a long time


## 1 Load a cassette.

Make sure the window side is up, the rear label side is facing you and the arrow on the front of the cassette is pointed toward the unit.

- Do not apply too much pressure when inserting.
- If the record safety tab has been removed, playback begins automatically. Although the DVD deck is selected, the VCR deck is selected automatically if the DVD deck is in stop mode.
- The unit's power comes on automatically and the counter is reset to 0:00:00.


## 2 Select the VCR deck.

On the unit
Press VCR/DVD repeatedly so that the VCR indicator lights up.

On the Remote
Press VCR so that the VCR indicator lights up.

## 3 Find the program start point.

If the tape is advanced past the start point, press REW
$(\ll)$. To go forward, press FF $\rightarrow$ ).
4 Start playback.
Press PLAY ( $\boldsymbol{>}$ ).

## 5 Stop playback.

Press STOP (■). Then press EJECT (르) on the VCR deck to remove the cassette.

## Usable cassettes

Full-Size VHS
T-30 (ST-30**)
T-60 (ST-60**)
T90
T-120 (ST-120**)
T-160 (ST-160**)
ST-210**

## Compact VHS*



TC-20 (ST-C20**)
TC-30 (ST-C30**)
TC-40 (ST-C40**)

* Compact VHS camcorder recordings can be played on this unit. Simply place the recorded cassette into a VHS Cassette Adapter and it can be used just like any full-sized VHS cassette.
** This unit can record on regular VHS and Super VHS cassettes. However, it will record regular VHS signals only.
- S-VHS recording is not possible with this unit.
- This unit is equipped with SQPB (S-VHS QUASI PLAYBACK) that lets you watch tapes recorded in the SVHS format and the SP mode with regular VHS resolution.
- SQPB does not deliver Super VHS resolution.


## Playback Features

- Turn on the TV and select the VCR channel (or AV mode).
- Slide the TV/VCR/DVD switch to the right.



## ATTENTION

In the search, still, slow-motion or frame-by-frame playback mode,

- the picture will be distorted.
- the noise bars will appear.
- there may be a loss of colour.
- you cannot hear the sound.


## Still Picture/Frame-By-Frame Playback

## 1 Pause during playback.

Press PAUSE (II).

- If there is vertical jitter, press $\mathbf{C H}+$ /- on the Remote to correct the picture.


## 2 Activate frame-by-frame playback. <br> Press PAUSE (II) to advance a still picture.

## Slow Motion

## 1 Pause during playback. <br> Press PAUSE (II).

## 2 Activate slow motion playback.

Press and hold PAUSE (II) for 2 seconds, then release. Press PAUSE (II) and release again to return to still picture.

## NOTE:

During slow motion playback, some noise may appear on the TV screen. Press CH + or - on the Remote to eliminate the noises.

## Variable Speed Search

During playback, press FF $\rightarrow$ ) for forward variable speed search, or REW (<<) for reverse variable speed search.

- The speed changes for each direction by pressing REW and $\mathbf{F F}(\rightarrow$ ) repeatedly.
When pressing $\mathbf{F F}(\boldsymbol{D})$ :
(SP): $+5 \mathrm{x} \leftrightarrow+7 \mathrm{x}$
(EP): $+11 \mathrm{x} \leftrightarrow+21 \mathrm{x}$
When pressing REW (<<):
Once REW ( $<\boldsymbol{\text { a }}$ ) is pressed, reverse search starts in -1 x normal playback speed. After this process, each press of REW $(\ll)$ changes the search speed between $-5 x$ and $-7 x$ in SP mode, $-11 x$ and $-21 x$ in EP mode.
(SP): $-1 x \rightarrow-5 x \leftrightarrow-7 x$
(EP): $-1 x \rightarrow-11 x \leftrightarrow-21 x$

To resume normal playback, press PLAY ( ) .


## Skip Search

During playback, press SKIP SEARCH 1 to 6 times to skip over unwanted sections.
Each press initiates a 30 -second period of fast-motion playback. Normal playback resumes automatically.

To resume normal playback during a Skip Search, press PLAY (

## Index Search

Your unit automatically marks index codes at the beginning of each recording. This function gives you quick access to any one of 9 index codes in either direction.

## NOTE:

Before starting, make sure the unit
 is in the Stop mode.

## Activate Index Search.

Press INDEX ( $\mid<4$ ) or INDEX $(\boldsymbol{\rightarrow})$. "INDEX -1 " or "INDEX 1 " is displayed on the TV screen and search begins in the corresponding direction.

- To access index codes 2 through 9, press INDEX (1-4) or INDEX $(1)$ repeatedly until the correct index number is displayed.
Example:
To locate the beginning of B from the current position, press INDEX (1<4) twice.
To locate the beginning of $D$ from the current position, press INDEX $(1$ ) once.

- When the specified index code is located, playback begins automatically.


## Instant ReView

Simply by pressing a single button, the unit power comes on, rewinds, and begins playback of the last timer-recorded program. If you have several programs recorded, you can easily access any of them.

## NOTE:

Before starting, make sure that the unit is off and that the Timer mode is disengaged.

## Activate Instant ReView.

Press creview. The unit power comes on and the unit searches for the index code indicating the start of the last timer-recorded program. Once it's found, playback begins automatically.

- To watch the first of the 3 programs, press CREVIEW three times. The unit searches and begins playback automatically. You can access a program as far as 9 index codes away from the current tape position.



## Next Function Memory

The Next Function Memory "tells" the unit what to do after rewinding. Before continuing, make sure the unit is in the Stop mode.
a- For Automatic Start Of Playback
Press REW ( $<\boldsymbol{<}$ ), then press PLAY ( $\boldsymbol{~})$ within 2 seconds.
b- For Automatic Power Off
Press REW (<<), then press POWER (山/l) within 2 seconds.
c- For Automatic Timer Standby
Press REW (<<), then press TIMER within 2 seconds.
d- For Automatic Cassette Ejection After Tape Rewind Press REW $(<\boldsymbol{<})$, then press EJECT ( $\boldsymbol{(}$ ) within 2 seconds.

## Repeat Playback

Your unit can automatically play back the whole tape 100 times repeatedly.

## 1 Start playback.

## Press PLAY ( $\boldsymbol{\square}$ ).

## 2 Activate Repeat Playback.

Press PLAY ( ) and hold for over 5 seconds, then release.

- The Play indicator $(\triangleright)$ on the front display panel blinks slowly.
- After playing back a tape 100 times, the unit stops automatically.


## 3 Stop Repeat Playback.

Press STOP (■) at any time.

- Pressing PLAY ( $\boldsymbol{-}$ ), REW (<4), FF $(\boldsymbol{>})$ or PAUSE (II) also stops Repeat Playback.


## Manual Tracking



Your unit is equipped with automatic tracking control. During playback, you can override this and adjust the tracking manually by pressing the $\mathbf{C H}$ buttons.


## 1 Override automatic tracking.

During playback, press SP/EP on the Remote.

## 2 Adjust the tracking manually.

Press CH + or - on the Remote.

- Press $\mathbf{S P} / \mathbf{E P}$ again to return to automatic tracking.


## NOTE:

When a new tape is inserted, the unit enters the automatic tracking mode automatically.

## Soundtrack Selection

Your unit is capable of recording three soundtracks (HI-FI L, HI-FI R and NORM) and will play back the one you select.

## During Playback

Pressing A.MONITOR changes the soundtrack as follows:

- You can also select the soundtrack on the Function Set screen. ( 5 単 pg. 76)

| TRACK | USE |
| :---: | :--- |
| On-Screen Display |  |
| H I-F I | Hi-Fi sound is played back |
| H I-F I L | Sound on the left Hi-Fi channel is <br> played back |
| H I-F IR | Sound on the right Hi-Fi channel is <br> played back |
| NORM | Sound on the normal track is played <br> back |
| NORM <br> H I-F I | Both sounds on the Hi-Fi track and <br> normal track are mixed and played <br> back |

## NOTES:

- "HIFI" should normally be selected. In this mode, Hi-Fi stereo tapes are played back in stereo, and the normal audio track is played back automatically for tapes with only normal audio.
- "SUPERIMPOSE" must be set to "ON" or the on-screen displays will not appear. ( 0 拲 pg. 75)


## Basic Recording

- Turn on the TV and select the VCR channel (or AV mode).
- Slide the TV/VCR/DVD switch to the right.



## Recording Resume Function

If there is a power outage during recording, Instant Timer Recording or timer recording (0, pg. 33, 34, 36), the recording will resume automatically when power is restored to the unit unless the unit's memory backup has expired.

## 1 Load a cassette.

Insert a cassette with the record safety tab intact.

- The unit's power comes on automatically and the counter is reset to 0:00:00.


## 2 Select the VCR deck.

## On the unit

Press VCR/DVD repeatedly so that the VCR indicator lights up.

## On the Remote

Press VCR so that the VCR indicator lights up.

## 3 Choose a program.

Press $\mathbf{C H}+$ /- or the number keys to select the channel you wish to record.

## 4 Set the tape speed.

Press SP/EP. The current setting appears on the front display panel or TV screen. Press SP/EP again to change the setting while the tape speed is displayed on the TV screen.

## 5 Start recording.

Press and hold REC $(\boldsymbol{\bullet})$ and press PLAY $(\boldsymbol{\nabla})$ on the Remote, or press REC $(\bullet)$ on the unit.
6 Pause/Resume recording.
Press PAUSE (II). Press PLAY ( $\boldsymbol{\text { I }}$ ) to resume recording.

- You can select channel during the Record Pause mode.


## 7 Stop recording.

 to remove the cassette.

## Recording Features

- Turn on the TV and select the VCR channel (or AV mode).
- Slide the TV/VCR/DVD switch to the right.



## Accidental erasure prevention

To prevent accidental recording on a recorded cassette, remove its safety tab. To record on it later, cover the hole with adhesive tape.


Record safety tab

## Record One Program While Watching Another

If your unit is connected to the TV via the AV connection, press TV/VCR. The VCR indicator on the front display panel and the TV broadcast being recorded disappear. Once recording is in progress, all you need to do is to set the channel controls on the TV for the station you wish to view.

- The program selected with the TV's channel controls appears on the TV screen, while the one selected with the unit's $\mathbf{C H}$ buttons is recorded on the tape.


## NOTE:

You can also use the DVD deck in the following cases. Before use, be sure to turn on the unit and select the DVD deck.

- During recording
- During timer recording
- During timer standby mode


## Instant Timer Recording (ITR)

This easy method lets you record for from 30 minutes to 6 hours (selectable in 30-min. increments), and shuts the unit off after recording is finished.

## 1 Start recording.

Press REC ( ) on the unit.

## 2 Engage the ITR mode.

Press REC $(\bigcirc)$ again. " $\bigcirc$ " blinks and "0:30" appears on the front display panel.

## 3 Set the recording duration.

If you want to record for more than 30 minutes, press REC $(\boldsymbol{)}$ to extend the time. Each press extends recording time by 30 minutes.

## NOTES:

- You can only perform ITR using the REC ( $)$ button on the unit's front panel.
- Still picture playback stops automatically after 5 minutes to protect the heads.
- When the end of the tape is reached during timer recording, the unit stops and " $\bigcirc$ " and " $\triangleright$ " blink on the front display panel.
- When the end of the tape is reached during timer recording or Instant Timer Recording, the unit is turned off and " $\bigcirc$ " and " $\triangleright$ " blink on the front display panel.
- During Instant Timer Recording, any other timer programed recording won't start even if their start time has come. In such a case, the timer programed recording starts (if the end time of the timer programed recording is set after the end of Instant Timer Recording) after the Instant Timer Recording finishes.



## Elapsed Recording Time Indication

## 1 Set the counter display.

Press DISPLAY until a counter reading appears on the front display panel.


## 2 Reset the counter.

Press C.RESET before starting recording or playback.

- The counter is reset to "0:00:00" and shows the exact elapsed time as the tape runs. You can check the exact time of a recording or playback.


## Tape Remaining Time

Press DISPLAY until the time remaining on the tape appears.

- The front display panel shows the tape remaining time with ":" blinking.

- By pressing the DISPLAY button, you can change display to show the channel position*, clock time, counter reading or tape remaining time.
* Channel position is not displayed during playback.


## NOTES:

- When you press ON SCREEN, the on-screen display appears on the TV screen for 5 seconds, then the displays other than the counter disappears. To clear the counter display, press ON SCREEN.
- Depending on the type of tape being used, the tape remaining time reading may not appear right away, or is not correct. "- -:- -" may sometimes appear with ":" blinking, or the display may blink on occasion.


## Second Audio Recording

This unit's built-in MTS decoder enables reception of Multichannel TV Sound broadcast. To record a SAP program received, set "2ND AUDIO RECORD" to "ON". (演 pg. 76)

## NOTE:

When the channel is changed on the unit;

- The "STEREO" indicator appears on the screen for about 5 seconds if the program is a stereo broadcast.
- The "SAP" indicator appears on the screen for about 5 seconds if the program is a SAP broadcast.
- Both indicators appear when a stereo program is accompanied by SAP sound.


## Express Timer Programing

Before performing Express Timer Programing:

- Make sure that the unit's built-in clock is set properly.
- Insert a cassette with the safety tab in place. The unit will come on automatically.
- Turn on the TV and select the VCR channel (or AV mode).
- Slide the TV/VCR/DVD switch to the right.


Example: To timer-record the program from 8:00 PM to 10:00 PM on 24th December, on channel 12.

## Select the VCR deck.

On the unit
Press VCR/DVD repeatedly so that the VCR indicator lights up.

## On the Remote

Press VCR so that the VCR indicator lights up.

## 2 Access the Program screen.

Press PROG.. (If you're just starting out, "PROGRAM 1" appears.)


## 3 Enter the program start time.

Press START +/- to enter the time you want recording to start.

- Press and hold START +/- to move in 30-minute increments, or press and release repeatedly to move 1 minute at a time.



## 4 Enter the program stop time.

Press STOP +/- to enter the time you want recording to stop.

- Press and hold STOP +/- to move in 30-minute increments, or press and release repeatedly to move 1 minute at a time.


## 5 Enter the program date.

Press DATE +/-.

- The current date appears on the TV screen. The date you enter appears in its place.


## 6 Enter the channel position.

Press CH +/-.

## 7 Set the tape speed.

Press SP/EP.

## 8 Return to the normal screen.

Press PROG. or ENTER. "PROGRAM COMPLETED" appears on the TV screen for about 5 seconds, then the normal screen appears. If "PROGRAM NOT
COMPLETED PROGRAM OVERLAP" appears on the TV screen, see page 40.

- Repeat steps $\mathbf{2}-\mathbf{8}$ for each additional program.


## 9 Engage the unit's timer mode.

Press TIMER. The unit turns off automatically and "@(" appears on the front display panel.

- To disengage the timer mode, press TIMER again.


## To Timer-Record Weekly Or Daily Serials:

- anytime during steps $\mathbf{3}$ through $\mathbf{Z}$, press WEEKLY (number
key " 9 ") for weekly serials or DAILY (number key "8") for daily
serials (Monday - Friday). Either "WEEKLY" or "DAILY" appears
key "9") for weekly serials or DAILY (number key "8") for daily
serials (Monday - Friday). Either "WEEKLY" or "DAILY" appears on the TV screen. Pressing the button again makes the on the TV screen. Pressing the button


## NOTES:

- You can program this unit to timer-record as many as 8 programs. If you try to program the unit to record a ninth, "PROGRAM FULL" appears on the TV screen. To record the extra program, you must first cancel any unnecessary programs. (L. F pg. 39)
- Programs that start after midnight must have the next day's date.


## Cable Box or DBS Receiver Users

To timer-record a satellite broadcast using Express Timer Programing:
1 Perform steps $\boldsymbol{\square}-\mathbf{9}$. Enter "F-1" for the channel position in step 6.
2 Set the DBS receiver to the appropriate channel before the selected program begins.
3 Leave the DBS receiver's power on.

## Check, cancel and change programs



## 1 Disengage the timer mode.

Press TIMER, then press POWER (山/l).
2 Access the Program Check screen.
Press PROG. CHECK.


3 Access the Program screen.
Press PROG. CHECK again to check more information. Each time you press PROG. CHECK, the next program's information appears.


## To cancel or change a program



## 4 Cancel or change a program.

Press CANCEL to cancel a program. To change program settings, press the appropriate button: START +/-,
STOP +/-, DATE +/-, CH +/-, DAILY (number key " 8 "), WEEKLY (number key " $\mathbf{9}^{\prime \prime}$ ) and/or SP/EP.

## 5 Return to the normal screen.

Press PROG. CHECK as many times as necessary. If there are still some programs remaining, go on to step $\mathbf{6}$.

6 Return to the timer mode.
Press TIMER.


## ATTENTION

If there is a conflict in the timer schedule and one program overlaps with another, only the parts shown below in gray will be recorded.
Pattern 1: The program with the lower program number will be recorded.


Pattern 2: The program starting earlier will be recorded.


Pattern 3: The program starting earlier will be recorded, followed by the remaining portion of the other program.


## When programs overlap each other

If "PROGRAM NOT COMPLETED PROGRAM OVERLAP" appears, you have another program overlapping the program you have just made.
The Program Check screen appears and conflicting programs will start blinking.


Example: Program 1 (you have just made) and Program 4 overlap each other.

## 1 Confirm the overlapping programs.

Overlapping programs blink on the TV screen.

## 2 Select the program to modify.

Press $\triangle \nabla$, then press ENTER or $\triangleright$.

- You can only select one of the overlapping programs.

NOTE:
If you do not mind this overlap, press PROG. to finish the timer program setting. The program with the lower program number will be recorded and the other one will not be recorded correctly. If no changes are made for approximately 1 minute, the unit will return to the normal screen.

## 3 Cancel or change program setting.

To cancel a program, press CANCEL when the Program screen you do not want is shown. "PROGRAM COMPLETED" appears on the TV screen for about 5 seconds, then the normal screen appears.
To change a program, press the appropriate button: START +/-, STOP +/-, DATE +/-, CH +/-, DAILY (number key "8"), WEEKLY (number key "9") and/or SP/ EP when the Program screen on which you want to make changes is shown, then press ENTER. "PROGRAM COMPLETED" appears on the TV screen for about 5 seconds, then the normal screen appears.

## NOTE:

If the overlap is not yet solved, or another overlap occurs with the timer program setting after making the last correction on a program, the conflicting programs will be shown on the Program Check screen again. Repeat the above steps again until the overlap is solved.

## Sutellite Auto Recording

This function allows you to automatically record a satellite program which is timer-programed on your external DBS receiver. Connect a DBS receiver to the unit's AUDIO/VIDEO input ( $\mathrm{F}-1$ ) connector and program the timer on the DBS receiver. The unit starts or stops recording by the signals input from the DBS receiver. After recording, the unit's power shuts off automatically. - You can also connect the cable box if it has a timer.


## ATTENTION

- Be sure not to turn on the DBS receiver before the program is executed; otherwise, the unit will start recording when the DBS receiver's power is turned on.
- If you have connected another appliance other than a DBS receiver to the AUDIO/VIDEO input (F-1) connector, be sure not to engage the Satellite Auto Recording mode; otherwise, the unit will start recording when the connected appliance's power is turned on.
- Satellite Auto Recording and timer-recording cannot be done at the same time.


## Before performing the following steps:

- Make sure the DBS receiver is connected to the unit's AUDIO/VIDEO input (F-1) connector.
- Program the timer on the DBS receiver.
- Insert a cassette with the safety tab in place.
- Slide the TV/VCR/DVD switch to the right.

1Select the VCR deck.

## On the unit

Press VCR/DVD repeatedly so that the VCR indicator lights up.

## On the Remote

Press VCR so that the VCR indicator lights up.

## 2 Set the tape speed.

Press SP/EP.

## 3 Engage the Satellite Auto Recording mode.

Press and hold REC LINK for about 2 seconds. The " $\checkmark$ " and " $(\rightarrow$ " indicators light up and the unit turns off automatically.

## NOTES:

- Operation on the DVD deck are not possible when the Automatic Satellite Program Recording mode is engaged, or timer recording is in progress.
- To disengage the Satellite Auto Recording mode, press REC LINK. The " $\downarrow^{~}$ " indicator goes off.
- If the unit's power is off, it is not possible to engage the Satellite Auto Recording mode.
- In step 3, if the " $\Delta$ " indicator does not light but instead blinks quickly even though your DBS receiver's power is off, Satellite Auto Recording will not work properly with that DBS receiver*. If this is the case, perform "Express Timer Programing" (LS pg. 36) to timer-record a satellite program.
* Some DBS receivers output signals even if the power is off. Satellite Auto Recording is not possible with those DBS receivers.
- The " $\widehat{\Delta}$ " indicator blinks while Satellite Auto Recording is in progress.
- For timer programing of the DBS receiver, refer to the instruction manual of the DBS receiver.
- Satellite Auto Recording is not possible if your DBS receiver does not have a timer.
- Pressing the unit's POWER (山/l) button while Satellite Auto Recording is in progress turns off the unit's power and disengages the Satellite Auto Recording mode.
- If there are more than one satellite programs you wish to record with Satellite Auto Recording, it is not possible to set different tape speeds for each program.
- Depending on the type of DBS receiver, the unit may not record a slight portion of the beginning of the program or may record slightly longer than the actual length of the program.
- If you engage the Satellite Auto Recording mode when the DBS receiver's power is on, the unit will not start Satellite Auto Recording even though the " $₫$ " and " $\Theta$ " indicators blink. When the DBS receiver shuts off once and is turned back on again, the unit starts recording.
- You can also record a program from your cable system in the same way if the system has a timer.


## Basic Playback

## DVD <br> SVED <br> Audio

- Turn on the TV and select the VCR channel (or AV mode).
- Slide the TV/VCR/DVD switch to the right.



## ATTENTION

- You can not use the DVD deck when the VCR deck is in the Automatic Satellite Recording standby and recording mode.
- You can use the DVD deck when the VCR deck is in the timer standby mode.

To play back a MP3/JPEG disc, see pages 62 - 67 .

## 1 Load the disc.

1 Press OPEN/CLOSE (스) on the DVD deck to open the disc tray.

- The unit's power comes on automatically.

22 Place the disc in the disc tray.

- For details, refer to "Placing a Disc" (L.5 pg. 9).

3 Press OPEN/CLOSE (스) on the DVD deck to close the disc tray.

- Pressing PLAY ( ) also close the disc tray.
- Playback begins automatically if the auto-playback DVD disc is loaded. Although the VCR deck is selected, the DVD deck is selected automatically if the VCR deck is in stop mode.


## 2 Select the DVD deck.

On the unit
Press VCR/DVD repeatedly so that the DVD indicator lights up.

## On the Remote

Press DVD so that the DVD indicator lights up.

## 3 Start playback.

Press PLAY (
Example: DVD VIDEO


- You can switch the display on the front display panel between the title number/chapter number and the elapsed time by pressing DISPLAY.
- It may take a few seconds to start playback.
- If you load a DVD disc whose region code does not match the DVD deck, "REGION CODE ERROR!" appears on the TV screen. For details, refer to "Region Number" (TS pg. 7).
- With Video CD discs with PBC control or some DVD discs, the menu display may appear on the TV screen after starting playback. In this case, select an item which you want to play back from the menu. Otherwise, the playback cannot go forward. Refer to "Locating a desired scene using the menu of the Video CD with PBC" (㜿 pg. 43) or "Locating a desired scene using the DVD menu" (综 pg. 43).


## 4 Pause playback.

## Press PAUSE (II).

- To resume normal playback, press PLAY ( $\boldsymbol{\nabla}$ ).


## 5 Stop playback.

Press STOP (■). Press OPEN/CLOSE (스) on the DVD deck to open the disc tray, then remove the disc.

- Pressing PLAY $(\boldsymbol{\square})$ resume playback from the position where you stop playback. For details, see "Resume Function" on page 45 .


## NOTE:

When you press OPEN/CLOSE $(\boldsymbol{\Delta})$ while the unit is turned off, the unit's power comes on and the disc tray opens automatically.

## Playback Features

- Turn on the TV and select the VCR channel (or AV mode).
- Slide the TV/VCR/DVD switch to the right.


## Playback Control (PBC) Function - Locating a desired scene using the menu of the Video CD with PBC



Some Video CD discs supports the PBC function. PBC is an abbreviation of "PlayBack Control." A Video CD disc recorded with PBC has its own menus, such as a list of the songs of the disc. You can locate a specific scene by using the menu.

## 1 Access the PBC menu.

## In stop mode

## Press PLAY ( $\mathbf{~}$ ).

- Depending on a disc, PBC menu may automatically appear on the TV screen by simply loading a disc on the unit. "Pbs" appears on the front display panel.


Example:


## 2 Start playback.

Press the appropriate number keys.

- The unit starts playback of the selected item.
- When "NEXT" or "PREVIOUS" appears on the TV screen: Pressing SKIP $(1)$ advances to the next page.
Pressing SKIP $(\mid \ll)$ returns to the previous page.
- You can return to the menu by pressing RETURN.
- The method of the operation is different depending on the disc.


## NOTES:

- If you want to playback a PBC-compatible Video CD disc without activating the PBC function, start playback by using the number keys instead of the PLAY ( $\boldsymbol{\nabla}$ ) button.
- To activate the PBC function when a PBC-compatible Video CD disc is being played back without the PBC function, press TOP MENU or MENU, or press STOP (■) (press twice when "RESUME" is set to "ON") then press PLAY ( $)$.


## Locating a desired scene using the DVD menu



DVD VIDEO discs may have two types of the menus; top menu and disc menu.

## Top menu

DVD discs generally have their own menus which show the disc contents. These menus contain various items such as titles of a movie, names of songs, or artist information. You can locate a desired scene by using the top menu displayed on the TV screen. Press TOP MENU to access the top menu.

## Disc menu

DVD discs have the disc menu to select subtitle and audio language etc. for each title.
Press MENU to access the disc menu.

## 1 Access the DVD menu.

Press TOP MENU or MENU.


Example:

## 2 Start playback.

Press $\triangle \nabla \triangleleft D$ to select a desired item, then press ENTER.

- It may be possible to select the desired item using the number keys depending on the disc.


## NOTES:

- When " $\theta^{\prime}$ " appears on the TV screen in step 1, the disc does not have a top menu or disc menu.
- Top menu or disc menu may not appear depending on the discs even if it is recorded in DVD VIDEO format and finalized. In that case, press STOP (■) to display the total number of titles on a disc, then press the appropriate number keys to select the desired title.



## Locating the start point of the item or skip the item

DVD
VIded
CD SVCD Audio

Press SKIP $(\mid<4)$ or SKIP $(>\mid)$ during playback.

## Example:

To locate the beginning of item $B$ from the current position, press SKIP (1<4) twice.
To locate the beginning of item D from the current position, press SKIP $(1)$ once.


The number you press the button

- When the specified item is located, playback begins automatically.


## NOTE:

When you press SKIP $(\mid \ll)$ or SKIP $(>\mid)$, the counter display may appear instead of title number/chapter number depending on the discs.

## Variable Speed Search



During playback, press FF $\rightarrow$ ) for forward variable speed search, or REW (<<) for reverse variable speed search.

- The more times you press, the faster the playback picture moves.
- To resume normal playback, press PLAY ( $\boldsymbol{\square}$ ).

OR
During playback, press and hold SKIP $(>$ ) for forward search, or press and hold SKIP (|<<) for reverse search.

- While you press and hold the button, the image is played back at $5 x$ speed.
- To resume normal playback, release SKIP (1<4) or SKIP (\$1).


## NOTES:

- Actual speed may be different from that displayed on the TV screen depending on the discs.
- Playback sound is not heard in any variable speed search mode.


## Still Picture／Frame－By－Frame Playback

| DVD | Video |  | Audio |
| :---: | :---: | :---: | :---: |
| U1DEO | GD | SICD | 6 C |

## 1 Pause during playback． <br> Press PAUSE（II）．

## 2 Activate frame－by－frame playback．

Press PAUSE（II）to advance a still picture．
－To resume normal playback，press PLAY（ $\boldsymbol{\square}$ ）．

## Slow Motion



During playback，press PAUSE（II），then press REW for reverse slow motion playback，or $\mathbf{F F}(\rightarrow)$ for forward slow motion playback．
－Each press of $\mathbf{F F}$ ）changes the playback speed as follows： $1 / 32 \rightarrow 1 / 16 \rightarrow 1 / 8 \rightarrow 1 / 4 \rightarrow 1 / 2$
－Each press of REW（＜＜）changes the playback speed as follows（only for DVD VIDEO discs）：
$-1 / 32 \rightarrow-1 / 16 \rightarrow-1 / 8 \rightarrow-1 / 4 \rightarrow-1 / 2$
－To resume normal playback，press PLAY（ $\boldsymbol{\triangle}$ ）．

## NOTES：

－Reverse slow motion playback is possible only with the DVD VIDEO discs．
－This function may not works for some Video CD or SVCD．

## Resume Function

DVP
VIDE Video sven Antio

It is possible to memorize the position where you stop playback and resume playback from that position．
－Be sure to set＂RESUME＂to＂ON＂．（忬 pg．80）

## 1 Memorize the resume point．

Press STOP（ $\quad$ ）during playback．
－＂rESuM＂appears on the front display panel．
FEEMiN1
－The unit enters Resume Stop mode and memorise the position where you stop playback as the resume point．
－To clear the resume point：
－Press STOP（■）in stop mode．
－Press POWER（山／l）to turn off the unit．
－Eject the disc．
－Set＂RESUME＂to＂OFF＂．（以ア pg．80）

## 2 Resume playback．

Press PLAY（ $\downarrow$ ．The unit start playback from the resume point．

## NOTES：

－Resume Function does not work on the Audio CD．It also may not work depending on the discs．
－If you stop the playback of a disc for which an resume point has already been memorized，the memory will be updated with the new resume point．
－When the unit memorizes a resume point，it also remembers audio language，subtitle and angle settings．
－This function may not works for some Video CD or SVCD．

## Zooming

Press ZOOM during playback or while paused．
－Each press of ZOOM changes the magnification in the following steps：
ZOOM OFF $\rightarrow$ ZOOM $1 \rightarrow$ ZOOM $2 \rightarrow$ ZOOM $3 \rightarrow$
ZOOM $4 \rightarrow$ ZOOM $5 \rightarrow$ ZOOM $6 \rightarrow$（Back to the beginning）
－When a 16：9 aspect picture source is displayed on a 4：3 aspect TV（conventional TV）in Letter Box conversion mode， the margins in black shown on top and bottom of the TV screen will be cropped by zooming．In such a case，note that both left and right side parts of the picture will also be cropped．
－While zoomed，the picture may look coarse or distorted．

> Current magnification


Press $\triangle \nabla \triangleleft D$ to move the zoomed－in scene．



## 3D Phonic

## DVD VIDEO

3D Phonic function allows you to get a simulated surround effect from your stereo system. You can enjoy the vertical surround sound with your 2-channel stereo system.

## 1 Access the selection menv.

Press 3D-PHONIC during playback.

- The current setting appears on the right bottom corner of the TV screen.


## 2 Select the mode.

## Press 3D-PHONIC

 repeatedly.

- Each time you press 3D-PHONIC, the setting changes as follows:
OFF $\rightarrow$ ACTION $\rightarrow$ DRAMA $\rightarrow$ THEATER $\rightarrow$ (Back to the beginning)

| OFF: | No effect <br> ACTION: <br> Suitable for action movies and sports <br> programs in which sounds dynamically <br> move. |
| :--- | :--- |
| DRAMA: | Provides the natural and warm sound. You <br> can enjoy movies in a relaxed mood. <br> You can enjoy sound effects like in a major <br> theater. |

- The selection menu disappears automatically if you do not change the selection for 5 seconds.


## NOTES:

- The 3D Phonic function works correctly only when playing back a DVD VIDEO disc recorded in the multi channel Digital format. With other sources, you cannot get any effect if you activate 3D Phonic function.
- When playing back a DVD VIDEO disc recorded with the Dolby Digital that does not contain the rear signal, you cannot get a correct 3D Phonic sound even if you activate 3D Phonic function.
- The 3D Phonic function does not affect the Digital bitstream signal from the DIGITAL AUDIO OUT connector.
- When 3D Phonic function is activated, Down Mix and D. Range Compression functions are disabled. ( 1


## VFP function <br> - Adjusting the picture quality

DVD VIDEO

GD SUED

The VFP (Video Fine Processor) function enables you to adjust the picture character according to the type of programing, picture tone or personal preference.

## NOTE:

Before you start operation;
The VFP setting screen disappears if no operations are done for more than about 10 seconds. If the setting screen disappears before you finish, start from step $\mathbf{1}$ again.

## 1 Access the VFP setting menu.

Press DVD PICTURE during playback.

- The current setting appears on the TV screen.



## 2 Select the VFP mode.

Press $\triangleleft \triangleright$ repeatedly.

- Each time you press $\triangleleft D$, the VFP mode changes as follows: NORMAL $\rightarrow$ CINEMA $\rightarrow$ USER $1 \rightarrow$ USER $2 \rightarrow$ (Back to the beginning)

| NORMAL: | Select this normally. |
| :--- | :--- |
| CINEMA: | Suitable for movie. |
| USER 1/ | You can adjust parameters that affect picture |
| USER 2: | appearance and store settings. Go to step 3. |

## NOTE:

You cannot adjust the parameters of "NORMAL" and "CINEMA".

## To adjust picture appearance manually

## 3 Access USER menu.

Press $\triangleleft D$ repeatedly to select "USER 1" or "USER 2".


## 4 Select the parameter.

Press $\triangle \nabla$ repeatedly to select a parameter you want to adjust, then press ENTER.

- Adjust gradually and confirm picture appearance results are as preferred.

| GAMMA | Controls brightness of neutral tints while <br> $(-3$ to +3$):$ <br> maintaining brightness of dark and bright |
| :--- | :--- |
| portions. |  |

- VFP menu disappears and the following pop-up window appears on the TV screen.

- The selection menu disappears automatically if you do not change the selection for 10 seconds.


## 5 Adjust the parameter.

Press $\triangle \nabla$ repeatedly to change the setting, then press ENTER.

- The current VFP settings appear again.


## 6 Adjust the other parameters.

Repeat steps $\mathbf{4}$ and $\mathbf{5}$ to adjust other parameters.

## To return to the normal screen Press DVD PICTURE.

## To activate your setting

Press DVD PICTURE, then press $\triangleleft \triangleright$ repeatedly to select "USER 1" or "USER 2" that you have changed the parameters.

## Using the on－ screen bar



You can check disc information while the disc is loaded and you can use some functions using the on－screen bar．The on－screen bar allows you the various playback operations．


## How to Access the on－screen bar

Press ON SCREEN twice whenever a disc is loaded．
Example：During DVD VIDEO playback

| DVD－VIDEO | 7．7 Mbps | titue | CHAP | 7 |  | Otal |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| tIME © | $\bigcirc$ | （1） | －1 |  |  |  |  |

Example：During Video CD playback


## Contents of the on－screen bar during playback

DVD


## Video CD

Disc type
2 Current transfer rate（Megabits per second）
3 Current title（for DVD）
4 Current chapter number（for DVD）or track number （for other type of discs）
5 Time information（［GF pg．49）
6 Playback status
D：appears during playback．
（ $\boldsymbol{H}$／appears during fast forward／reverse．
D／U1：appears during playback in forward slow－ motion／reverse slow－motion．

II：appears when paused．
■：appears when stopped．
7 Select this to change time information．（See 5 in the illustration above）（as pg．49）
Select this for Repeat Playback．（绿 pg．50）
9 Select this for time search function．（倞 pg．52）
10 Select this for chapter search function．（汿 pg．53）
11 Select this to change audio language or channel． （ 0 寻 pg．56，57）
12 Select this to change subtitle language．（ 0 ． 7 pg ．54）
13 Select this to change view angle．（0，pg．55）

## Basic operation on the on-screen bar

Example: When selecting the Repeat mode of DVD
During playback

## 1 Access the on-screen bar.

Press ON SCREEN twice. The on-screen bar appears on the TV screen.

- The currently selected item is highlighted.



## 2 select menv item.

Press $\triangleleft D$ to move the hightlight to $\circlearrowright$, then press ENTER. The pop-up window appears under the selected item.

- The current setting appears.



## 3 Select the option.

Press $\Delta \nabla$ to select the desired option, then press ENTER. - Each time you press $\triangle \nabla$, the options change.

To clear the on-screen bar Press ON SCREEN.

## NOTE:

See the corresponding pages for details on each function.

## Change the time information

DVD
VIIdeo
CD SVED Audio

You can change the time information in the on-screen bar on the TV screen and the front display panel of the unit.

During playback or while stopped

## Access the on-screen bar.

Press ON SCREEN twice. The on-screen bar appears on the TV screen.

## 2 Select menu item.

Press $\triangleleft \triangleright$ to move the hightlight to TIME , then press ENTER.

- Each time you press ENTER, the time information changes as follows;
Example: During DVD playback
$\Rightarrow$ TIME 0:25:58 $\Rightarrow$ REM 0:18:14 $\Rightarrow$ TOTAL 1:25:58
$\Rightarrow$ T.REM 0:45:41 $\Rightarrow$ (Back to the beginning)

| TIME: | Elapsed playing time of current chapter/track |
| :--- | :--- |
| REM: | Remaining time of current chapter/track |
| TOTAL: | Elapsed time of title/disc |
| T. REM: | Remaining time of title/disc |

To clear the on-screen bar Press ON SCREEN.

NOTE:
While a DVD is stopped, "- :-- :--" appears in the time information display.


## Repeat Playback



You can repeat playback as you like according to the type of disc.
DVD VIDEO: during playback
Audio CD: during playback or in stop mode
Video CD/SVCD: in stop mode or during playback with PBC disactivated

When using the on-screen bar

## Access the on-screen bar.

Press ON SCREEN twice. The on-screen bar appears on the TV screen.

## 2 Select menu item.

Press $\triangleleft \triangleright$ to move the hightlight to $\circlearrowright$, then press ENTER.

- The following pop-up window appears under the selected item.



## 3 Select the repeat mode.

Press $\Delta \nabla$ repeatedly to select the Repeat mode, then press ENTER.

- The mode changes as follows:


## DVD VIDEO

CHAPTER $\rightarrow$ TITLE $\rightarrow$ A-B $\rightarrow$ OFF $\rightarrow$ (Back to the beginning)

| CHAPTER: | The current chapter is played back <br> repeatedly. <br> TITLE: |
| :--- | :--- |
| A-B: | The current title is played back <br> repeatedly. |
| OFF: | The desired part is played back <br> repeatedly. (as pg. 51) |
|  | Each title and chapter is played <br> back once. |

## Video CD/SVCD/CD

TRACK $\rightarrow$ ALL $\rightarrow \mathrm{A}-\mathrm{B} \rightarrow$ OFF $\rightarrow$ (Back to the beginning)

| TRACK: | The current track is played back <br> repeatedly. |
| :--- | :--- |
| ALL: | All tracks are played back <br> repeatedly. |
| A-B: | The desired part is played back <br> repeatedly. (0.3 pg. 51) |
| OFF: | Each track is played back once. |

- "A-B" cannot be selected while stopped.

To clear the on-screen bar Press ON SCREEN.

To cancel Repeat Playback
Repeat from step 1, select "OFF" in step 3, then press ENTER.

When using the REPEAT button:

## 1 Access the repeat mode.

Press REPEAT during playback of the item you want to repeat.

- Repeat mode is displayed on the TV.


## 2 Select the repeat mode.

Press REPEAT repeatedly to select the desired repeat mode.

- To stop Repeat Playback, press STOP (■).
- To cancel Repeat Playback, press REPEAT repeatedly until "OFF" appears on the TV screen.
- The pop-up window disappears if no operation is done for about 5 seconds.


## NOTES:

- Repeat Playback is not possible with a Video CD and SVCD with PBC function.
- Repeat Playback may not work properly depending on the type of disc being used.
- You cannot select A-B Repeat Playback by pressing REPEAT.



## A-B Repeat Playback

DV
UDEO

## Audio

CD
You can repeat the desired part.

## Access the on-screen bar.

Press ON SCREEN twice. The on-screen bar appears on the TV screen.

## 2 Select menv item.

Press $\triangleleft D$ to move the hightlight to $\circlearrowright$, then press

## ENTER.

- The following pop-up window appears under the selected item.



## 3 Select the repeat mode.

Press $\triangle \nabla$ repeatedly to select "A-B".

## 4 Select the start point.

Press ENTER at the beginning of the part you want to repeat (point A).

- The following display appears in the on-screen bar.



## 5 Select the end point

Press ENTER at the end of the part you want to repeat (point B).

- A-B Repeat Playback starts. The selected part of the disc (between point $A$ and $B$ ) is played repeatedly.
To cancel A-B Repeat Playback
Repeat from step 1, select "OFF" in step B, then press
ENTER.
- You can also cancel Repeat Playback by pressing SKIP or SKIP $\rightarrow$ ).


## To clear the on-screen bar

Press ON SCREEN.

## NOTES:

- A-B Repeat Playback may not work properly depending on the type of disc being used.
- The subtitles recorded around A-B point may not appear.
- The end of the item will be set as " $B$ " point if the end of the item reached before you set the " $B$ " point.
- When playing back a DVD, A-B Repeat Playback is possible only within the same title.
- "A-B" cannot be selected while stopped.



## Time Search



You can play back a disc from the desired point by specifying the elapsed time from the beginning of the current title (for DVD VIDEO) or the disc (for Audio CD/Video CD) using the Time Search.
When a PBC-compatible Video CD is played back, be sure to inactivate PBC function before you perform Time search by pressing the number keys instead of the PLAY $(\boldsymbol{\nabla})$ button when you start playback.

Access the on-screen bar.
Press ON SCREEN twice. The on-screen bar appears on the TV screen.

## 2 Select menu item.

Press $\triangleleft D$ to move the hightlight to $\Theta \Rightarrow$, then press ENTER.

- The following pop-up window appears under the selected item.



## 3 Select the time.

Press the number keys (0-9) to enter the time, then press ENTER.

Example:
To play back from a point 2 (hours): 34 (minutes): 08 (seconds) elapsed


Press 8

## If you have specified a wrong selection,

Press $\triangleleft$ repeatedly until the wrong number is erased, then press number keys to enter the correct numbers.

- The unit starts playback from the specified time.


## To clear the on-screen bar Press ON SCREEN.

## NOTES:

- When " $\theta^{\prime}$ " is displayed on the TV screen in step B , you have selected a point that excesses the recording time of the disc.
- Some DVD VIDEO discs do not contain time information, and it is no possible to use the Time Search function. In such a case, " $\theta^{\prime}$ " is displayed on the TV screen as well.
- Time Search does not work while you play back the Video CD or SVCD with the PBC Function.


## Reactivate the Playback Control (PBC) Function

You can reactivate the PBC function when you play back a PBCcompatible Video CD disc without PBC function.

- Press TOP MENU during playback.


## Chapter Search



## DVD UDEO <br> Video <br> SICD <br> Audito

You can start playback the desired chapter using the on-screen bar.

## Access the on-screen bar.

Press ON SCREEN twice. The on-screen bar appears on the TV screen.

## 2 Select menv item.

Press $\triangleleft D$ to move the hightlight to CHAP. $\rightarrow$, then press ENTER.

- The following pop-up window appears under the selected item.



## 3 Select the chapter.

Press the number keys (0-9) to enter the desired chapter number, then press ENTER.

- The unit starts playback from the selected chapter.


## Examples:

To select track 5, press the number key " 5 ".
To select track $\mathbf{1 5}$, press the number key " $\mathbf{1}$ " and " $\mathbf{5}$ ".
To select track 25 , press number key " $\mathbf{2}$ " and " $\mathbf{5}$ ".

- It is not possible to use the number key "+10" and " $\mathbf{- 1 0}$ ".

If you have specified a wrong selection
Enter the appropriate number keys again.
To clear the on-screen bar Press ON SCREEN.

## NOTES:

- When " $\theta^{\prime}$ " is displayed on the TV screen in step $\mathbf{3}$, the chapter you have selected is not contained in the disc, or chapter search does not work on the disc.
- Chapter Search starts automatically when you select the desired chapter in step $\mathbf{3}$ depending on the disc.



## Subtitle Selection



You can select subtitle language.

- During playback

When using the on-screen bar

## 1 Access the on-screen bar.

Press ON SCREEN twice. The on-screen bar appears on the TV screen.

## 2 Select menu item.

Press $\triangleleft \triangleright$ to move the hightlight to , then press

## ENTER.

- The following pop-up window appears under the selected item.
Example (DVD): "ENGLISH" is selected out of 3 subtitle languages recorded.



## 3 Select the subtitle language.

Press $\Delta \nabla$ repeatedly to select the desired subtitle language, then press ENTER.

- Each time you press the button, the subtitle language changes.

To clear the on-screen bar Press ON SCREEN.

## NOTES:

- It is impossible to select "OFF" when using the on-screen bar. To select "OFF", press ON SCREEN to clear the on-screen bar, then press SUB TITLE until "OFF" is selected.
- For DVD VIDEO

Some subtitle languages are abbreviated in the pop-up window. See "Language Code List" ( 5 家 pg. 23).

- For SVCD

SVCD can contain up to four subtitles. Pressing SUB TITLE changes the subtitles regardless of whether the subtitles are recorded or not. (Subtitles will not change if no subtitle is recorded.)

- When " $\theta^{\prime}$ " appears on the TV screen in step B, subtitle language is not recorded.


## When using the SUB TITLE button:

## 1 Access the menu.

Press SUB TITLE.

- The following pop-up window appears on the TV screen.

Example (DVD): "ENGLISH" is selected out of 3 subtitle languages recorded.


## 2 Select the subtitle language.

Press $\Delta \nabla$ or SUB TITLE repeatedly to select the desired subtitle language. To select "OFF", press SUB TITLE until "OFF" is selected.

- Each time you press the button, the subtitle language changes.
- The pop-up window disappears if no operation is done for about 5 seconds.


## NOTE:

When " $\otimes$ " appears on the TV screen in step $\mathbf{Z}$, subtitle language is not recorded.

## Angle Selection

## DVI <br> UIDEO <br> Video <br> syen Andio

You can enjoy a variety of scene angles if the DVD VIDEO disc contains "multi-angle" parts, where multiple cameras were used to shoot the same scene from different angles.
If the disc contains "multi-angle" parts, " ${ }^{g_{7}}$ " appears on the TV screen at the beginning of the "multi-angle" part when "ON
SCREEN GUIDE" is set to "ON".

- During playback


## When using the on-screen bar

## 1 Access the on-screen bar.

Press ON SCREEN twice. The on-screen bar appears on the TV screen.

## 2 Select menv item.

Press $\triangleleft D$ to move the hightlight to $\mathbb{o g}_{9}$, then press ENTER.

- The following pop-up window appears under the selected item.
Example: The first view angle is selected out of 3 view angles recorded.



## 3 Select the view angle.

Press $\triangle \nabla$ repeatedly to select the desired view angle, then press ENTER.

- Each time you press the button, the angle of the scene changes.


## To clear the on-screen bar

Press ON SCREEN.

## NOTE:

When " $Q^{\prime}$ " appears on the TV screen in step $\mathbf{B}$, the current scene is not recorded from multiple angles.

## When using the ANGLE button:

## Access the menu.

## Press ANGLE.

- The following pop-up window appears on the TV screen.

Example: The first view angle is selected out of 3 view angles recorded.


## 2 Select the view angle.

Press $\triangle \nabla$ or ANGLE repeatedly to select the desired view angle.

- Each time you press the button, the angle of the scene changes.
- The pop-up window disappears if no operation is done for about 5 seconds.

Example:
$1 / 3 \rightarrow 2 / 3 \rightarrow 3 / 3 \rightarrow$ (Back to the beginning)



## Audio Language Selection

## DVI Video syei Aurdio

Some DVD discs contain the multiple audio.
You can select the audio language of movies (DVD VIDEO).

- During playback

When using the on-screen bar

## Access the on-screen bar.

Press ON SCREEN twice. The on-screen bar appears on the TV screen.

## 2 Select menv item.

Press $\triangleleft \triangleright$ to move the hightlight to $O D$, then press ENTER.

- The following pop-up window appears under the selected item.

Example: "ENGLISH" is selected out of 4 audio languages recorded.


## 3 Select the audio language.

Press $\Delta \nabla$ repeatedly to select the desired audio language, then press ENTER.

- Each time you press the button, the audio language changes.

To clear the on-screen bar Press ON SCREEN.

## NOTES:

- Some audio languages are abbreviated in the pop-up window. See "Language Code List" (
- If " $Q^{\prime}$ " appears on the TV, the current scene does not contain plural audio languages.


## When using the A.MONITOR button:

## Access the menu.

Press A.MONITOR.

- The following pop-up window appears on the TV screen.

Example: "ENGLISH" is selected out of 3 audio languages recorded.


## 2 Select the audio language.

Press $\triangle \nabla$ or A.MONITOR repeatedly to select the desired audio language.

- Each time you press the button, the audio language changes.
- The pop-up window disappears if no operation is done for about 5 seconds.


## NOTE:

Some audio languages are abbreviated in the pop-up window. See "Language Code List" ( (L马 pg. 23).

## Audio Channel Selection

| DVD | Video | HI |  |
| :---: | :---: | :---: | :---: |
| E | GD |  |  |

When you play certain karaoke (Video CD/SVCD), you can enjoy karaoke by selecting the audio channel to play.

- The sound of each audio channel depends on the contents of the disc.
- During playback

When using the on-screen bar

## 1 Access the on-screen bar.

Press ON SCREEN twice. The on-screen bar appears on the TV screen.

## 2 Select menu item.

Press $\triangleleft \triangleright$ to move the hightlight to $\mathbf{O D}$, then press ENTER.

- The following pop-up window appears under the selected item.

Example: "ST" (stereo) is selected.


## 3 Select the audio channel.

Press $\triangle \nabla$ repeatedly to select the desired audio channel, then press ENTER.

- Each time you press the button, the audio channel changes.

To clear the on-screen bar Press ON SCREEN.

When using the A.MONITOR button:

## Access the menu.

## Press A.MONITOR.

- The following pop-up window appears on the TV screen.

Example: "ST" (stereo) is selected out of 3 audio channels recorded.


## 2 Select the ouvio channel.

Press $\triangle \nabla$ or A.MONITOR repeatedly to select the desired audio channel.

- Each time you press the button, the audio channel changes.
- The pop-up window disappears if no operation is done for about 5 seconds.


## For Video CD

$\mathrm{ST} \rightarrow \mathrm{L} \rightarrow \mathrm{R} \rightarrow$ (Back to the beginning)
ST: To listen to normal stereo playback.
L: To listen to L (left) audio channel only.
R: To listen to $R$ (right) audio channel only.
For SVCD
ST $1 \rightarrow$ ST $2 \rightarrow \mathrm{~L} 1 \rightarrow \mathrm{R} 1 \rightarrow \mathrm{~L} 2 \rightarrow \mathrm{R} 2 \rightarrow$ (Back to the beginning)
ST 1/ST 2: To listen to normal stereo playback of ST 1 or ST 2 channel.
L 1/L 2: $\quad$ To listen to the $L$ (left) 1 or 2 audio channel.
R 1/R 2: To listen to the $R$ (right) 1 or 2 audio channel.

## Parental Lock

This function restricts playback of DVD VIDEO discs which contain violent（and other）scenes according to the level set by the user．For example，if a movie which includes violent scenes supports the parental lock feature，such scenes which you do not want to let children view can be cut or replaced with other scenes．
－Turn on the TV and select the VCR channel（or AV mode）．
－Slide the TV／VCR／DVD switch to the right．


## To set Parental Lock for the first time

## 1 Turn on the unit．

Press POWER（山ノノ）．

## 2 Select the DVD deck．

On the unit
Press VCR／DVD repeatedly so that the DVD indicator lights up．

## On the Remote

Press DVD so that the DVD indicator lights up．

3 Access the DVD Set Up menu．
1 Press SET UP．Press $\triangleleft D$ to select＂$\$ OTHERS＂．

## 4 Access the＂PARENTAL LOCK＂menv．

Press $\triangle \nabla$ repeatedly to move the hightlight to
＂PARENTAL LOCK＂，then press ENTER．
－The＂PARENTAL LOCK＂sub－ menu appears on the TV screen．

－It is possible to access the ＂PARENTAL LOCK＂menu only in the stop mode when a DVD disc is loaded on the unit．

## 5 Access the country code menu．

Press ENTER，then press $\Delta \nabla$ repeatedly to move the hightlight to＂COUNTRY CODE＂，then press ENTER．


## Select the country code．

Press $\Delta \nabla$ repeatedly to move the hightlight to select the country code，then press ENTER．
－See＂Country／Area Code List for Parental Lock＂（［买 pg．60）．
－The hightlight moves to＂SET
 LEVEL＂．

## 7 Select the Level．

Press ENTER，then press $\Delta \nabla$ repeatedly to move the hightlight to select the level of restriction，then press

## ENTER．

－The hightlight moves to ＂PASSWORD＂．
－The smaller the value of level is，the more restrictive the Parental Lock level is．
－Select＂NONE＂to cancel this function．


## 8 Enter the password.

Press the number keys to enter a four-digit number as your password, then press ENTER.

- The hightlight moves to "EXIT".



## Return to the OTHERS menu screen.

Press ENTER.

- The " ${ }^{\text {Y OTHERS" menu resumes. }}$


## To return to the normal screen

Press SET UP.

## NOTE:

Remember your password, or make a note of it.

## To change the settings

You can change the Parental lock settings later.

## 1 Access the Parental Lock screen.

1 Press SET UP.
2 Press $\triangleleft \triangleright$ to select " $\$ OTHERS".
3 Press $\triangle \nabla$ repeatedly to move the hightlight to "PARENTAL LOCK", then press ENTER.

- The "PARENTAL LOCK" sub-menu appears on the TV screen.
- You can only move the hightlight to "PASSWORD" or to "EXIT" before you enter your password.


## 2 Enter the password.

Press the appropriate number keys to enter 4-digit password, then press ENTER. If you enter the wrong password, "WRONG! RETRY..." appears at the bottom of the TV screen.


Enter the correct password.

## 3 Change the country code.

Press $\triangle \nabla$ to select the country code, then press ENTER.

- See "Country/Area Code List for Parental Lock" ( (0. pg. 60).
- When you change the country code, you must select the level.


## 4 Change the level.

Press $\Delta \nabla$ to select the desired level, then press ENTER.

## 5 Enter your new password.

Press the appropriate number keys to enter 4-digit password, then press ENTER.

- The password entered in the this step becomes the new password. If you do not change the password, enter the same password as in the step $\mathbf{2}$.
- Even if you want to change only the country code and/or level, do not forget to enter the password after changing the country code and/or the level. Otherwise, the new country code and/ or the level will not become effective.


## Return to the normal screen.

Press SET UP.

## NOTES:

- When you enter the wrong password more than 3 times in step $\mathbf{2}$ on the left column, the highlight moves to "EXIT" automatically and $\Delta \nabla$ does not work.
- If you forget your password, enter "8888" in step $\mathbf{2}$


## To temporarily release the Parental Lock

When you set the parental level strictly, some discs may not be played back at all. When you insert such a disc and try to play back it, the following Parental Lock screen appears on the TV screen, asking you whether you want the Parental Lock to be temporarily released or not.

## Access the password screen.

1) Place the disc in the disc tray.

- If the disc rated higher than the selected level, the following screen appears.

2. Press $\triangle \nabla$ to move the hightlight to
 "TEMPORARY RELEASE", then press ENTER.

- If you select "NOT RELEASE", you cannot play back that disc.


## 2 Enter the password.

Press the appropriate number keys to enter 4-digit password, then press ENTER.

- If you enter the wrong password, "WRONG! RETRY..." appears on the TV screen. Enter the correct password.
- If you enter the correct password, the Parental lock is released and the unit starts playback.


## NOTES:

- When you enter the wrong password more than 3 times in step 2 above, the highlight moves to "NOT RELEASE" automatically and $\triangle \nabla$ do not work. In such a case, press ENTER, then press OPEN/CLOSE $(\underline{\Delta})$ to remove the disc.
- If you forget your password, enter " 8888 " in step $\mathbf{~}$.


## Country/Area Code List for Parental Lock

| AD | Andorra |
| :--- | :--- |
| AE | United Arab Emirates |
| AF | Afghanistan |
| AG | Antigua and Barbuda |
| AI | Anguilla |
| AL | Albania |
| AM | Armenia |
| AN | Netherlands Antilles |
| AO | Angola |
| AQ | Antarctica |
| AR | Argentina |
| AS | American Samoa |
| AT | Austria |
| AU | Australia |
| AW | Aruba |
| AZ | Azerbaijan |
| BA | Bosnia and Herzegovina |
| BB | Barbados |
| BD | Bangladesh |
| BE | Belgium |
| BF | Burkina Faso |
| BG | Bulgaria |
| BH | Bahrain |
| BI | Burundi |
| BJ | Benin |
| BM | Bermuda |
| BN | Brunei Darussalam |
| BO | Bolivia |
| BR | Brazil |
| BS | Bahamas |
| BT | Bhutan |
| BV | Bouvet Island |
| BW | Botswana |
| BY | Belarus |
| BZ | Belize |
| CA | Canada |
| CC | Cocos (Keeling) Islands |
| CF | Central African Republic |
| CG | Congo |
| CH | Switzerland |
| CI | Cote d'lvoire |
| CK | Cook Islands |
| CL | Chile |
| CM | Cameroon |
| CN | China |
| CO | Colombia |
| CR | Costa Rica |
| CU | Cuba |
| CV | Cape Verde |
| CX | Christmas Island |
| CY | Cyprus |
| CZ | Czech Republic |
| DE | Germany |
| DJ | Djibouti |
| DK | Denmark |
| DM | Dominica |
| DO | Dominican Republic |
| DZ | Algeria |
| EC | Ecuador |
| EE | Estonia |
| Egypt |  |
| Western Sahara |  |
| Eritrea |  |
| AR |  |


| ES | Spain |
| :--- | :--- |
| ET | Ethiopia |
| FI | Finland |
| FJ | Fiji |
| FK | Falkland Islands (Malvinas) |
| FM | Micronesia (Federated States of) |
| FO | Faroe Islands |
| FR | France |
| FX | France, Metropolitan |
| GA | Gabon |
| GB | United Kingdom |
| GD | Grenada |
| GE | Georgia |
| GF | French Guiana |
| GH | Ghana |
| GI | Gibraltar |
| GL | Greenland |
| GM | Gambia |
| GN | Guinea |
| GP | Guadeloupe |
| GQ | Equatorial Guinea |
| GR | Greece |
| GS | South Georgia and the South Sandwich Islands |
| GT | Guatemala |
| GU | Guam |
| GW | Guinea-Bissau |
| GY | Guyana |
| HK | Hong Kong |
| HM | Heard Island and McDonald Islands |
| HN | Honduras |
| HR | Croatia |
| HT | Haiti |
| HU | Hungary |
| ID | Indonesia |
| IE | Ireland |
| II | Israel |
| IN | India |
| IO | British Indian Ocean Territory |
| IQ | Iraq |
| IR | Iran (Islamic Republic of) |
| IS | Iceland |
| IT | Italy |
| JM | Jamaica |
| JO | Jordan |
| JP | Japan |
| KE | Kenya |
| KG | Kyrgyzstan |
| KH | Cambodia |
| KI | Kiribati |
| KM | Comoros |
| KN | Saint Kitts and Nevis |
| KP | Korea, Democratic People's Republic of |
| KR | Korea, Republic of |
| KW | Kuwait |
| KY | Cayman Islands |
| KA | Kazakhstan |
| LB | Lao People's Democratic Republic |
|  | Lebanon |


| LC | Saint Lucia |
| :---: | :---: |
| LI | Liechtenstein |
| LK | Sri Lanka |
| LR | Liberia |
| LS | Lesotho |
| LT | Lithuania |
| LU | Luxembourg |
| LV | Latvia |
| LY | Libyan Arab Jamahiriya |
| MA | Morocco |
| MC | Monaco |
| MD | Moldova, Republic of |
| MG | Madagascar |
| MH | Marshall Islands |
| ML | Mali |
| MM | Myanmar |
| MN | Mongolia |
| MO | Macau |
| MP | Northern Mariana Islands |
| MQ | Martinique |
| MR | Mauritania |
| MS | Montserrat |
| MT | Malta |
| MU | Mauritius |
| MV | Maldives |
| MW | Malawi |
| MX | Mexico |
| MY | Malaysia |
| MZ | Mozambique |
| NA | Namibia |
| NC | New Caledonia |
| NE | Niger |
| NF | Norfolk Island |
| NG | Nigeria |
| NI | Nicaragua |
| NL | Netherlands |
| NO | Norway |
| NP | Nepal |
| NR | Nauru |
| NU | Niue |
| NZ | New Zealand |
| OM | Oman |
| PA | Panama |
| PE | Peru |
| PF | French Polynesia |
| PG | Papua New Guinea |
| PH | Philippines |
| PK | Pakistan |
| PL | Poland |
| PM | Saint Pierre and Miquelon |
| PN | Pitcairn |
| PR | Puerto Rico |
| PT | Portugal |
| PW | Palau |
| PY | Paraguay |
| QA | Qatar |
| RE | Réunion |
| RO | Romania |
| RU | Russian Federation |
| RW | Rwanda |


| SA | Saudi Arabia |
| :---: | :---: |
| SB | Solomon Islands |
| SC | Seychelles |
| SD | Sudan |
| SE | Sweden |
| SG | Singapore |
| SH | Saint Helena |
| SI | Slovenia |
| SJ | Svalbard and Jan Mayen |
| SK | Slovakia |
| SL | Sierra Leone |
| SM | San Marino |
| SN | Senegal |
| SO | Somalia |
| SR | Suriname |
| ST | Sao Tome and Principe |
| SV | El Salvador |
| SY | Syrian Arab Republic |
| SZ | Swaziland |
| TC | Turks and Caicos Islands |
| TD | Chad |
| TF | French Southern Territories |
| TG | Togo |
| TH | Thailand |
| TJ | Tajikistan |
| TK | Tokelau |
| TM | Turkmenistan |
| TN | Tunisia |
| TO | Tonga |
| TP | East Timor |
| TR | Turkey |
| TT | Trinidad and Tobago |
| TV | Tuvalu |
| TW | Taiwan, Province of China |
| TZ | Tanzania, United Republic of |
| UA | Ukraine |
| UG | Uganda |
| UM | United States Minor Outlying Islands |
| US | United States |
| UY | Uruguay |
| UZ | Uzbekistan |
| VA | Vatican City State (Holy See) |
| VC | Saint Vincent and the Grenadines |
| VE | Venezuela |
| VG | Virgin Islands (British) |
| VI | Virgin Islands (U.S.) |
| VN | Viet Nam |
| VU | Vanuatu |
| WF | Wallis and Futuna Islands |
| WS | Samoa |
| YE | Yemen |
| YT | Mayotte |
| YU | Yugoslavia |
| ZA | South Africa |
| ZM | Zambia |
| ZR | Zaire |
| ZW | Zimbabwe |

## About MP3 Disc

This unit can playback CD discs recorded by the MP3 format (we refer to those discs as MP3 discs in this manual).
Operations for MP3 discs are similar to those for Audio CD discs, though there are some restrictions and differences.

## What is MP3?

MP3 is the abbreviation of "MPEG1 Audio Layer 3." MPEG Audio is a compression specification that compresses the audio portion only. This image compression method is used in DVD or Video CD, etc. The audio data has been compressed into about 1/10.
On an MP3 disc, each material (song) is recorded on each Track (file), which usually belongs to a Group (folder).


This unit can recognize up to 99 Groups and up to 150 Tracks per Group.
If a disc includes more than the Tracks above limit, the unit stops detecting Tracks when the number of detected Tracks reaches the limit and ignores the subsequent Tracks. The unit also ignores any non-MP3 file in the disc.

## NOTES for making a private MP3 disc using a CD-R/ CD-RW disc: <br> - Select "ISO9660" as the disc format. <br> - Finalize the disc.

## NOTES:

- Because of the disc characteristics or recording condition, some discs may not be played back or it takes time to start playback.
- The unit does not support "packet writing" discs.
- If there are any Tracks (files) which are stored on a disc directly and do not belong to any Group (directory), the unit recognized them as belonging to an independent Group.
- The unit plays back Groups/Tracks on an MP3 disc in the alphabetical order.
- For example, if there are three title Groups [one], [two] and [three] on a disc, the playback order is [one], [three] then [two]. Tracks in a Group are played back in the same way.
- Therefore, an MP3 disc on the market may be played back in the different order from the order printed on its sleeve.


## MP3 control display

The MP3 control display appears on the TV screen and playback starts when an MP3 disc is loaded.

Total group number on Current track Total track number disc number in current group


* Elapsed playing time of current track

Elapsed playing time is only shown during playback.

## MP3 Playback

## MP3

You can search and play back desired groups and tracks using the MP3 control display．
－Turn on the TV and select the VCR channel（or AV mode）．
－Slide the TV／VCR／DVD switch to the right．


## NOTES：

$\bullet$ PLAY（ $\boldsymbol{-}$ ），STOP（■），PAUSE（II），SKIP（ $1<4$ ）and SKIP $(\$ 1)$
buttons function the same as with Audio CD discs，however， REW（＜4）and FF $\rightarrow$ ）buttons do not function for MP3 playback．
－Resume playback also does not function for MP3 playback．

## Using the MP3 control display

## 1 Turn on the unit．

Press POWER（山／l）．

## 2 Select the DVD deck．

On the unit
Press VCR／DVD repeatedly so that the DVD indicator lights up．

## On the Remote

Press DVD so that the DVD indicator lights up．

## 3 Select the mode．

Be sure to set＂FILE TYPE＂to＂AUDIO＂before loading a disc．（（L）pg．78）

## 4 Load the disc．

Press OPEN／CLOSE $(\boldsymbol{\Delta})$ on the DVD deck to open the disc tray．
2 Place the MP3 disc in the disc tray．
－For details，refer to＂Placing a Disc＂（L．pg．9）．
3 Press OPEN／CLOSE（스）on the DVD deck to close the disc tray．
－The MP3 control display appears on the TV screen when an MP3 disc is loaded．（绿 pg．62）

## 5 Select the group．

Press $\Delta \nabla$ to select the desired group，then press $\triangleright$ ．

## 6 Start playback．

Press $\triangleleft D$ to select the desired track，then press ENTER or PLAY（ $\boldsymbol{~}$ ）．
－You can skip a track across a group．Press SKIP $\longrightarrow$ ）to skip to the first track of the next group when the last track of the current group is selected．

## 7 Pause playback．

Press PAUSE（II）．
－To resume normal playback，press PLAY（ $\boldsymbol{\square}$ ）．

## 8 Stop playback．

Press STOP（■）．Press OPEN／CLOSE（步）on the DVD deck to open the disc tray，then remove the disc．


## Group/track selection

To start playback by specifying the group/track number
1 Press the number keys $(0-10,+10)$ to enter the group number.
2 Press the number keys $(0-10,+10)$ to enter the track number.

- The entered number appears in the track number indication and playback starts from the track you have specified.


## Example:

To select 3:
To select 14: Press +10 , then 4 .
To select 20: Press +10 , then 10 . Or press +10 twice, then 0 .
To select 24: Press $+10,+10$, then 4 .
To select 110: Press +10 ten times, then 10 .
To select 150: Press +10 fourteen times, then press 10 once.

## NOTE:

You cannot select 150 even if you press +10 fifteen times, then press 0 once.

## Repeat Playback

You can repeat playback of the current group, track or all groups.

- While MP3 control display is on the TV:


## 1 Select the mode.

Press REPEAT to select the desired repeat mode.

- Each time you press REPEAT, the mode changes as follows: TRACK $\rightarrow$ GROUP $\rightarrow$ ALL $\rightarrow$ OFF (No indication) $\rightarrow$ (Back to the beginning)

| TRACK: | The current track is played back <br> repeatedly. |
| :--- | :--- |
| GROUP: | All tracks of the current group are <br> played back repeatedly. |
| ALL: | All tracks are played back <br> repeatedly. |
| OFF (no indication): | Each track is played back once. |

- To stop Repeat Playback, press STOP (■).
- To cancel Repeat Playback, press REPEAT repeatedly until the repeat mode display disappears on the TV screen.
- You can also quit Repeat Playback in the following cases:
- Press OPEN/CLOSE $(\underline{\boldsymbol{A}})$ to open the disc tray.
- Turn off the unit.


## To return to the MP3 control display Press STOP (

## About JPEG Disc

This unit can playback CD discs recorded by the JPEG format (we refer to those discs as JPEG discs in this manual). Operations for JPEG discs are similar to those for Audio CD discs, though there are some restrictions and differences.

## What is JPEG?

JPEG is the abbreviation of "Joint Photographic Expert Group." JPEG is a still-picture data compression system.
On a JPEG disc, each still picture is recorded as a file, which usually belongs to a Group (folder).


This unit can recognize up to 99 Groups and up to 150 Files per Group.
If a disc includes more than the Files above limit, the unit stops detecting Files when the number of detected Files reaches the limit and ignores the subsequent Files. The unit also ignores any non-JPEG file in the disc.

## NOTES for making a private JPEG disc using a CD-R/

 CD-RW disc:- Select "ISO9660" as the disc format.
- Finalize the disc.

NOTES:

- We recommend to record a file at $640 \times 480$ resolution. (If a file has been recorded at a resolution of more than $640 \times 480$, it will take a longer time to be displayed.)
- This unit can only play back baseline JPEG files*. Progressive JPEG files* or lossless JPEG files* cannot be played back.
* Baseline JPEG format: Used for digital cameras, web, etc. Progressive JPEG format: Used for web. Lossless JPEG format: An old type and rarely used now.
- Some files on a JPEG disc may be played back distortedly.
- Because of the disc characteristics or recording condition, some discs may not be played back or it takes time to start playback.
- The unit does not support "packet writing" discs.
- If there are any Files which are stored on a disc directly and do not belong to any Group (directory), the unit recognized them as belonging to an independent Group.
- The unit plays back Groups/Files on an JPEG disc in the alphabetical order.
- For example, if there are three title Groups [one], [two] and [three] on a disc, the playback order is [one], [three] then [two]. Files in a Group are played back in the same way.
- Therefore, an JPEG disc on the market may be played back in the different order from the order printed on its sleeve.


## JPEG control display

The JPEG control display appears on the TV screen and playback starts when a JPEG disc is loaded.


## JPEG Playback

## JPEG

You can search and play back desired groups and files using the JPEG control display.

- Turn on the TV and select the VCR channel (or AV mode).
- Slide the TV/VCR/DVD switch to the right.


NOTES:
$\bullet$ PLAY $(>)$, STOP (■), PAUSE (II), SKIP $(\mid \ll)$ and SKIP $(>1)$ buttons function the same as with Audio CD discs, however, REW $(\ll)$ and FF $(>)$ buttons do not function for JPEG playback.

- Resume playback also does not function for JPEG playback.


## Using the JPEG control display

## Turn on the unit.

Press POWER (山/l).

## 2 Select the DVD deck.

On the unit
Press VCR/DVD repeatedly so that the DVD indicator lights up.

## On the Remote

Press DVD so that the DVD indicator lights up.

## 3 Select the mode.

Be sure to set "FILE TYPE" to "STILL PICTURE" before loading a disc. (0.F pg. 78)

## 4 Load the disc.

Press OPEN/CLOSE $(\underline{\boldsymbol{N}})$ on the DVD deck to open the disc tray.
2 Place the JPEG disc in the disc tray.

- For details, refer to "Placing a Disc" (LI pg. 9).

3 Press OPEN/CLOSE (스) on the DVD deck to close the disc tray.

- The JPEG control display appears on the TV screen when a JPEG disc is loaded. ([. $\mathbf{3}$ pg. 65)


## 5 Select the group.

Press $\Delta \nabla$ to select the desired group, then press $\triangleright$.

## 6 Start playback.

Press $\triangleleft D$ to select the desired file, then press ENTER or PLAY ( $\boldsymbol{~}$ ).

- You can skip a file across a group. Press SKIP $(>$ ) to skip to the first file of the next group when the last file of the current group is selected.
The slide-show playback starts from the selected file.
- After selecting a file, press PLAY ( $\boldsymbol{\nabla}$ ) to starts slide-show playback from the selected file, or press ENTER to show the selected file.
- The playback interval time of slide-show depends on the file size.


## 7 Pause playback.

Press PAUSE (II).

- To resume normal playback, press PLAY ( $\boldsymbol{\square}$ ).


## 8 Stop playback.

Press STOP (■). Press OPEN/CLOSE (스) on the DVD deck to open the disc tray, then remove the disc.


## Group/file selection

## To start slide-show playback by specifying the group/file number

Press the number keys $(0-10,+10)$ to enter the group number.
2 Press the number keys $(0-10,+10)$ to enter the file number.

- The slide-show playback starts from the file you have specified.
- To display only the selected file, then press ENTER. To start slide-show playback from that file, press ENTER again.
Example:
To select 3:
To select 14: Press +10 , then 4 .
To select 20: Press +10 , then 10 .
Or press +10 twice, then 0 .
To select 24: Press $+10,+10$, then 4 .
To select 110: Press +10 ten times, then 10 .
To select 150: Press +10 fourteen times, then press 10 once.


## Repeat Playback

You can repeat playback of the current group, file or all groups.

- While JPEG control display is on the TV:


## 1 Select the mode.

Press REPEAT to select the desired repeat mode.

- Each time you press REPEAT, the mode changes as follows: GROUP $\rightarrow$ ALL $\rightarrow$ OFF (No indication) $\rightarrow$ (Back to the beginning)

| GROUP: | All files of the current group are <br> played back repeatedly. |
| :--- | :--- |
| ALL: | All files are played back <br> repeatedly. |
| OFF (No indication): | Each file is played back once. |

## 2 Start playback.

Press PLAY ( $\boldsymbol{~}$ ).

- To stop Repeat Playback, press STOP
- To cancel Repeat Playback, press REPEAT repeatedly until the repeat mode display disappears on the TV screen.
- You can also quit Repeat Playback in the following cases:
- Press OPEN/CLOSE $(\boldsymbol{\Delta})$ to open the disc tray.
- Turn off the unit.


## To return to the JPEG control display <br> Press STOP (■).

## Zooming

Press ZOOM during playback.

- When you want to zoom the picture during slide-show playback, first press PAUSE (II), then press ZOOM.
- Each press of ZOOM changes the magnification in the following steps:
ZOOM OFF $\rightarrow$ ZOOM $1 \rightarrow$ ZOOM $2 \rightarrow$ (Back to the beginning)
- To resume normal playback, press ENTER.


## Edit From A Camcorder



VIDEO
input
Audio/video cable
(not supplied)


You can use a camcorder as the source player and your unit as the recording deck.

Slide the TV/VCR/DVD switch to the right.

## Make connections.

Connect the camcorder's AUDIO OUT and VIDEO OUT connectors to the unit's front panel AUDIO and VIDEO input connectors.

- When using a monaural camcorder, connect its AUDIO OUT connector to the AUDIO L input connector on your unit.


## 2 Select the VCR deck.

On the unit
Press VCR/DVD repeatedly so that the VCR indicator lights up.

## On the Remote

Press VCR so that the VCR indicator lights up.

## 3 Set the unit's input mode.

Press AUX (number key "0") and/or CH to select "F-1".

## 4 Set the edit mode.

See "PICTURE CONTROL" on page 75.

## 5 Engage the Record Pause mode.

Use PLAY $(>)$, REW $(\ll)$, or FF $(>$ ) to locate the point where you start recording, then press and hold PAUSE (II) and press REC ( $)$ to engage the Record Pause mode.

## 6 Start the camcorder.

Engage the Play mode of the camcorder.

## 7 Start the unit.

Press PLAY ( $\boldsymbol{>}$ ) to engage the Record mode of the unit.

## NOTES:

- All necessary cables can be obtained from your dealer.
- When you select "EDIT" to dub tapes in step 4, be sure to select "NORM" after you finish dubbing the tapes.


## Edit To Or From Another Video Recorder



You can use your unit as the source player or as the recording deck.

Slide the TV/VCR/DVD switch to the right.

## Make connections.

1 When using your unit as the source player ...
... connect its AUDIO/VIDEO OUTPUT connectors to the audio/video input connectors on another recorder.
2 When using your unit as the recording deck ... ... connect its AUDIO/VIDEO input connectors to the audio/video output connectors on another recorder.

## 2 Select the VCR deck.

On the unit
Press VCR/DVD repeatedly so that the VCR indicator lights up.

## On the Remote

Press VCR so that the VCR indicator lights up.

## 3 Set the input mode of recording deck.

With this video unit, press AUX (number key "0") and/or CH to select " $\mathrm{F}-1$ ".

- When using another recorder as the recording deck, refer to its instruction manual.


## 4 Set the edit mode.

See "PICTURE CONTROL" on page 75.

## 5 Engage the Record Pause mode of the recording deck.

Locate the point where you start recording, then engage the Record Pause mode.

## 6 Start the source player.

Engage the Play mode of the source player.

## 7 Start the recording deck.

Engage the Record mode of the recording deck.

## NOTES:

- All necessary cables can be obtained from your dealer.
- When you select "EDIT" to dub tapes in step 4, be sure to select "NORM" after you finish dubbing the tapes.
- When you use this unit as the source player for editing, be sure to set "SUPERIMPOSE" to "OFF" before starting. (lㅗㅗ pg. 75)


## Dubbing

## （from DVD to VCR）

－Turn on the TV and select the VCR channel（or AV mode）．
－Slide the TV／VCR／DVD switch to the right．


You can dub selected scenes from the DVD disc to a cassette， starting and stopping wherever you wish．
However，it is not possible to dub the copy－protected disc． In such case，＂ERROR＂appears on the front display panel．

## 1 Load a cassette and place a disc．

## For the VCR deck

Insert a cassette with the record safety tab intact．
For the DVD deck
1 Press OPEN／CLOSE（스）on the DVD deck to open the disc tray．
2 Place the disc in the disc tray．
3 Press OPEN／CLOSE（스）on the DVD deck to close the disc tray．

## 2 Prepare the VCR deck for dubbing．

## 1 Press VCR．

2 Press SP／EP to select recording speed．
3 Search for the point where you want to start dubbing by pressing PLAY $(>)$ ，FF $(\rightarrow)$ or REW $(\ll)$ then press STOP（■）．

## 3 Prepare the DVD deck for dubbing．

Press DVD．
2 Search for the point where you want to start dubbing by pressing PLAY $(\boldsymbol{>}), \mathbf{F F}(\rightarrow)$ ，REW $(\ll), \rightarrow$ or

3 Press PAUSE（II）to pause playback a little before the start point．

## 4 Start dubbing．

Press and hold REC $(\boldsymbol{\bullet})$ ，then press $\operatorname{PLAY}(\boldsymbol{\nabla})$ on the Remote．
－＂dub＂lights on the front display panel．


## 5 End dubbing．

Press STOP（■）．
－Be sure to press STOP（■）while the VCR indicator lights up on the unit．

## NOTES：

－You can dub from DVD to VCR regardless of the scan mode setting．（演 pg．80）However，the progressive signals will be converted to the interlace signals when dubbing．
－Set＂ON SCREEN GUIDE＂to＂OFF＂（ 0 需 pg．80）if you do not want to record the on－screen display for DVD discs during dubbing．
－There may be a discrepancy of several seconds between where you intend editing to start，and where it actually starts．
－The superimposed indication during the operation or dubbing is not recorded．
－Set＂PICTURE CONTROL＂to＂EDIT＂．（嫁 pg．75）

## Digital Audio Dubbing

- Turn on the TV and select the VCR channel (or AV mode).
- Slide the TV/VCR/DVD switch to the right.


You can dub selected audio from the DVD or Audio CD disc to a MD etc.
However, it is not possible to dub the copy-protected disc.
Example: Dubbing to a MD

## 1 Make connections.

Connect the coaxial cable between the unit and the digital audio device.

## 2 Place a disc and load a MD.

## For the DVD deck

1 Press OPEN/CLOSE (스) on the DVD deck to open the disc tray.
2 Place the disc in the disc tray.
3 Press OPEN/CLOSE (스) on the DVD deck to close the disc tray.

For the digital audio device
Insert a MD.

## 3 Prepare the DVD deck for dubbing.

1 Press DVD and select the audio to be dubbed.
2 Search for the point where you want to start dubbing by pressing PLAY $(\boldsymbol{>})$, FF $(>)$ or REW $(<\boldsymbol{)}$ ) then press STOP (■).
Press REW $(\lll)$ a little, then press PLAY ( $\boldsymbol{~})$ to start playback.
4 Press PAUSE (II) to pause playback a little before the start point.

## 4 Prepare the audio device for dubbing.

Select the input mode.

## 5 Start dubbing.

Press PLAY ( $\boldsymbol{>}$ ) to start playback on the DVD deck.
Start recording on the audio device.

## 6 End dubbing.

Stop recording on the audio device. Then press STOP (■) to stop playback on the DVD deck.

## NOTES:

- There may be a discrepancy of several seconds between where you intend editing to start, and where it actually starts.
- You can also dub a Video CD or SVCD. Set "DIGITAL AUDIO OUTPUT" to "PCM ONLY". (㖊 pg. 78)


## Remote Control Functions

## Remote A/B/C/D Code Switching

The Remote is capable of controlling four JVC video units independently. Each of units can respond to one of four codes (A, B, C or D). The remote control is preset to send A code signals because your unit is initially set to respond to A code signals. You can easily modify your unit to respond to $\mathrm{B}, \mathrm{C}$ or D code signals.

Before performing the following steps:
Slide the TV/VCR/DVD switch to the right.


## On the Remote

Keep pressing VCR down during steps $\boldsymbol{1}-\mathbf{2}$.

## 1 Change the remote control code.

Press the number key " $\mathbf{1}$ " for $A, ~ " \mathbf{2}$ " for $B, ~ " \mathbf{3}$ " for $C$ or " 4 " for D.

## 2 Set the remote control code.

Press ENTER to set the code.

## On the unit

## 3 Turn off the unit.

Press POWER (山/l).

## 4 Display the code.

Press PLAY ( ) on the unit for over 5 seconds while the unit is turned off. The code currently set appears on the front display panel.

- If the code displayed on the front display panel is different from the code set on the Remote, go to step $\mathbf{5}$.


## 5 Change the unit's code.

Press STOP (■) on the Remote. The code currently set on the Remote will be applied to the unit.

## NOTE:

Even if you unplug the end of the mains power cord from the mains, the remote control code is not back to A. However, the batteries are removed from the Remote, the remote control code is back to A .

# Connecting To A Dolby Digital Decoder or An Amplifier With A Built-in DTS 

## (DVD deck only)

These instructions enable you to connect your unit to dolby digital decoder or amplifier with a built-in DTS.


## Make connections.

Connect the coaxial cable between the unit and the Dolby Digital decoder or amplifier with a built-in DTS.

## NOTES:

- For Dolby digital sound, set "DIGITAL AUDIO OUTPUT" to "DOLBY DIGITAL/PCM". (LT P pg. 78)
- For DTS sound, set "DIGITAL AUDIO OUTPUT" to "STREAM/ PCM". ( (IF pg. 78)


## CAUTIONS:

- This unit has a dynamic range of more than 80 dB with regards to its Hi - Fi audio capability. It is recommended that you check the maximum level if you are going to listen to the $\mathrm{Hi}-\mathrm{Fi}$ audio signals through a stereo amplifier. A sudden surge in the input level to the speakers may damage them.
- Some speakers and televisions are specially shielded to prevent television interference. If both are of the non-shielded type, do not place the speakers adjacent to the TV set as this can adversely affect the video playback picture.


## Mode Set <br> (VCR deck)

- Turn on the TV and select the VCR channel (or AV mode).
- Slide the TV/VCR/DVD switch to the right.


You can change various mode settings on the Function Set screen by following the procedure described below. - For each mode setting, see pages 75 to 76 .

## Turn on the unit.

Press POWER (山/l).

## 2 Select the VCR deck.

On the unit
Press VCR/DVD repeatedly so that the VCR indicator lights up.

## On the Remote

Press VCR so that the VCR indicator lights up.

## 3 Access the Main Menu screen.

Press SET UP.

## 4 Access the Function Set screen.

Press $\Delta \nabla$ to move the highlight bar (arrow) to "FUNCTION SET", then press ENTER or $D$.

```
->FUNCTION SET
    TUNER SET
    INITIAL SET
PRESS ( \(\boldsymbol{\Lambda}, \boldsymbol{\nabla}\) ), THEN (ENTER) PRESS (SET UP) TO END
```


## 5 Select the mode.

Press $\Delta \nabla$ to move the highlight bar (arrow) to the item you want to change.

| FUNCTION |  |
| :--- | ---: |
| $\rightarrow$ PICTURE CONTROL | NORM |
| SUPERIMPOSE | ON |
| AUTO SP $\rightarrow$ EP TIMER | OFF |
| VIDEO STABILIZER | OFF |
| BLUE BACK | ON |
| 2ND AUDIO RECORD | OFF |
| NEXT PAGE |  |
| SELECT WITH ( $\Delta$, , $\rightarrow$ (ENTER) |  |
| PRESS (SET UP) TO END |  |



6 Select the mode setting.
Press ENTER or $\triangleright$.

## 7 Return to the normal screen.

Press SET UP.

* The default setting is bold in the table below.

| PICTURE CONTROL NORM EDIT SOFT SHARP | This feature helps you to adjust the playback picture quality according to your preference. Normally select "NORM". <br> NORM: Picture quality is adjusted automatically. <br> EDIT: Minimizes picture degradation during editing (recording and playback). <br> SOFT: Reduces image coarseness when viewing overplayed tapes containing a lot of noise. <br> SHARP Clearer, sharper-edged picture when viewing images with lots of flat, same-coloured surfaces such as cartoons. <br> NOTES: <br> - When you select "EDIT", "SOFT" or "SHARP", the selected mode will not change until you select another mode. <br> - When you select "EDIT" to dub tapes, be sure to select "NORM" after you finish dubbing the tapes. |
| :---: | :---: |
| SUPERIMPOSE ON OFF | When this function is set to "ON", various operational indicators appear on the TV screen. Messages appear in the selected language. ( <br> NOTES: <br> - When you use this unit as the source player for editing, be sure to set "SUPERIMPOSE" to "OFF" before starting. <br> - During playback, the operation mode indicators may be disturbed depending on the type of tape being used. |
| $\begin{aligned} & \text { AUTO SP } \rightarrow \text { EP TIMER } \\ & \text { ON } \\ & \text { OFF } \end{aligned}$ | When this function is set to "ON", the unit automatically switches to EP mode to allow complete recording if there is not enough tape to record the entire program while timer-recording in SP mode. <br> For Example: <br> Recording a program of 140 minutes in length onto a 120-minute tape <br> Total 140 minutes <br> Make sure you set this function to "ON", before the timer-recording starts. <br> NOTES: <br> - If you have programed the unit to timer-record 2 or more programs, the second program and those thereafter may not fit on the tape if you set "AUTO SP $\rightarrow E P$ TIMER" to "ON". In this case, make sure the mode is not engaged, then set the tape speed manually during timer programing. <br> - In order to ensure that the recording fits on the tape, this feature may leave a slight nonrecorded section at the end of the tape. <br> - There may be some noise and sound disturbance at the point on the tape where the unit switches from SP to EP mode. <br> - The Auto SP $\rightarrow$ EP Timer feature is not available during ITR (Instant Timer Recording), and the feature will not work properly on the following tapes: $\mathrm{T}(\mathrm{ST})-30, \mathrm{~T}(\mathrm{ST})-60, \mathrm{~T}(\mathrm{ST})-90$, and T(ST)-120 |

* The default setting is bold in the table below.

| - VIDEO STABILIZER ON OFF | When this function is set to "ON", you can automatically correct vertical vibration in the picture when playing back unstable recordings made on another recorder. <br> NOTES: <br> - When you finish viewing a tape, be sure to set this function to "OFF". <br> - Regardless of the setting, this function has no effect during recording and during special effects playback. <br> - The on-screen display may jitter vertically when this function is set to "ON". <br> - To watch recordings with close-caption, set this function to "OFF". |
| :---: | :---: |
| $\begin{aligned} & \text { BLUE BACK } \\ & \text { ON } \\ & \text { OFF } \end{aligned}$ | When this function is set to "ON", the TV screen becomes all blue when receiving a channel not in use. <br> NOTE: <br> When you want to receive an unstable channel with poor signals, set this function to "OFF". |
| 2ND AUDIO RECORD ON OFF | - When this function is set to "ON"; <br> If a SAP program is received, the SAP audio is recorded on both the normal and Hi-Fi tracks. The main audio is not recorded. <br> If a non-SAP program is received, the main audio is recorded on both the $\mathrm{Hi}-\mathrm{Fi}$ and normal tracks. <br> - When this function is set to "OFF", the SAP audio cannot be recorded. <br> NOTES: <br> When the channel is changed on the unit; <br> - The "STEREO" indicator appears on the screen for about 5 seconds if the program is a stereo broadcast. <br> - The "SAP" indicator appears on the screen for about 5 seconds if the program is a SAP broadcast. <br> - Both indicators appear when a stereo program is accompanied by SAP sound. |
|  | This unit can record two sound tracks simultaneously (normal and Hi-Fi) on a Hi-Fi stereo tape. You can select the sound track(s) to listen to while playing back a Hi-Fi stereo tape. In addition, when playing back a prerecorded tape containing two separate audio programs on the Hi-Fi tracks, you can choose either one by selecting either "HI-FI L" or "HI-FI R". <br> NOTES: <br> - While playing back a monaural tape, sounds on the normal track will be heard regardless of this setting. <br> - You can also use the A.MONITOR button on the Remote to select the desired monitor sound. ([5 pg. 32) |
| $\begin{aligned} & \text { AUTO POWER OFF } \\ & \text { 3H } \\ & \text { OFF } \end{aligned}$ | When this function is set to " $3 \mathrm{H}^{\prime}$, the unit is turned off automatically if no operation is done within 3 hours. "AUTO POWER OFF IN 3 MIN" appears on the screen 3 minutes before the unit is turned off. |

## Mode Set <br> （DVD deck）

－Turn on the TV and select the VCR channel（or AV mode）．
－Slide the TV／VCR／DVD switch to the right．


You can change various mode settings on the Mode Set screen by following the procedure described below．
－For each mode setting，see pages 78 to 80.

| A LANGUAGE | MENU LANGUAGE（［5 pg．22） <br> AUDIO LANGUAGE（定 pg．22） <br> SUBTITLE（ 5 고 pg．22） <br> ON SCREEN LANGUAGE（忬 pg．21） |
| :---: | :---: |
| $\square$ PICTURE | MONITOR TYPE（ 6 Pg．18，78） <br> PICTURE SOURCE（以 SCREEN SAVER（ 0 고 pg．78） FILE TYPE（ 0 고 pg．78） |
| O AUDIO | DIGITAL AUDIO OUTPUT（［5．pg．78） DOWN MIX（ $\left[\begin{array}{ll}\text { po pg．79）}\end{array}\right.$ <br> D．RANGE COMPRESSION（노 pg．79） |
| $\eta$ OTHERS | RESUME（ 6 雪 pg．80） <br> ON SCREEN GUIDE（0．3 pg．80） <br> PARENTAL LOCK（（ 5 pg．58） |

－The procedure shows how to set＂RESUME＂to＂ON＂ on the DVD Set Up menu screen as an example．

## 1 Turn on the unit．

Press POWER（山／l）．

## 2 Select the DVD deck．

On the unit
Press VCR／DVD repeatedly so that the DVD indicator lights up．

On the Remote
Press DVD so that the DVD indicator lights up．

## 3 Access the DVD Set Up menu screen．

1 Press SET UP．
2 Press $\triangleleft D$ to select ＂$y$ OTHERS＂．
－Each time you press the button，the setup menus change as follows；


A LANGUAGE $\rightarrow \square$ PICTURE $\rightarrow$ AUDIO $\rightarrow y$ OTHERS $\rightarrow$（Back to the beginning）

## 4 Select the mode．

Press $\triangle \nabla$ to move the hightlight to＂RESUME＂，then press ENTER．

## 5 Select the mode setting．

Press $\Delta \nabla$ to select＂ON＂，then press ENTER．

## 6 Return to the normal screen．

Press SET UP．

| MONITOR TYPE 16:9 4:3 LB 4:3 PS | You can select the monitor type depending the TV used when you play back DVD VIDEO discs recorded for wide-screen TVs. For more details, refer to "Monitor Set (DVD deck)" ( (家 pg. 18) |
| :---: | :---: |
| PICTURE SOURCE AUTO FILM VIDEO | You can obtain optimal picture quality by selecting whether the content on the disc is processed by field (video source) or by frame (film source). <br> Normally set to "AUTO". <br> AUTO: Used to play back a disc containing both video and film source materials. This unit recognizes the picture type (film or video source) of the current disc according to the disc information. <br> FILM: $\quad$ Suitable for playing back a film or progressive source disc. <br> VIDEO: Suitable for playing back a video source disc with relatively a few moments. <br> - If the playback picture is unclear or noisy, or the oblique lines of the picture are rough, try to change to other modes. |
| $\begin{aligned} & \text { SCREEN SAVER } \\ & \text { ON } \\ & \text { OFF } \end{aligned}$ | The TV screen may be burned out if a static picture is displayed for a long time. When this function is set to "ON", the unit automatically activates the screen saver function if a static picture, such as an on-screen display or menu is displayed for over 5 minutes. |
| FILE TYPE AUDIO STILL PICTURE | You can select files to play back, when both MP3 files and JPEG files are recorded on a disc. <br> AUDIO: <br> Select this to play back MP3 files. <br> STILL PICTURE: Select this to play back JPEG files. |

## Audio Settings

* The default setting is bold in the table below.

DIGITAL AUDIO OUTPUT
PCM ONLY
DOLBY DIGITAL/PCM
STREAM/PCM

Set to the appropriate mode according to the type of the device connected to DIGITAL AUDIO OUT connector on the rear of unit.
It is not necessary to set this mode when you connect no device to DIGITAL
AUDIO OUT connector.
PCM ONLY:
Select this when you connect the unit's DIGITAL AUDIO OUT connector to the linear PCM digital input connector of other audio device.
DOLBY DIGITAL/PCM:
Select this when you connect the unit's DIGITAL AUDIO OUT connector to the digital input connector of a Dolby Digital decoder or an amplifier with a built-in Dolby Digital decoder.
STREAM/PCM:
Select this when you connect the unit's DIGITAL AUDIO OUT connector to the digital input connector of an amplifier with a builtin DTS, Dolby Digital, or MPEG multichannel decoder.

DOWN MIX
DOLBY SURROUND
STEREO

Set to the appropriate mode according to your audio system when you play back a DVD VIDEO disc recorded with surround multichannel audio. This setting affects only the analogue audio output signal from the AUDIO OUTPUT connectors (DVD) when playing back a DVD VIDEO disc recorded with surround multichannel audio.

DOLBY SURROUND:
Select this when you enjoy multichannel surround audio by connecting the unit's analogue AUDIO OUTPUT connector (DVD) to a surround decoder or an internal amplifier.
STEREO: Select this when you enjoy conventional 2-channel stereo audio by connecting the unit's analogue AUDIO OUTPUT connectors (DVD) to a stereo amplifier/receiver or TV, or when you dub audio of a DVD VIDEO disc recorded with surround audio to your MD, cassette, etc.

## NOTE:

The "DOWN MIX" function does not work when the 3D Phonic function is activated. (涫 pg. 46)
D. RANGE COMPRESSION AUTO
ON

You can compress the dynamic range (the difference between the loudest and quietest audio signals) of the sound when listening to the sound at a low volume or at night.
This function is available with DVD VIDEO discs recorded with the Dolby Digital format. Set to the appropriate mode according to the number of channels recorded.

AUTO: Audio is played back with channels other than Dolby Digital channel 1 or 2 compressed.
ON: Audio is played back with all channel compressed.

## NOTES:

- This function works only when playing back a disc recorded with Dolby Digital format.

The setting is not effective for other discs.

- This function does not work when the 3D Phonic function is activated. (0. pg . 46)

| Playback discs | Output |  |  |
| :---: | :---: | :---: | :---: |
|  | STREAM/PCM | DOLBY DIGITAL/PCM | PCM ONLY |
| DVD VIDEO with $48 \mathrm{kHz}, 16 / 20 / 24$ bit linear PCM | 48 kHz , 16 bit linear PCM |  |  |
| DVD VIDEO with DTS | DTS bitstream | $44.1 \mathrm{kHz}, 16$ bit stereo linear PCM |  |
| DVD VIDEO with Dolby Digital | Dolby Digital bitstream |  | $48 \mathrm{kHz}, 16$ bit stereo linear PCM |
| Audio CD/Video CD | $44.1 \mathrm{kHz}, 16$ bit stereo linear PCM |  |  |
| Audio CD with DTS | DTS bitstream | $44.1 \mathrm{kHz}, 16$ bit stereo linear PCM |  |
| MP3 disc | Linear PCM |  |  |

## NOTES:

- The unit is not equipped with the DTS 5.1 channel decoding function.
- When you play back a DVD VIDEO or Audio CD disc with DTS, use a DTS decoder to get correct signals from your speakers. Never use the unit's analog output connectors, which output incorrect signals that may damage your speakers.
- If you connect the analog outputs and digital outputs simultaneously, be sure to select the source of the amplifier correctly, or set the level control of the amplifier connected to the analog outputs to minimum.

| RESUME ON OFF | When this function is set to＂ON＂，you can use the resume function． （ 5 洔 pg．45） <br> ON：You can start playback from the resume point of the <br> OFF：Ylaced disc．$\quad$ You cannot use the resume function． <br> NOTE： <br> This function is not available for Audio CDs and MP3 discs． |
| :---: | :---: |
| ON SCREEN GUIDE ON OFF | When this function is set to＂ON＂，the unit can display＂on－screen guide＂icons or characters which shows the conditions of the unit or disc． |

## Child Lock

－Turn on the TV and select the VCR channel（or AV mode）．
－Slide the TV／VCR／DVD switch to the right．
You can disable the unit＇s operation．

## Set the Child Lock．

Press and hold POWER（山／ノ）on the Remote for more than 10 seconds while the unit is turned on．The unit turns off，and＂CL＂appears on the front display panel．

－To release the child lock，press and hold POWER（山／l）on the Remote until the unit turns on．

## NOTES：

－When the child lock function is in use，keep the Remote out of the children＇s reach．
－Timer recording programs will be performed even if the child lock function activated．

## Scan Mode Set

## （DVD deck）

－Turn on the TV and select the VCR channel（or AV mode）．
－Slide the TV／VCR／DVD switch to the right．
This unit supports the progressive scan system（eg．480p＊） as well as the conventional interlaced scan system（eg． 480i＊）．
If your TV equipped with component video connectors supports the progressive video input，you can enjoy a high quality picture by setting the progressive scan mode to active．
－Refer also to the instruction manuals supplied with your TV．
－If your TV equipped with component video connectors does not support the progressive video input，do not change the scan mode to the＂PROGRESSIVE＂．
＊480p and 480i indicate the number of scanning lines and scanning format of an image signal．
－480p indicates 480 scanning lines with progressive format．
－480i indicates 480 scanning lines with interlaced format．

## 1 Swith the mode．

During playback or while stopped，press and hold PROGRESSIVE SCAN on the unit or DVD on the Remote for more than 3 seconds，to change the scan mode between Progressive and Interlace mode．
－When the Progressive scan mode is selected，the Progressive mode indicator（ $\mathbb{\square}$ ）lights up on the front display panel．

Before requesting service for a problem, use this chart and see if you can repair the trouble yourself. Small problems are often easily corrected, and this can save you the trouble of sending your unit off for repair.

## POWER

| SYMPTOM | POSSIBLE CAUSE | CORRECTIVE ACTION |
| :--- | :--- | :--- |
| 1. No power is supplied to the unit. | • The AC power cord is disconnected. | Connect the AC power cord. |
| 2. The Remote won't function. | • The batteries are discharged. | Replace the dead batteries with new ones. |

## TAPE TRANSPORT (VCR deck)

| SYMPTOM | POSSIBLE CAUSE | CORRECTIVE ACTION |
| :--- | :--- | :--- |
| 1. During recording, the tape does not <br> run. The counter display blinks on the <br> front display panel. | • The unit is in the Record Pause mode. | Press PLAY ( - to resume recording. |
| 2. The tape will not rewind or fast- <br> forward. | - The tape is already fully rewound or <br> fast-forwarded. | Check the cassette. |

## PLAYBACK (VCR deck)

| SYMPTOM | POSSIBLE CAUSE | CORRECTIVE ACTION |
| :---: | :---: | :---: |
| 1. The VCR deck can not be operated. | - The VCR deck is not selected. | On the unit Press VCR/DVD repeatedly so that the VCR indicator lights up. <br> On the Remote Press VCR so that the VCR indicator lights up. |
| 2. The playback picture does not appear while the tape is running. | If you are using the RF connection, - the TV receiver's channel selector is not set to the VCR channel. <br> - the unit's VCR channel has not been correctly set. <br> - If you are using the AV, S-VIDEO* or Component Video* connection, the TV receiver is not set to the AV mode. <br> * (DVD deck only) | If you are using the RF connection, <br> - set the TV receiver to the VCR channel. <br> - perform "Set the VCR channel." <br> ([定 pg. 14). <br> If you are using the AV or S-VIDEO*, Component Video* connection, set the TV to its AV mode. <br> * (DVD deck only) |
| 3. Noise appears during visual search. | - This is normal. |  |
| 4. Noise appears during normal playback. | - The automatic tracking mode is engaged. | Try manual tracking. (LIF pg. 32) |
| 5. The playback picture is blurred or interrupted while TV broadcasts are clear or "USE CLEANING CASSETTE" message appears on the screen. | - The video heads may be dirty. | Use a dry cleaning cassette ECL-3F, or consult your JVC dealer. |
| 6. Breaks are noticeable in $\mathrm{Hi}-\mathrm{Fi}$ soundtrack. | - The automatic tracking mode is engaged. | Try manual tracking. (LT Fg p. 32) |

## PLAYBACK（DVD deck）

| SYMPTOM | POSSIBLE CAUSE | CORRECTIVE ACTION |
| :---: | :---: | :---: |
| 1．The button do not work． | －The operation is prohibited on the placed disc． | － |
| 2．The DVD deck can not be operated． | －The DVD deck is not selected． | On the unit Press VCR／DVD repeatedly so that the DVD indicator lights up． <br> On the Remote Press DVD so that the DVD indicator lights up． |
| 3．＂ 8 ＂appears on the TV screen． | －The operation is prohibited on the placed disc． | － |
| 4．＂REGION CODE ERROR！＂appears on the TV screen． | －The disc＇s region number does not match that of the unit． | Use the discs whose region number includes＂ALL＂or＂ 1 ＂．（㖊 pg．7） |
| 5．The disc cannot be played back． | －The disc＇s region number does not match that of the unit． <br> －This type of the disc cannot be played back． <br> －The disc is not placed properly． <br> －The Parental Lock is engaged，and the placed disc is rated higher than the set level． | Use the discs whose region number includes＂ALL＂or＂ 1 ＂．（馆 pg．7） <br>  <br> Remove the disc，then place the disc properly in the disc tray．（LT pg．9， ＂Placing a Disc＂） <br> Release the Parental Lock temporarily （ 0 霜 pg．59），or change the set level （（1）pg．59）． |
| 6．The language is not played back as you set． | －The disc does not contain the language you set． | － |
| 7．Changing audio／subtitle language is not possible． | －The disc does not contain the audio／ subtitle in the multiple languages． | With some discs，the language should be set on the top menu．（演 pg．43） |
| 8．The subtitles do not appears on the TV screen． | －The disc does not contain the subtitles． <br> －The subtitle display is set to off． <br> －A－B Repeat Playback is in progress． （实 pg．51） | Set the subtitles display to on．（LI Pg．54） <br> The subtitles recorded around A－B point may not appear． |
| 9．Angle cannot be changed． | －The scene is not recorded from the multiple angles． | － |

## MP3 Playback (DVD deck)

| SYMPTOM | POSSIBLE CAUSE | CORRECTIVE ACTION |
| :--- | :--- | :--- |
| 1. A disc cannot be played. | $\begin{array}{l}\text { - No MP3 files are recorded to the disc. } \\ \text { - MP3 files do not have the correct file } \\ \text { extension in their file names. }\end{array}$ | $\begin{array}{l}\text { Replace the disc. } \\ \text { Add correct file extension (.mp3, .MP3 or } \\ \text { any uppercase and lowercase combination } \\ \text { such as ".Mp3") to their file names. } \\ \text { Replace the disc. (Record MP3 files using } \\ \text { a compliant application.) }\end{array}$ |
| - MP3 files are not recorded in a format |  |  |
| compliant with ISO 9660 Level 1 or 2. |  |  |
| - The different types of files are recorded |  |  |
| to the disc. |  |  |\(\left.\quad \begin{array}{l}The disc which contains the different types <br>

of files may not be played because of its <br>
disc characteristics or recording <br>
conditions.\end{array}\right]\)

## JPEG Playback (DVD deck)

| SYMPTOM | POSSIBLE CAUSE | CORRECTIVE ACTION |
| :--- | :--- | :--- |
| 1. A disc cannot be played. | • No JPEG files are recorded to the disc. <br> • JPEG files do not have the correct file <br> extension in their file names. | Replace the disc. <br> Add correct file extension (.jpg, .jpeg, <br> JPG, .JPEG or any uppercase and <br> lowercase combination such as ".jpg") to <br> their file names. |
| 2. Not JPEG files but MP3 files are played <br> back. | • JPEG files are not recorded in a format <br> compliant with ISO 9660 Level 1 or 2. | Replace the disc. (Record JPEG files using <br> a compliant application.) |

## RECORDING (VCR deck)

| SYMPTOM | POSSIBLE CAUSE | CORRECTIVE ACTION |
| :--- | :--- | :--- |
| 1. Recording cannot be started. | - There is no cassette loaded, or the <br> cassette loaded has had its record safety <br> tab removed. | Insert a cassette, or using adhesive tape, <br> cover the hole where the tab was <br> removed. |
| 2. TV broadcasts cannot be recorded. | - "F-1" has been selected as the input <br> mode. | Set to the desired channel. |
| 3. Tape-to-tape editing is not possible. | - The source (another video recorder, <br> camcorder) has not been properly <br> connected. | Confirm that the source is properly <br> connected. |
| - All necessary power switches have not |  |  |
| been turned on. |  |  |
| - The input mode is not correct. |  |  |$\quad$| Confirm that all units' power switches are |
| :--- |
| turned on. |
| Set the input mode to "F-1". |

## TIMER RECORDING (VCR deck)

| SYMPTOM | POSSIBLE CAUSE | CORRECTIVE ACTION |
| :---: | :---: | :---: |
| 1. Timer recording won't work. | - The clock and/or the timer have been set incorrectly. <br> - The timer is not engaged. | Re-perform the clock and/or timer settings. <br> Press TIMER and confirm that " $๑$ " is displayed on the front display panel. |
| 2. Timer programing is not possible. | - Timer recording is in progress. | Timer programing can't be performed while a timer recording is in progress. Wait until it finishes. |
| 3. " $(\square$ " on the front display panel won't stop blinking. | - The timer is engaged but there's no cassette loaded. <br> - The loaded cassette has had its record safety tab removed. | Load a cassette with the record safety tab intact. <br> Remove the cassette and cover the hole with adhesive tape, or insert a cassette with the record safety tab intact. |
| 4. " $($ ", " $\bigcirc$ " and " $\triangleright$ " on the front display panel won't stop blinking. | - The end of the tape was reached during timer recording. | The program may not have been recorded in its entirety. Next time make sure you have enough time on the tape to record the entire program. |
| 5. " $\bigcirc$ " blinks for 10 seconds and the Timer mode is disengaged. | - TIMER has been pressed when there are no programs in memory, or the timer record information has been programed incorrectly. | Check the programed data and reprogram as necessary, then press TIMER again. |
| 6. $\qquad$ panel won't stop blinking. | - The end of the tape was reached during Instant Timer Recording. | The program may not have been recorded in its entirety. Next time make sure you have enough time on the tape to record the entire program. |
| 7. " $\mathbb{\wedge}$ ", " $\bigcirc$ " and " $\triangleright$ " on the front display panel won't stop blinking. | - The Satellite Auto Recording mode is engaged but there is no cassette loaded. <br> - The loaded cassette has had its record safety tab removed. <br> - The end of the tape was reached during Satellite Auto Recording. | Load a cassette with the record safety tab intact. <br> Remove the cassette and cover the hole with adhesive tape, or insert a cassette with the record safety tab intact. <br> The program may not have been recorded in its entirety. Next time make sure you have enough time on the tape to record the entire program. |

## OTHER PROBLEMS

| SYMPTOM | POSSIBLE CAUSE | CORRECTIVE ACTION |
| :---: | :---: | :---: |
| 1. The image of TV broadcast appears distorted on the TV screen. | - The unit leaves turned on and the DVD deck is selected. | Turn off the unit, or press VCR to select the VCR deck, then press TV/VCR so that the VCR indicator disappears from the front display panel. |
| 2. Whistling or howling is heard from the TV during camcorder recording. | - The camcorder's microphone is too close to the TV. <br> - The TV's volume is too high. | Position the camcorder so its microphone is away from the TV. <br> Turn the TV's volume down. |
| 3. When scanning channels, some of them are skipped over. | - Those channels have been designated to be skipped. | If you need the skipped channels, restore them. (馆 pg. 27) |
| 4. The channel cannot be changed. | - Recording is in progress. | Press PAUSE (II) to pause the recording, change channels, then press PLAY ( $\boldsymbol{\bullet}$ ) to resume recording. |
| 5. Channel settings that were made manually seem to have changed or disappeared. | - After the manual settings were made, Auto Channel Set was performed. | Perform manual setting again. |
| 6. Even though Auto or Semiauto Clock Set has been performed, the clock is incorrect. | - The clock setting data received from the host channel is incorrect. | Select a different host channel during "Semiauto Clock Set" (0.5 pg. 25), or perform "Manual Clock Set" (LI pg. 25). |

## ATTENTION

This unit contains microcomputers. External electronic noise or interference could cause malfunctioning. In such cases, switch the unit off and unplug the AC power cord. Then plug it in again and turn the unit on. Take out the cassette. After checking the cassette, operate the unit as usual.

## Tray Lock

You can lock the disc tray to prohibit the unwanted disc ejection by children.

## To lock the disc tray.

While the unit is turned off, press and hold ■, then press $\downarrow / I$ on the unit. "LOCK" appears on the front display panel.

- If you try to eject the discs, "LOCK" appears and indicates that tray is locked.

To unlock tray
While the unit is turned off, press and hold $山 / I$, then press $\boldsymbol{\Delta}$ on the unit. "UNLOCK" appears on the display panel.

## PLAYBACK

Q. What happens if the end of the tape is reached during playback or search?
A. The tape is automatically rewound to the beginning.
Q. During search, slow, still and frame-by-frame playback, I can't hear any audio. What's the problem?
A. This is normal.
$Q$. Can the unit indefinitely remain in the still mode?
A. No. It stops automatically after 5 minutes to protect the heads.
Q. When returning from search to normal playback, the picture is disturbed. Should I be concerned about this?
A. No, it is normal.
Q. Noise bar appear during search. What's the problem?
A. This is normal.
Q. Sometimes, during Index Search, the unit can't find the program I want to see. Why not?
A. There may be index codes too close together.

## RECORDING

Q. When I pause and then resume a recording, the end of the recording before the pause is overlapped by the beginning of the continuation of recording. Why does this happen?
A. This is normal. It reduces distortion at the pause and resume points.
Q. Can the unit indefinitely remain in the RecordPause mode?
A. No. The unit goes to its Stop mode automatically after 5 minutes to protect the heads.
Q. What happens if the tape runs out during recording?
A. The unit stops recording, and " $\bigcirc$ " and " $\perp$ " on the front display panel won't stop blinking.

## TIMER RECORDING

Q. " $\bigcirc$ " and " $(\bigcirc$ " remain lit on the front display panel. Is there a problem?
A. No. This is a normal condition for a timer recording in progress.
Q. Can I program the timer while I'm watching a tape or a TV broadcast?
A. You won't see the picture as it is replaced by the on-screen menu, but the audio from the program or tape you're viewing can be heard.

## GENERAL

Power requirement : AC $120 \mathrm{~V} \sim, 60 \mathrm{~Hz}$
Power consumption
Power on : 22 W
Power off : 2.0 W
Temperature
Operating $\quad: 5^{\circ} \mathrm{C}$ to $40^{\circ} \mathrm{C}\left(41^{\circ} \mathrm{F}\right.$ to $\left.104^{\circ} \mathrm{F}\right)$
Storage $\quad:-20^{\circ} \mathrm{C}$ to $60^{\circ} \mathrm{C}\left(-4^{\circ} \mathrm{F}\right.$ to $\left.140^{\circ} \mathrm{F}\right)$
Operating position : Horizontal only
Dimensions (WxHxD)
: $435 \mathrm{~mm} \times 93 \mathrm{~mm} \times 272 \mathrm{~mm}$
Weight : 4.1 kg
Format : VHS NTSC standard
Maximum recording time
$\begin{array}{ll}\text { (SP) } & : 210 \mathrm{~min} \text {. with ST-210 video cassette } \\ \text { (EP) } & : 630 \mathrm{~min} \text {. with ST-210 video cassette }\end{array}$

## VIDEO/AUDIO (VCR deck)

Signal system
: NTSC colour signal and EIA monochrome signal, 525 lines/60 fields
Recording system : DA4 (Double Azimuth) head helical scan system
Signal-to-noise ratio: 45 dB
Horizontal resolution
: 230 lines
Frequency range : 70 Hz to $10,000 \mathrm{~Hz}$ (Normal audio) 20 Hz to $20,000 \mathrm{~Hz}$ (Hi-Fi audio)
Input/Output : RCA connectors:
IN x 1, OUT x 1

## VIDEO/AUDIO (DVD deck)

Signal system : NTSC
Applicable disc : DVD $(12 \mathrm{~cm}, 8 \mathrm{~cm})$ CD (12 cm, 8 cm )
Audio characteristics
DVD $\quad: 4 \mathrm{~Hz}-22 \mathrm{KHz}$
Frequency response
CD $: 4 \mathrm{~Hz}-20 \mathrm{KHz}$
S/N Ratio $\quad: 90 \mathrm{~dB}$
Harmonic distortion
: 0.1 \%
Wow and flutter : Below Measurable Level
Dynamic range : 90 dB
Output
Component-Y : (RCA) $1.0 \mathrm{Vp}-\mathrm{p} / 75$ ohm
Component- $\mathrm{P}_{\mathrm{B}} / \mathrm{PR}_{\mathrm{R}}$
: (RCA) $0.7 \mathrm{Vp}-\mathrm{p} / 75$ ohm
Audio : (RCA) 2 Vrms, 1 Kohm
Digital Audio : (COAXIAL) $0.5 \mathrm{Vp}-\mathrm{p} / 75$ ohm

## TUNER

Tuning system : Frequency synthesized tuner
Channel coverage
VHF : Channels 2 - 13
UHF : Channels 14-69
CATV : 113 Channels
RF output : Channel 3 or 4 (switchable; preset to Channel 3 when shipped)
75 ohms, unbalanced

## TIMER

Clock reference : Quartz
Program capacity : 1-year programmable timer/ 8 programs
Memory backup time
: Approx. 5 seconds

## ACCESSORIES

Provided accessories
: RF cable, Infrared remote control unit, "AA" battery x 2

Specifications shown are for SP mode unless otherwise specified.
E.\& O.E. Design and specifications subject to change without notice.
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## HOW TO LOCATE YOUR JVC SERVICE CENTER

TOLL FREE: 1-800-537-5722

## http://www.jvc.com

## Dear Customer,

In order to receive the most satisfaction from your purchase, please read the instruction booklet before operating the unit. In the event that repair is necessary, or for the address nearest your location within the Continental United States, please call 1-800-537-5722 for your nearest authorized servicer or visit our website at www.JVC.com. Remember to retain your Bill of Sale for Warranty Service.

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Sophisticated electronic products may require occasional service. Just as quality is a keyword in the engineering and production of the wide array of JVC products, service is the key to maintaining the high level performance for which JVC is world famous. The JVC service and engineering organization stands behind our products.

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JVC SERVICE \& ENGINEERING COMPANY OF AMERICA
DIVISION OF JVC AMERICAS CORP.
10 New Maple Avenue
Pine Brook, NJ 07058-9641

## ACCESSORIES

To purchase accessories for your JVC product, you may contact your local JVC Dealer. From the 48 Continental United States call toll free: 1-800-882-2345 or on the web at www.JVC.com

Don't service the product yourself.

## CAUTION

To prevent electrical shock, do not open the cabinet. There are no user serviceable parts inside. Please refer to qualified service personnel for repairs.

## LIMITED WARRANTYconsumer video 1-90

JVC COMPANY OF AMERICA warrants this product and all parts thereof, except as set forth below ONLY TO THE ORIGINAL PURCHASER AT RETAIL to be FREE FROM DEFECTIVE MATERIALS AND WORKMANSHIP from the date of original retail purchase for the period as shown below. ("The Warranty Period")


THIS LIMITED WARRANTY IS VALID ONLY IN THE FIFTY (50) UNITED STATES, THE DISTRICT OF COLUMBIA AND IN COMMONWEALTH OF PUERTO RICO.

## WHAT WE WILL DO:

If this product is found to be defective, JVC will repair or replace defective parts at no charge to the original owner. Such repair and replacement services shall be rendered by JVC during normal business hours at JVC authorized service centers. Parts used for replacement are warranted only for the remainder of the Warranty Period. All products and parts thereof may be brought to a JVC authorized service center on a carry-in basis except for Television sets having a screen size 25 inches and above which are covered on an in-home basis.

## WHAT YOU MUST DO FOR WARRANTY SERVICE:

Return your product to a JVC authorized service center with a copy of your bill of sale. For your nearest JVC authorized service center, please call toll free: (800) 537-5722.
If service is not available locally, box the product carefully, preferably in the original carton, and ship, insured, with a copy of your bill of sale plus a letter of explanation of the problem to the nearest JVC Factory Service Center, the name and location of which will be given to you by the toll-free number.
If you have any questions concerning your JVC Product, please contact our Customer Relations Department.

## WHAT IS NOT COVERED:

This limited warranty provided by JVC does not cover:

1. Products which have been subject to abuse, accident, alteration, modification, tampering, negligence, misuse, faulty installation, lack of reasonable care, or if repaired or serviced by anyone other than a service facility authorized by JVC to render such service, or if affixed to any attachment not provided with the products, or if the model or serial number has been altered, tampered with, defaced or removed;
2. Initial installation and installation and removal for repair;
3. Operational adjustments covered in the Owner's Manual, normal maintenance, video and audio head cleaning;
4. Damage that occurs in shipment, due to act of God, and cosmetic damage;
5. Signal reception problems and failures due to line power surge;
6. Video Pick-up Tubes/CCD Image Sensor, Cartridge, Stylus (Needle) are covered for 90 days from the date of purchase;
7. Accessories;
8. Batteries (except that Rechargeable Batteries are covered for 90 days from the date of purchase);

There are no other express warranties except as listed above.
THE DURATION OF ANY IMPLIED WARRANTIES INCLUDING THE IMPLIED WARRANTY OF MERCHANTABILITY, IS LIMITED TO THE DURATION OF THE EXPRESS WARRANTY HEREIN.

JVC SHALL NOT BE LIABLE FOR THE LOSS OF USE OF THE PRODUCT, INCONVENIENCE, LOSS OR ANY OTHER DAMAGES, WHETHER DIRECT, INCIDENTAL OR CONSEQUENTIAL (INCLUDING, WITHOUT LIMITATION, DAMAGE TO TAPES, RECORDS OR DISCS) RESULTING FROM THE USE OF THIS PRODUCT, OR ARISING OUT OF ANY BREACH OF THIS WARRANTY. ALL EXPRESS AND IMPLIED WARRANTIES, INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR PARTICULAR PURPOSE, ARE LIMITED TO THE WARRANTY PERIOD SET FORTH ABOVE.

Some states do not allow the exclusion of incidental or consequential damages or limitations on how long an implied warranty lasts, so these limitations or exclusions may not apply to you. This warranty gives you specific legal rights and you may also have other rights which vary from state to state.

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Wayne, New Jersey 07470

REFURBISHED PRODUCTS CARRY A SEPARATE WARRANTY, THIS WARRANTY DOES NOT APPLY. FOR DETAILS OF REFURBISHED PRODUCT WARRANTY, PLEASE REFER TO THE REFURBISHED PRODUCT WARRANTY INFORMATION PACKAGED WITH EACH REFURBISHED PRODUCT.

## For customer use:

Enter below the Model No. and Serial No. which is located either on the rear, bottom or side of the cabinet. Retain this information for future reference.

Model No.:
Serial No.:

Purchase date:
Name of dealer:

## JVC

## SCHEMATIC DIAGRAMS

## DVD PLAYER \& VIDEO CASSETTE RECORDER

## HR-XVC22UC, HR-XVC23UC,

 HR-XVC26US, HR-XVC27UC, HR-XVC27US

CD-ROM No.SML200404


HR-XVC22UC, HR-XVC23UC, HR-XVC26US, HR-XVC27UC, HR-XVC27US [D3PV0]

## CHARTS AND DIAGRAMS

## NOTES OF SCHEMATIC DIAGRAM

## Safety precautions

The Components identified by the symbol $\triangle$ are critical for safety. For continued safety, replace safety critical components only with manufacturer's recommended parts.

1. Units of components on the schematic diagram

Unless otherwise specified.

1) All resistance values are in ohm. $1 / 6 \mathrm{~W}, 1 / 8 \mathrm{~W}$ (refer to parts list).
Chip resistors are 1/16 W.
$\mathrm{K}: \mathrm{K} \Omega(1000 \Omega), \mathrm{M}: \mathrm{M} \Omega(1000 \mathrm{~K} \Omega)$
2) All capacitance values are in $\mu F,(P: P F)$.
3) All inductance values are in $\mu \mathrm{H},(\mathrm{m}: \mathrm{mH})$.
4) All diodes are 1SS133, MA165 or 1N4148M (refer to parts list).
Note: The Parts Number, value and rated voltage etc. in the Schematic Diagram are for references only. When replacing the parts, refer to the Parts List.
2. Indications of control voltage

AUX : Active at high.
$\overline{A U X}$ or $A \cup X(L): A c t i v e ~ a t ~ l o w . ~$
3. Interpreting Connector indications


Note: For the destination of each signal and further line connections that are cut off from the diagram, refer to "BOARD INTERCONNECTIONS"

## 4. Voltage measurement

1) Regulator (DC/DC CONV) circuits

REC : Colour bar signal.
PB : Alignment tape (Colour bar).

- : Unmeasurable or unnecessary to measure.

2) Indication on schematic diagram

Voltage Indications for REC and PB mode on the schematic diagram are as shown below.


Note: If the voltages are not indicated on the schematic diagram, refer to the voltage charts.

## 5. Signal path Symbols

The arrows indicate the signal path as follows.
NOTE : The arrow is DVC unique object.

(Example)

6. Indication of the parts for adjustments

The parts for the adjustments are surrounded with the circle as shown below.

7. Indication of the parts not mounted on the circuit board "OPEN" is indicated by the parts not mounted on the circuit board.


OPEN

## CIRCUIT BOARD NOTES

1. Foil and Component sides
1) Foil side ( $B$ side) :

Parts on the foil side seen from foil face (pattern face) are indicated.
2) Component side ( A side) :

Parts on the component side seen from component face (parts face) indicated.
2. Parts location guides

Parts location are indicated by guide scale on the circuit board.


Note: For general information in service manual, please refer to the Service Manual of GENERAL INFORMATION Edition 4 No. 82054D (January 1994).

BOARD INTERCONNECTIONS


ASH CPU.

| $\bar{D}$ | $E$ | $F$ | $G$ | $2-4$ |
| :---: | :---: | :---: | :---: | :---: |

■ MAIN(VIDEO/N.AUDIO) SCHEMATIC DIAGRAM



|  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| $2-5$ | A | B | C | D |



MAIN(FMA/DEMOD) SCHEMATIC DIAGRAM


p20398001a_rev0

| $\bar{D}$ | $E$ | $F$ | $G$ | $2-8$ |
| :---: | :---: | :---: | :---: | :---: |




$\bar{D}$



- MAIN(TUNER) SCHEMATIC DIAGRAM


- MAIN(TERMINAL) SCHEMATIC DIAGRAM


p10591001a_rev0

| $\bar{D}$ | $E$ | F | G | ${ }_{2-16}$ |
| :---: | :---: | :---: | :---: | :---: |

MAIN(SUB CPU) SCHEMATIC DIAGRAM


| $2-17$ | A | B | C | D |
| :--- | :--- | :--- | :--- | :--- |


p20401001a_rev0

| $\bar{D}$ | $E$ | $F$ | $G$ | $2-18$ |
| :---: | :---: | :---: | :---: | :---: |


p20396001a_rev0

| $\bar{D}$ | $E$ | $F$ | $G$ | $2-20$ |
| :---: | :---: | :---: | :---: | :---: |



e10054001a_rev0

| $\bar{D} \mid$ | E | F | G |  |
| :---: | :---: | :---: | :---: | :---: |
| $2-22$ |  |  |  |  |

DVD FLASH ROM SCHEMATIC DIAGRAM


e10054001a_rev0

| $\bar{D}$ | $E$ | F | G | $2-24$ |
| :---: | :---: | :---: | :---: | :---: |




| REF.NO. LOCATION <br> CAPACITOR |  | REF.NO. LOCATION |  | REF.NO. LOCATION |  | REF.NO. LOCATION |  | REF.NO. LOCATION |  | REF.NO. LOCATION |  | REF.NO. LOCATION |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | C3011 | A D 4C | C7123 | D 110 | IC7 | B C 170 | R2 | D 12F | R4 | 5 F | R8 | C |
|  | C 15L | 3012 | D 12F | C7124 | A D 120 | IC7104 | B C 9L | R212 | B C 12E | R4010 | B C 16E | R8201 | 8B |
| C2 | C 14M | C3013 | C 13F | C7125 | A D 120 | IC7501 | C 8 N | R2007 | B C 14M | R4012 | B C 15F | R8202 | B |
| C4 | D 15M | C3014 | A D 5C | C7126 | B C 10 K | IC8001 | C 2 D | R2010 | B C 15M | R4013 | B C 15F | R8203 | , |
| C5 | C 14M | C3016 | B C 15 C | C7128 | A D 8 M | IC8201 | B C 8B | R2013 | B C 16M | R4015 | B C 16E | R8204 | g |
| C6 | C 14M | C3021 | A D 20A | C7129 | B C 8 M | 108 | B $C 10$ | R2014 | B C 16M | R4017 | B C 16E |  | 6B |
| ${ }^{\text {C7 }}$ | C 14L | 322 | B C 20A | C7130 | B C 8L |  | A D 5B | R2015 | B C 17M | R5001 | A D 4P | R8206 | C 6B |
| C8 | C 14L | C3024 | B C 16 C | C7131 | B C 8L |  |  | R2016 | B C 16M | R5101 | A D 4 N | R8207 | B |
| c9 | D 13L | С3030 | A D 18C | C7132 | B C 8L | coil |  | R2017 | B C 15M | R5102 | A D 4 N | R8208 | В С 7B |
| C10 | D 13L | C3031 | B C 18C | C7133 | A D 9L | L | A D 14L | R2018 | B C 13N | R5103 | A D 5 N | R8214 | C 7A |
| C11 | C 14L | C303 | B C 15 F | C7134 | B C 9L | L3 | D 13L | R2019 | B C 13 N | R5104 | A D 2 M | R8215 | 7 A |
| C12 | C 13L | ${ }^{\text {C3036 }}$ | B C 16C | C7135 | B C 9K | L5 | A D 13 K | R2021 | B C 17M | R5106 | A D 3N | R8216 | 8A |
| C13 | C 13L | C3037 | B C 17C | ${ }^{\text {C7136 }}$ | B C 9L | L6 | A D ${ }^{13 J}$ | R2022 | B C 16H | R5107 | A D 5M | R8217 | ${ }^{\text {9 }}$ |
| C14 | C 13L | C3041 | B C 16C | C7137 | B C 4 E | L7 | A D 16J | R2023 | A D 171 | R5108 | B C 5L | R8221 | B C 9 B |
| C15 | C 14L | C3045 | B C 21 H | C7138 | B C 3 E | L10 | A D 17 K | R2024 | B C 15m | R5109 | B C 4 M | R8222 | C 98 |
| C17 | C 14L | C3046 | B C | C7139 | B C 4 E | L201 | A D 13E | R2053 | B C 21D | R5110 | B C 4M | R8223 | 9 |
| C19 | C 14 K | C3047 | B C 13D | C7140 | B C 4 E | L202 | A D 12 D | R2054 | B C 20 C | R5111 | B C 4L | R8227 | 98 |
| C20 | C 14 K | C3048 | B C 13D | C7141 | B C 5 E | L203 | A D 110 | R2055 | B C 21D | R5112 | B C 5L | R8250 | D |
| C22 | C 14 K | C3050 | C 16 D | C7191 | B C 190 | L204 | A D 12F | R2056 | A D 20 C | R5113 | B C 5 N | R8251 | C 8D |
| C24 | C 14 K | C3052 | A D 178 | C7201 | B C 7E | L205 | A D 11E | R2057 | B C 20 C | R5201 | B C 4 K | R8252 | 7 D |
| C25 | D 14k | C3053 | C 17C | C7202 | B C 6E | L2001 | A D 12M | R20 | B C 20 | R5202 | B C 4 K | R8259 | ${ }^{\text {c }}$ |
| C26 | D 14J | C3054 | B C 178 | C7203 | B C 7E | L2251 | A D 17J | R2059 | B C 20 C | R5203 | B C 5k | R8260 | 6 |
| C27 | C 13K | C3055 | A D 17C | C7204 | B C 5D | L4001 | A D 8J | R2060 | B C 21B | R5204 | B C 5k | R8 | B |
| C30 | C 14J | C3056 | C | C7205 | A D 5D | L5201 | D 3H | R2201 | B C 19K | R5205 | B C 5K | R8263 | B |
| C31 | D 15J | C3071 | A D ${ }^{8 J}$ | C7501 | A D 80 | L5202 | A D 2 H | R2202 | B C 19k | R5206 | B C 5k | R83 | 3B |
| C32 | D 14J | C3072 | B C 13C | C7502 | B C 80 | L5203 | A D | R2203 | B C 19K | R5310 | B C 1 H |  |  |
| ${ }^{\text {C33 }}$ | D 15J | ${ }^{\text {c }} 4001$ | A D 13F | C7503 | A D 80 | L5205 | A D 21 | R2204 | B C 19K | R5311 | B C 4 G | OTHER |  |
| C34 | C 14J | C4002 | B C 12F | C7504 | B C 80 | L5301 | A D 3E | R2205 | B C 19k | R5312 | B C 19 | CP3002 | 81 |
| C35 | 15J | C4003 | C 13E | C7505 | C 7P | L5302 | D 2G | R2206 | B C 19K | R5313 | B C 1G | CP3101 | 5 H |
| ${ }^{\text {C36 }}$ | D 15J | ${ }^{\text {c } 4004}$ | A D 13F | C7506 | B C 70 | L5303 | A D $2 F$ | R2207 | B C 19K | R5314 | B C 1G | CP4002 | 8 J |
| C37 | C 16J | C4005 | B C 13F | C7507 | A D 70 | L6001 | A D 21 L | R2208 | B C 19k | R5315 | B C 1G | CP5301 | 2 |
| C38 | C 151 | C4006 | D 14F | C7508 | B C 7P | L6003 | A D 210 | R2209 | A D 20F | R5316 | A D 4 H | CP5302 | 3 F |
| C39 | D 15J | C4008 | D 13F | C8001 | A D 2 D | L6005 | A D 21 M | R2210 | B C 21 F | ${ }^{R 5317}$ | B c $1 J$ | ${ }^{\text {CP5303 }}$ | $2{ }_{3}^{2 H}$ |
| C40 | $16 J$ | ${ }^{\text {C4009 }}$ | B C 13E | ${ }^{C 8002}$ | A D 1 D | L6006 | D 20L | R2211 | B C 20 H | R5319 | B C 2G | CP5304 | 3F |
| ${ }^{\text {C41 }}$ | C 161 | C4010 | B C 14F | C8003 | B C 2 C | L6032 | A D 22 J | R2212 | B C 21G | ${ }^{R 5320}$ | B C 3G | F5001 |  |
| C43 | D 151 | C4011 | B C 15F | C8004 | B C 2 D | L6050 | D 210 | R2213 | B C 21F | R5321 | B C 2 G | FC5001 |  |
| C44 | 141 | C4012 | D 15E | C8005 | B C 2 D | L7101 | D 190 | R2214 | A D 20F | R5325 | B C 4 F | FC50 | 40 |
| C45 | C 16J | C4014 | B C 16E | C8006 | B C 3D | L7103 | A D 10 K | R2216 | B C 20 H | R5326 | A D 5H | J7002 | 18P |
| ${ }^{\text {c46 }}$ | C 16J | ${ }^{\text {C4015 }}$ | C 14E | C8007 | A D 2 C | L7201 | A D 7E | R2217 | B C 20 H | R5391 | B C 6 K | J7004 | P |
| C47 | 16J | C4016 | C 16E | C8008 | A D 3D | L7202 | A D 5D | R2218 | B C 20 G | R6020 | B C 22 N | J7005 | D 13P |
| ${ }^{\text {C48 }}$ | C 16J | C4017 | D 13F | C8009 | B C 2 C | L7501 | A D 80 | R2219 | B C 20H | R6021 | B C 22M | J7006 | P |
| C49 | 17J | C4018 | C 14F | C8010 | 3 C | L7502 |  | R22 | B C 20F | R6030 | B C 22J | J70 | P |
| C55 | C 17J | C4031 | A D 8J | C8051 | A D 3D | L8301 | A D 1C | R2221 | B C 19K | R6031 | B C 22 K | J7009 | 8P |
| C56 | C 17K | C5001 | 3 P | ${ }^{\text {C8052 }}$ | D 3C |  |  | R222 | B C 20 K | R6034 | B C 221 | J7010 | P |
| C57 | C 17L | C5002 | A D $2 P$ | C8053 | B C 3C | tran | Stor | R2223 | B C 20 K | R6050 | B C 220 | Js3001 | D 10 F |
| C58 | C 17L | C5003 | A D 50 | C8201 | A D 78 | Q2 | B C 14L | R2224 | B C 20 K | R6051 | A D 210 | K2251 | C 18k |
| C59 | 17L | C5004 | 6L | C8202 | B C 7 B | Q7 | C 17k | R2230 | C 18H | R6054 | B C 210 | K2252 | K |
| C60 | C 17L | C5006 | A D 2 N | C8203 | B C 10b | Q8 | B C 18L | R2231 | B C 18 H | R6055 | B C 22 P | K2253 | C 18k |
| C61 | D 17L | C5101 | D 2M | C8301 | A D 3B | Q201 | C 12E | R2251 | B C 171 | R6502 | B C 19H | K5101 | M |
| C62 | D 16L | C5102 | A D 2 N | C8302 | B C 4A | Q202 | B C 12F | R2252 | B C 17J | R7131 | B C 17P | K5102 | ${ }^{19}$ |
| C63 | C 17k | C5104 | A D 5 N | C8303 | B C 3A | Q2001 | B C 14 N | R2255 | B C 181 | R7134 | B C 180 | K7501 | 70 |
| C77 | C 14J | C5105 | A D 4M | CF6031 | A D 21 J | Q2002 | C 14N | R2257 | B C 17J | R7135 | B C 10K | K7502 | ${ }^{\text {N }}$ |
| C78 | C 17K | C5106 | B C 4 L |  |  | Q2003 | B C 12M | R3033 | A D 11E | R7136 | B C 10L | K7503 | 8 P |
| C201 | C 13E | C5107 | D 5M | CONN |  | Q2051 | C 21 D | R3034 | A D 11E | R7137 | B C 10 L | K8301 | 6A |
| C202 | D 13F | C5108 | C 5M | CN1 | D 18K | Q2052 | C 20 C | R3043 | C 13C | R7138 | A D 10L | LF5002 | 30 |
| C203 | B C 13 E | C5109 | C 4M | CN2001 | A D 11M | Q2053 | B C 20 C | R3045 | B C 13C | R7154 | A D 150 | PC085 | B C 21 A |
|  | C 12E | 201 | D 5K | CN2002 | A D 21 J | Q2054 | C 21C | R3046 | B C 13C | R7155 | B C 140 | PC01267 | D 50 |
| C205 | D 12E | C5202 | A D | CN3001 | A D 9J | Q2055 | B C 20 C | R3047 | B C 14C | R7156 | B C 140 | PC01268 | D 4P |
| ${ }^{2} 206$ | C 12E | ${ }^{\text {C5204 }}$ | A | CN3102 | A D 12 A | Q2201 | ${ }^{\text {B C C } 20}$ | R3048 | B C C 14C B | R7157 | A D 15P | PC02242 | B C 20 |
| ${ }^{C 207}$ | A D 12E | ${ }^{C 5205}$ | A D 11 | CN3901 | A D 22B | Q2202 | B C $21 F$ | R300 | ${ }^{B}$ C ${ }^{\text {C } 14 C}$ | R7164 | $\text { A D } 130$ | PC02505 | B C 22 N |
| C208 | C 12E | ${ }^{\text {C5207 }}$ | $\begin{array}{ll}\text { A D } & 11 \\ A & \text { d }\end{array}$ | CN7103 | A D 22 E | Q2203 | B C 21G | R3051 | ${ }^{\text {B C C }}$ - 14C | R7165 | A D 130 | PC3001 | D 17E |
| C210 | C 13F | C5210 | A ${ }_{\text {A }} \mathrm{D} 3 \mathrm{H}$ | CN7302 | A D $4 E$ | Q3001 | A D 7 H | R3053 | ${ }^{\text {B C C }}$ C 14C | R7167 | ${ }^{\text {A }}$ C C 11 P | PC5101 |  |
| C211 | B C 12 E | C5211 | A D 51 | CN7303 | A D $4 C$ | Q3002 | A D 21 H | R3054 | B C 14C | R7168 | B C 11P | S3001 | D 20B |
| C212 | C 13E | C5213 | A D 1 J | CN8301 | A D 2A | Q3004 | B C 4B | R3058 | B C 15C | R7169 | B C 10P | T2051 | D 20D |
| C213 | C 13D | C5214 | C 5K |  |  | Q3005 | C 12 F | R3061 | A D 15B | R7170 | B C 11P | T5001 | 2 L |
| C2001 | A D 14M | C5302 | D 1H | dIODE |  | Q3901 | B C 19C | R3062 | A D 15C | R7171 | B C 10P | TL3901 | C 178 |
| C2002 | A D 14M | ${ }^{\text {C5303 }}$ | 4G | D1 | B C 18 N | Q3902 | B C 18B | R3063 | B C 15B | R7172 | B C 110 | TL3902 | B |
| C2003 | A D 14M | C5304 | A D 4G | D5 | B C 14L | Q4001 | B C 14E | R3064 | B C 16B | R7173 | B C 5E | TL3903 | B C 16C |
| C2004 | B C 14M | C5305 | 5G | D201 | A D 13E | Q4002 | C 13E | R3065 | B C 16B | R7174 | B C 5E | TL3904 | C 170 |
| C2005 | D 17M | C5306 | B C 4G | D2001 | A D 20 D | Q4003 | B C 13E | R3069 | A D 15B | R7175 | B C 3E | TL3905 | C 17C |
| ${ }^{\text {c2006 }}$ | B C 16M | ${ }^{\text {C53307 }}$ | C 5G | D2251 | A D 17G | Q5101 | A D 4M | R3074 | B C 19C | R7176 | B C 3E | TL3906 | B C 198 |
| C2007 | A D 16 M | ${ }^{\text {C5308 }}$ | B C 5F | D3001 | A D 14G | Q5102 |  | R3077 | B C 17C | R7177 | B C 4 E | TL3908 | C 13C |
| C2008 | D 16L | C5309 | A D 5F | D3002 | A D 18D | Q5103 | B C 5 N | R3080 | B C 16D | R7178 | B C 4 E | TP106 | A D 160 |
| C2009 | C 16M | C5310 | D 3G | D3003 | D 4B | Q5304 | D 2 H | R3082 | B C 17D | R7179 | B C 4 E | TP111 | D 160 |
| C2010 | C 16M | ${ }^{\text {C5311 }}$ | A D 2E | D3004 | A D 3B | Q5305 | B C 1 H | R3085 | B C 17D | R7180 | B C 4E | TP2253 | A 150 |
| C2011 | A D 16M | ${ }^{\text {C5312 }}$ | A D 3F | D3005 | A D 5F | Q5306 | A D 4 H | R3098 | A D 17E | R7181 | B C 10 K | TP4001 | A D 160 |
| C 2012 | A D 15M | C5313 | A D 2E | D4002 | A D 16E | Q5307 | B C ${ }^{19}$ | R3099 | B C 17E | R7182 | A D 170 | TU6001 | D 22P |
| C2051 | B C 11M | C5314 | A D 3F | D5001 | B C 10 | Q5308 | B C 1G | R3101 | B C 16E | R7183 | B C 5E | VA5001 | D 4 P |
| $\mathrm{C}_{2} 2052$ | A D 211 | ${ }^{6} 6005$ | A D 21 M | D5101 | A D 2 M | Q5309 | C 1F | R3201 | ${ }^{B}$ C 10A | R7184 | B C 5E | WR6 | D 1H |
| ${ }^{\text {c2053 }}$ | B C 20 D | C600 | B C 22M | D5102 | A D 2 M | Q5310 |  | R3202 | B C 10A | R7191 | B C 200 | WR11 | D 2 H |
| ${ }^{\text {c2054 }}$ | B C 21D | C600 | A D 20L | D5103 | A D 5L | Q5311 | A D 2G | R3205 | A D 15G | R7192 | B C 190 | WR12 | D 3G |
| C 2055 | d | C6008 | C 21M | D5105 | A D 5M | Q5315 | A D 4 F | R3206 | B C 9E |  | B C 200 |  | D 16k |
| $\mathrm{C}_{2} 2201$ | D 19M | C6012 | A D 210 | D5106 | A D 5 N | Q5391 | B C 7L | R3207 | A D 20E | R7201 | A D 8E | $\times 3001$ | D 16C |
| C 2202 | D 19M | C6013 | B C 220 | D5202 | A D 4 K | Q6030 | B C 22 J | R3208 | B C 18D | R7202 | B C 7E |  |  |
| C2203 | D 19L | C6020 | B C 21 N | D5204 | A D 1 K | Q6031 | B C 221 | R3209 | B C 18D | R7203 | B C 7E |  | 7 |
| C 2204 | A D 18L | C6021 | B C 21 N | D5205 | A D 2 J | Q7113 | B C 10L | R3210 | B C 12D | R7204 | B C 6E |  |  |
| C 2205 | D 18K | C6033 | B C 22J | D5206 | $\begin{array}{ll}\text { A } & \text { 2J } \\ \\ \text { d }\end{array}$ | Q7116 | B C 10k | R3211 | B C 111 | R7205 | B C 6E |  |  |
| ${ }_{C}^{C 2206}$ | D 18K | C6052 | B C 220 | D5207 | A D 4 K | Q7791 | B C 190 | $\mathrm{R}^{\mathrm{R} 3212}$ | A D 19D | R7206 | B C 60 |  |  |
| C 2207 C 2208 | $\begin{array}{lll}C & 18 \mathrm{~K} \\ \mathrm{C} \\ \text { 17J }\end{array}$ | ${ }_{\text {C605 }}$ | B C C 220 $B$ $C$ | D520 | $\begin{array}{llll}\text { A } & \text { D } 2 \mathrm{~K} \\ A & \text { d }\end{array}$ | Q7192 Q7201 | B C C 190 <br> $B$ $C$ | R3213 R3214 | $\begin{array}{ccc}\text { B C C } & 18 \mathrm{D} \\ \mathrm{B} & \mathrm{C} & 9 \mathrm{~F}\end{array}$ | R7501 R7502 | B C 70 <br> $B$ $C$ 80 |  |  |
| C2209 | C 18G | ${ }^{\text {C6054 }}$ | B C 220 | D5209 | $\begin{array}{ll}\text { A } & \text { D } \\ A & \text { 1 } \\ \text { A }\end{array}$ | Q7202 | B C C B C C E | R3215 | ${ }^{\text {B C C C }}$ 10F | R7503 | B <br> B <br> C <br> C 80 |  |  |
| C2210 | D 18G | C6501 | B C 19 K | D5213 | A D 2 K | Q8001 | B C $2 C$ | R3216 | B C 10F | R7504 | B C 80 |  |  |
| C2211 | D 18H | C6502 | A D 19M | D5301 | A D 3 H | Q8002 | B C 3C | R3217 | B C 10F | R7505 | B C 80 |  |  |
| C 2212 | D 18G | C6503 | A D 19K | D5304 | A D 2 H | Q8052 | B C 3 C | R3218 | B C 3B | R7506 | B C 8P |  |  |
| ${ }_{C}^{C 2214}$ | D 19G | C6504 | B C 19H | D5305 | A D 4 GG | Q8053 | $\begin{array}{ll}\text { B C C } & \\ B & \\ B & \\ C\end{array}$ | R3219 | ${ }^{B} \mathrm{C} 4 \mathrm{4B}$ | R7507 | ${ }^{B}$ C 70 |  |  |
| C 2215 C 2216 | D 20G | C6505 | D 19G | D5306 | 5 G | Q8301 | 5 B | R3220 | A D 5C | R8001 | B C 2 D |  |  |
| C2216 C 2218 | A D 20G | C6508 | C 19H | - | A D S 3 H | RE |  | R3222 | B C C 12F B C 208 | R8002 R 8003 |    <br> $B$ $C$ 2 <br> $B$ $C$ d |  |  |
| C 2219 | D 20 H | C6511 | B C 19H | D5310 | A D 4 G | R1 | B C 15L | R3224 | B C 208 | R8004 | B C 2 D |  |  |
| C 2220 | D 191 | C6512 | B C 19H | D5391 | A D 6K | R2 | B C 15M | R3225 | B C 21B | R8005 | B C 10 |  |  |
| $\mathrm{C}^{\mathrm{C} 221}$ | C 191 | C6513 | A D 19H | D5392 | A D 3F | R3 | $B^{\text {C C }} 14 \mathrm{M}$ | $\mathrm{R}^{\mathrm{R} 3229}$ | B C 160 | R8006 | B C 3D |  |  |
| $\mathrm{C}^{\mathrm{C} 222}$ | C 18 H | C6514 | B C 201 | D5393 | A D 3G | R6 | B C 13k | R3234 | B C 10B | R8007 | B C 2 D |  |  |
| C 2230 | C 181 | C6515 | A D 201 | D6002 | A D 21 M | $\mathrm{R}^{\mathrm{R}} 1$ | ${ }^{\text {B C }} 14 \mathrm{~K}$ | R3235 | A D 19B | R8008 | B C 2D |  |  |
| C2231 | B C 181 | ${ }^{6} 6516$ | A D 19G | D8001 | A ${ }^{\text {d }}$ | R11 | B C 16J | R3236 | A D 198 | R8009 | B C 2 C |  |  |
| C2 | C 20 J | C651 | ${ }^{\text {B C C }} 19 \mathrm{H}$ | D8301 | A D 5B | R12 | $B^{B}$ C 161 | R3240 | ${ }^{B}$ C 13D | R8010 |  |  |  |
| C2235 C 2251 | C 19 J <br> C 18 K <br> 1 | C6532 $C 6601$ | $\begin{array}{ll}\text { B C C } & 21 \mathrm{~K} \\ \text { A D } & 18 \mathrm{H} \\ \text { A }\end{array}$ | D8302 | $\begin{array}{ll}\text { A } & \text { D } \\ A & 5 B \\ A & \text { P }\end{array}$ | R21 R36 | $\begin{array}{llll}\text { B C C } & 17 J \\ B & C & 16 \mathrm{E}\end{array}$ | ${ }_{\text {R3242 }}^{\text {R3244 }}$ | B C C  <br> B  <br> B C 19 D | R8013 R8014 | $B$ $C$ $2 C$ <br> $B$ $C$ $3 D$ |  |  |
| C2252 | C 18k | C6602 | A D 19H |  |  | R37 | B C 17K | R3246 | B C 17C | R8015 | B C 2 C |  |  |
| C2253 | C 18 K | C6605 | A D 201 | IC |  | R38 | A D 13 K | R3248 | B C 17C | R8016 | B C 3D |  |  |
| C2254 | D 17J | C7109 | A D 180 | IC1 | B C 15 K | R201 | B C 13E | R3252 | B C 8J | R8017 | B C 2 C |  |  |
| C 2255 | C 18J | C7114 | A D 180 | IC2201 | B C 18 J | R202 | B C 13F | R3253 | B C 8J | R8018 | B C 3C |  |  |
| ${ }^{\text {c2256 }}$ | C 17K | C7117 | A D 170 | IC3001 | B C 15D | R203 | B C 13E | R3256 | B C 19E | R8019 | B С 3 C |  |  |
| C2257 C 2259 | $\begin{array}{ll}C & 171 \\ \text { D 17J }\end{array}$ | ${ }^{\text {C7118 }} \mathrm{C} 7119$ | A D 170 | ${ }^{\text {IC3002 }}$ | B C C 17C | R204 R205 | ${ }^{B}$ C ${ }^{\text {c }} 13 \mathrm{E}$ | R4001 R4003 | B C 16E | R8020 |  |  |  |
|  |  | C7119 | 80 |  | 21 A | R205 |  | R400 | C 14E | R8051 | A D 3D |  |  |
|  | C 18 J | C721 | D 140 |  | A D 5 K | R206 |  |  | B C C B C c 14E |  |  |  |  |
| C3008 | - | 7122 | D 16 P | IC5302 | A | R210 | B C 12E | R4007 | B C 13E | R8054 | B C 3C |  |  |



| MODE PIN NO | REC | PLAY |
| :---: | :---: | :---: |
| IC5201 |  |  |
| 1 | 2.4 | 2.5 |
| 2 | , | 0 |
| 3 | 4.5 | 4.6 |
| 1 C 5301 |  |  |
| 1 | 2.5 | 2.5 |
| 2 | 0 | 0 |
| 3 | 4.0 | 4.0 |
| IC5302 |  |  |
| 1 | 5.0 | 5.0 |
| 2 | 0 | 0 |
| 3 | 0 | 0 |
| 4 | 3.4 | 3.4 |
| 5 | 5.1 | 5.1 |
| 6 | 0 | 0 |
| 7 | 0 | 0 |
| 8 | 5.6 | 5.6 |
| IC7102 |  |  |
| 1 | 0 | 0 |
| 2 | 3.6 | 3.7 |
| 3 | 10.6 | 10.7 |
| 4 | 3.4 | 3.4 |
| 5 | 0 | 0 |
| 6 | 3.6 | 3.6 |
| IC7104 |  |  |
| 1 | 5.0 | 5.0 |
| 2 | 2.4 | 2.4 |
| 3 | 5.0 | 5.0 |
| 4 | 1.1 | 1.2 |
| 5 | 0 | 0 |
| 6 | 1.4 | 1.4 |
| 7 | 0 | 0 |
| 8 | 2.4 | 2.4 |
| 9 | 4.8 | 0 |
| 10 | 1.4 | 1.4 |
| 11 | 0 | 0 |
| 12 | 2.4 | 2.4 |
| 13 | 5.0 | 5.0 |
| 14 | 2.3 | 2.4 |
| 15 | 0 | 0 |
| 16 | 2.4 | 0 |
| 17 | 0 | 0 |
| 18 | 2.4 | 2.4 |
| 19 | 0 | 0 |
| 20 | 1.7 | 1.7 |
| 21 | 1.7 | 1.7 |
| 22 | 0 | 0 |
| 23 | 1.7 | 1.7 |
| 24 | 0 | 0 |
| 25 | 00 | 00 |
| 26 | 2.4 | 2.4 |
| 27 | 0 | 0 |
| 28 | 5.0 | 5.0 |
| IC7501 |  |  |
| 1 | 0 | 0 |
| 2 | 0 | 0 |
| 3 | 0 | 0 |
| 4 | 0 | 0 |
| 5 | 0 | 0 |
| 6 | 0 | 0 |
| 7 | 0 | 0 |
| 8 | 1.6 | 1.6 |
| 9 | 3.2 | 3.2 |
| 10 | 1.6 | 1.6 |
| 11 | 1.6 | 1.6 |
| 12 | 1.6 | 1.6 |
| 13 | 3.2 | 3.2 |
| 14 | 3.2 | 3.2 |
| IC8001 |  |  |
| 1 | 5.3 | 5.3 |
| 2 | 5.3 | 5.3 |
| 3 | 5.3 | 5.3 |
| 4 | 0 | 0 |
| 5 | 5.3 | 5.3 |
| 6 | 5.3 | 5.3 |
| 7 | 5.3 | 5.3 |
| 8 | 10.6 | 10.6 |
| IC8201 |  |  |
| 1 | 0 | 0 |
| 2 | 0 | 0 |
| 3 | 0 |  |
| 4 | 0 | 0 |
| 5 | 0 | 0 |
|  | 4.9 | 4.9 |
| 7 | 0 | 4.9 |
| 8 | 2.4 | 2.4 |
| 9 | 2.3 | 2.3 |
| 10 | 0 | 0 |
| 11 | 0 | 0 |
| 12 | 4.8 | 4.8 |
| 13 | 0 | , |
| 14 | 4.6 | 4.6 |
| 15 | 0.1 | 0.1 |
| 16 | 4.6 | 4.6 |
| 17 | 4.4 | 4.4 |
| 18 | 4.9 | 4.9 |
| 19 | 4.9 | 4.9 |
| 20 | 0 | 0 |


| $\begin{aligned} & \hline \text { MODE } \\ & \text { PIN NO. } \end{aligned}$ | REC | PLAY |
| :---: | :---: | :---: |
| 21 | 4.8 | 4.9 |
| 22 | 0 | 0 |
| 23 | 4.4 | 4.4 |
| 24 | 4.4 | 4.4 |
| 25 | 0 | 0 |
| 26 | 0 | 0 |
| 27 | 3.5 | 3.7 |
| 28 | 4.9 | 4.8 |
| 29 | 0 | 0 |
| 30 | 0 | 0 |
| 31 | 0 | 0 |
| 32 | 0 | 0 |
| 33 | 0 | 0 |
| 34 | 0 | 0 |
| 35 | 0 | 0 |
| 36 | 0 | 0 |
| 37 | 0 | 0 |
| 38 | 0 | 0 |
| 39 | 0 | 0 |
| 40 | 0 | 0 |
| 41 | 0 | 0 |
| 42 | 0 | 0 |
| 43 | 0 | 0 |
| 44 | 0 | 0 |
| 45 | 0 | 0 |
| 46 | 0 | 0 |
| 47 | 0 | 0 |
| 48 | 0 | 0 |
| 49 | 0 | 0 |
| 50 | 0 | 0 |
| 51 | 0 | 0 |
| 52 | 0 | 0 |
| 53 | 0 | 0 |
| 54 | 0 | 0 |
| 55 | 0 | 0 |
| 56 | 0 | 0 |
| 57 | 0 | 0 |
| 58 | 0 | 0 |
| 59 | 0 | 0 |
| 60 | 3.4 | 3.4 |
| 61 | 0 | 0 |
| 62 | 0 | 0 |
| 63 | 0 | 0 |
| 64 | 0 | 0 |
| IC8202 |  |  |
| 1 | 3.2 | 3.2 |
| 2 | 4.8 | 4.8 |
| 3 | 4.9 | 4.8 |
| 4 | 4.9 | 4.9 |
| 5 | 4.9 | 4.8 |
| 6 | 4.9 | 4.9 |
| 7 | 0 | 0 |
| 8 | 4.9 | 4.8 |
| 9 | 4.8 | 4.9 |
| 10 | 3.3 | 3.3 |
| 11 | 0 | 4.8 |
| 12 | 4.9 | 4.9 |
| 13 | 3.3 | 3.2 |
| 14 | 4.9 | 4.9 |
| IC8301 |  |  |
| 1 | 0 | 0 |
| 2 | 0.6 | 0.5 |
| 3 | 0.6 | 0.7 |
| 4 | 0.3 | 0.4 |
| 5 | 0 | 0 |
| 6 | 0 | 0 |
| 7 | 9.1 | 9.1 |
| 8 | 9.1 | 9.2 |
| 9 | 0.7 | 0.7 |
| 10 | 0.6 | 0.6 |
| Q202 |  |  |
| E | 1.7 | 1.7 |
| c | 5.1 | 5.0 |
| B | 2.4 | 2.4 |
| Q2001 |  |  |
| E | -6.4 | 0 |
| C | 0 | 0 |
| B | -14.7 | 0.7 |
| Q2002 |  |  |
| E | -6.4 | 0 |
| C | 0 | 0 |
| B | -14.5 | 0.7 |
| Q2003 |  |  |
| E | 5.0 | 5.1 |
| C | -14.6 | 5.0 |
| B | 4.7 | 0 |
| Q2051 |  |  |
| E | 0 | 0 |
| C | 7.4 | 0.2 |
| B | 0.4 | 0.2 |
| Q2052 |  |  |
| E | 10.6 | 10.7 |
| C | 10.4 | 0.2 |
| B | 9.8 | 10.6 |
| Q2053 |  |  |
| E | 0 | 0 |
| C | , | 10.6 |
| B | 4.8 | 0 |


| MODE PIN NO | REC | PLAY |
| :---: | :---: | :---: |
| Q2054 |  |  |
| E | 10.4 | 0.1 |
| C | 10.1 | 0.2 |
| B | 9.6 | 0 |
| Q2055 |  |  |
| E | 0 | 0 |
| C | 0 | 0 |
| B | 4.8 | 0 |
| Q2201 |  |  |
| E | 5.6 | 5.6 |
| C | -1.1 | -0.7 |
| B | 5.6 | 5.6 |
| Q2202 |  |  |
| E | 0 | 0 |
| C | 5.6 | 5.6 |
| B | 0 | 0 |
| Q2203 |  |  |
| E | 0 | 0 |
| C | 0 | 0 |
| B | -1.0 | $-0.8$ |
| Q2204 |  |  |
| E | 0 | 0 |
| C | 0 | 0 |
| B | -1.0 | -0.8 |
| Q3001 |  |  |
| E | 0 | 0 |
| C | 4.2 | 4.2 |
| B | - |  |
| Q3002 |  |  |
| E | 0 | 0 |
| C | 4.2 | 4.2 |
| B | - |  |
| Q3004 |  |  |
| E | 0 | 0 |
| C | 0 | 0 |
| B | 0.7 | 0.7 |
| Q3005 |  |  |
| E | 4.9 | 4.9 |
| C | 5.6 | 5.6 |
| B | 5.5 | 5.5 |
| Q4001 |  |  |
| E | 0 | 0 |
| C | 0 | 0 |
| B | 4.8 | 4.8 |
| Q5101 |  |  |
| S | -2.4 | -2.4 |
| G | -1.3 | -1.3 |
| D | 74.8 | 75.7 |
| Q5102 |  |  |
| E | -2.4 | $-2.4$ |
| C | -1.4 | -1.4 |
| B | -2.4 | $-2.4$ |
| Q5103 |  |  |
| E | -1.3 | -1.4 |
| C | -2.4 | $-2.4$ |
| B | 3.2 | 3.3 |
| Q5306 |  |  |
| E | 10.6 | 10.6 |
| C | 11.4 | 11.5 |
| B | 11.2 | 11.2 |
| Q5307 |  |  |
| E | 50.1 | 50.1 |
| C | 50.1 | 50.0 |
| B | 0 | 0 |
| Q5309 |  |  |
| E | 0 | 0 |
| C | 0 | 0 |
| B | 4.9 | 4.8 |
| Q5310 |  |  |
| E | 5.1 | 5.1 |
| C | 5.6 | 5.6 |
| B | 5.8 | 5.8 |
| Q5311 |  |  |
| E | 3.3 | 3.3 |
| C | 3.6 | 3.6 |
| B | 4.0 | 4.0 |
| Q5315 |  |  |
| E | 9.1 | 9.1 |
| C | 11.4 | 11.5 |
| B | 9.7 | 9.7 |
| Q6030 |  |  |
| E | 2.2 | 2.2 |
| C | 0 | 0 |
| B | 1.6 | 1.6 |
| Q7113 |  |  |
| E | 2.4 | 2.3 |
| c | 0 | 0 |
| B | 1.7 | 1.7 |
| Q8001 |  |  |
| E | 0 | 0 |
| C |  | 0 |
| B | 0.7 | 0.7 |
| Q8002 |  |  |
| E | 0 | 0 |
| C | 0 | 0 |
| B | 0.6 | 0.6 |
| Q8052 |  |  |
| E | 0 | 0 |



| $\begin{array}{\|l\|} \hline \text { MODE } \\ \text { PIN NO. } \\ \hline \end{array}$ | REC | PLAY |
| :---: | :---: | :---: |
| 9 | 4.7 | 4.7 |
| 10 | 2.0 | 3.4 |
| 11 | 2.0 | 3.4 |
| 12 | 2.0 | 4.1 |
| 13 | 1.4 | 2.7 |
| 14 | 2.0 | 2.7 |
| 15 | 2.0 | 2.7 |
| 16 | 0.7 | 2.0 |
| 17 | 0 | 0 |
| 18 | 0 | 0 |
| 19 | 0 | 0 |
| 20 | 0 | 0 |
| 21 | 4.8 | 4.8 |
| 22 | 4.8 | 4.8 |
| CN7301 |  |  |
| 1 | 2.4 | 2.4 |
| 2 | 0 | 0 |
| 3 | 2.4 | 2.4 |
| 4 | 0 | 0 |
| 5 | 5.0 | 5.0 |
| 6 | 0 | 0 |
| 7 | 0 | 0 |
| 8 | 9.1 | 9.2 |
| 9 | 5.0 | 5.0 |
| 10 | 5.0 | 5.0 |
| 11 | 0 | 0 |
| 12 | 0 | 0 |
| 13 | 3.3 | 3.3 |
| 14 | 3.3 | 3.3 |
| 15 | 3.3 | 3.3 |
| 16 | 0 | 0 |
| 17 | 1.3 | 1.6 |
| 18 | 0 | 0 |
| 19 | 3.2 | 3.2 |
| CN7302 |  |  |
| 1 | 0.3 | 0.3 |
| 2 | 0 | 0 |
| 3 | 0.5 | 0.5 |
| 4 | 0 | 0 |
| 5 | 0.3 | 0.3 |
| 6 | 0 | 0 |
| 7 | 0.8 | 0.8 |
| 8 | 0 | 0 |
| 9 | 0.3 | 0.4 |
| 10 | 3.3 | 3.2 |
| 11 | 0 | 0 |
| 12 | 3.3 | 3.2 |
| 13 | 2.8 | 2.8 |
| 14 | 3.2 | 3.2 |
| 15 | 3.2 | 3.3 |
| 16 | 2.8 | 2.8 |
| 17 | 2.8 | 2.8 |
| CN7103 |  |  |
| 1 | 0 | 0 |
| 2 | , | 0 |
| 3 | 0 | 0 |
| 4 | 0 | 0 |
| 5 | 0 | 0 |
| 6 | 0 | 0 |
| 7 | 0.2 | 0.2 |
| 8 | 0 | 0 |
| 9 | 3.4 | 3.4 |
| 10 | 4.9 | 4.9 |
| CN8301 |  |  |
| 1 | 0.5 | 0.6 |
| 2 | 0.5 | 0.5 |
| 3 | 0 | 0 |
| 4 | 0 | 0 |
| 5 | 0 | 0 |
| JS3001 |  |  |
| 1 | 0 | 0 |
| 2 | 0 | 0 |
| 3 | 4.9 | 4.8 |
| 4 | 0 | 0 |
| 5 | 4.8 | 4.9 |


| <DISPLAY,JACK> |  |  |
| :---: | :---: | :---: |
| MODE | REC | PLAY |
| IC7002 |  |  |
| 1 | 4.5 | 4.8 |
| 2 | 4.9 | 4.8 |
| 3 | 0 | 0 |
| Q7001 |  |  |
| E | 4.9 | 4.9 |
| C | 0.8 | 0.6 |
| B | 4.8 | 4.8 |
| Q7002 |  |  |
| E | 4.9 | 4.8 |
| C | 0.6 | 0.5 |
| B | 4.8 | 4.7 |
| Q7003 |  |  |
| E | 4.9 | 4.8 |
| C | 0.5 | 0.5 |
| B | 4.8 | 4.8 |
| Q7004 |  |  |
| E | 4.9 | 4.8 |
| C | 0.5 | 0.6 |
| B | 4.8 | 4.8 |
| Q7005 |  |  |
| E | 4.9 | 4.8 |
| C | 0.5 | 0.5 |
| B | 4.8 | 4.8 |
| Q7006 |  |  |
| E | 4.9 | 4.8 |
| C | 0.5 | 0.5 |
| B | 4.8 | 4.8 |
| Q7007 |  |  |
| E | 4.9 | 4.8 |
| C | 0.9 | 1.0 |
| B | 4.7 | 4.7 |
| Q7008 |  |  |
| E | 0 | 0 |
| C | 1.6 | 0.8 |
| B | 0.3 | 0.5 |
| Q7009 |  |  |
| E | 0 | 0 |
| C | 1.6 | 0.8 |
| B | 0.3 | 0.6 |
| Q7010 |  |  |
| E | 0 | 0 |
| C | 1.1 | 1.0 |
| B | 0.4 | 0.4 |
| Q7011 |  |  |
| E | 0 | 0 |
| C | 1.9 | 1.0 |
| B | 0.2 | 0.4 |
| Q7012 |  |  |
| E | 0 | 0 |
| C | 1.6 | 1.0 |
| B | 0.3 | 0.5 |
| Q7013 |  |  |
| E | 0 | 0 |
| C | 1.6 | 1.0 |
| B | 0.3 | 0.4 |
| Q7014 |  |  |
| E | 0 | 0 |
| C | 2.3 | 1.5 |
| B | 0 | 0.3 |

<28> DISPLAY
LPB10228-001A

<31> DVD BRACKET
LPB10228-001A


<98> SWITCH
LEB10070-001A

<99> DVD SERVO CONTROL
LVB10452-003A
-COMPONENT



COMPONENT PARTS LOCATION GUIDE <DISPLAY, JACK> LPB10228-001A

| REF.NO. LOCATION | REF.NO. LOCATION | REF.NO. LOCATION | REF.NO. LOCATION |  | REF.NO. LOCATION |  | REF.NO. LOCATION |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Q7004 B C 14B | R7005 | B C 15B | R7034 | B C 16B | S7006 | A D 8A |
| C7011 A D 18A | DIODE | Q7005 B C 14B | R7006 | B C 15B | R7035 | B C 16B | S7010 | A D 5A |
| C7012 B C 19B | D7001 A D 1C | Q7006 B C 14B | R7007 | B C 15A | R7036 | B C 17B | S7011 | A D 6C |
| C7013 B C 2 A | D7002 A D 7C | Q7007 B C 15B | R7010 | B C 19A | R7037 | B C 17B | S7012 | A D 8C |
| C7014 B C 5A | D7005 A D 1C | Q7008 B C 15B | R7011 | B C 3A | R7040 | B C 19B | S7013 | A D 12 C |
| C7021 B C 17B | D7006 A D 7C | Q7009 B C 15B | R7012 | B C 3A | R7041 | B C 7C | S7016 | A D 3C |
| C7022 B C 16B | D7022 B C 19B | Q7010 B C 15B | R7013 | B C 4 A | R7042 | B C 6C | S7017 | A D 4C |
| C7023 B C 16B | D7191 A D 5B | Q7011 B C 16B | R7014 | B C 6A | R7191 | B C 4B | S7014 | A D 6D |
| C7024 B C 16B | D7192 A D 5B | Q7012 B C 16B | R7015 | B C 7A |  |  | S7015 | A D 6C |
| C7025 B C 15B |  | Q7013 B C 17B | R7020 | B C 19A | OTHER |  |  |  |
| C7026 B C 15B | IC | Q7014 B C 17B | R7021 | B C 8B | DI7001 | A D 15B |  |  |
| C7027 B C 15B | IC7002 A D 19B |  | R7022 | B C 8B | J7191 | A D 3B |  |  |
| C7191 B C 5B |  | RESISTOR | R7023 | B C 8B | S7001 | A D 2 C |  |  |
|  | TRANSISTOR | R7001 B C 17B | R7025 | B C 6D | S7002 | A D 3A |  |  |
| CONNECTOR | Q7001 B C 13B | R7002 B C 16B | R7031 | B C 15A | S7003 | A D 4A |  |  |
| CN7003 A D $20 C$ | Q7002 B C 13B | R7003 B C 16B | R7032 | B C 15B | S7004 | A D 6A |  |  |
| CN7191 A D 6B | Q7003 B C 13B | R7004 B C 16B | R70 | B C 15B | S7005 | A D 7A |  |  |

JENT SIDE-

<99> DVD SERVO CONTROL
LVB10452-003A
-FOIL SIDE-


## CPU PIN FUNCTION

## <SYSCON IC3001>

| PIN NO. | LABEL | IN/OUT | FUNCTION |
| :---: | :---: | :---: | :---: |
| 1 | SVss | - | GND |
| 2 | CTLREF | - | CTL REFERENCE VOLTAGE |
| 3 | CTL(+) | IN/OUT | CTL(+) SIGNAL |
| 4 | CTL(-) | IN/OUT | CTL(-) SIGNAL |
| 5 | CTLBIAS | - | CTL BIAS VOLTAGE |
| 6 | NC | - | NC |
| 7 | CTLAMPOUT | OUT | CTL PULSE OUTPUT |
| 8 | CTLSMTIN | IN | CTL PULSE INPUT |
| 9 | CFG | IN | CAPSTAN FG PULSE INPUT |
| 10 | SVcc | - | SYSTEM POWER |
| 11 | AFCpc | OUT | AFC CLOCK(SYNC SEPARATOR FOR OSDIEXTERNAL CIRCUIT FOR AFC) |
| 12 | AFCosc | OUT | AFC CLOCK(SYNC SEPARATOR FOR OSDIEXTERNAL CIRCUIT FOR AFC) |
| 13 | AFCLPF | IN | FlLTER OUTPUT FOR HORIZONTAL SYNCHRONIIIG OF OSD CHARACTER |
| 14 | CSYNC/HSYNC | - | NC |
| 15 | VLPF/VSYNC | - | NC |
| 16 | CVIN2 | IN | COMPOSITE VIDEO SIGNAL INPUT(2) |
| 17 | CVIN1 | IN | COMPOSITE VIDEO SIGNAL INPUT(1) |
| 18 | OVCC | - | SYSTEM POWER |
| 19 | cVout | OUT | COMPOSITE VIDEO SIGNAL OUTPUT |
| 20 | OvSS | - | GND |
| 21 | NC | - | NC |
| 22 | FSCIN | IN | FSC INPUT FOR OSD |
| 23 | Avss | - | GND |
| 24 | BS_ANT/AFC | IN | TUNNING CHECK |
| 25 | LED | in | LED CONTROL OF STEREO BROADCASTING MODE |
| 26 | VIDEO_ENV | IN | AUTO TRACKING DETECT/ INPUT THE AVERAGE OF PLAYBACK VIDEO SIGNAL |
| 27 | NC | - | NC |
| 28 | KEY2 | IN | OPERATION CONTROL SIGNAL |
| 29 | START_SENSOR | IN | Start Sensor |
| 30 | KEY1 | IN | OPERATION CONTROL SIGNAL |
| 31 | END_SENSOR | IN | END SENSOR |
| 32 | A.ENV/ND(L) | IN | AUDIO PB FM ENV.INPUT/NON HiFi MODE:L |
| 33 | LSD | IN | MECHANISM MODE DETECT(D) |
| 34 | LSC | in | MECHANISM MODE DETECT(C) |
| 35 | S_DET | IN | HiFi/NORMAL AUDIO DETECTION |
| 36 | Avcc | - | SYSTEM POWER |
| 37 | SP_FG | IN | DETECTION SIGNAL FOR SUPPLY REEL ROTATIONTTAPE REMAIN |
| 38 | JUST_CLK/CH_SW | OUT | RF CONVERTER CHANNEL SELECT |
| 39 | REC_SAFETY | IN | REC SAFETY SWITCH DETECT(SW ON:L) |
| 40 | NC | - | NC |
| 41 | NC | - | NC |
| 42 | TU_FG | IN | DETECTION SIGNAL FOR TAKE-UP REEL ROTATIONTAPE REMAIN |
| 43 | SUB_RESET | OUT | DVD CPU RESET |
| 44 | LM_FR(LMC1) | OUT | LOADING MOTOR DRIVE |
| 45 | DIG1 | OUT | LED DRIVE |
| 46 | DIG2 | OUT | LED DRIVE |
| 47 | DIG3 | OUT | LED DRIVE |
| 48 | 12C_DATA | IN/OUT | SERIAL DATA TRANSFER CLOCK FOR TUNER |
| 49 | 12C_CLK | OUT | SERIAL DATA TRANSFER OUTPUT FOR TUNER |
| 50 | NC | - | NC |
| 51 | DIG4 | OUT | LED DRIVE |
| 52 | DIG5 | OUT | LED DRIVE |
| 53 | DIG6 | OUT | LED DRIVE |
| 54 | DIG7 | OUT | LED DRIVE |
| 55 | CAP.M_F/R | OUT | CAPSTAN MOTOR REVERSE CONTROL(FWD:H/REV:L) |
| 56 | Vcc | - | SYSTEM POWER |


| PIN NO. | LABEL | IN/OUT | FUNCTION |
| :---: | :---: | :---: | :---: |
| 57 | Vss | - | GND |
| 58 | LSA | IN | MECHANISM MODE DETECT(A) |
| 59 | D_A | OUT | LED DRIVE |
| 60 | POWER_DET | IN | DETECTION SIGNAL FOR POWER DOWN OF AC POWER SUPPLY |
| 61 | 12C_CLK_AV | OUT | SERIAL DATA TRANSFER CLOCK FOR THE VIDEO/AUDIO IC |
| 62 | 12C_DATA_AV | IN/OUT | SERIAL DATA TRANSFER OUTPUT FOR THE VIDEO/AUDIO IC |
| 63 | S.CLK | OUT | SERIAL DATA TRANSFER CLOCK FOR DVD CPU |
| 64 | S.DATA_FR_SYS | OUT | SERIAL DATA TRANSFERMER OUTPUT FOR DVD CPU |
| 65 | S.DATA_TO_SYS | IN | SERIAL DATA TRANSFERMER INPUT FOR DVD CPU |
| 66 | D_B | OUT | LED DRIVE |
| 67 | D_C | OUT | LED DRIVE |
| 68 | D_D | OUT | LED DRIVE |
| 69 | BS_DIGI | - | NC |
| 70 | D_E | OUT | LED DRIVE |
| 71 | D_F | OUT | LED DRIVE |
| 72 | RC | IN | REMOTE CONTROL DATA INPUT |
| 73 | D_G | OUT | LED DRIVE |
| 74 | FWE | OUT | FLASH WRITE ENABLE |
| 75 | x2 | - | TIMER CLOCK(32.768KHz) |
| 76 | X1 | - | TIMER CLOCK(32.768KHz) |
| 77 | RES | - | RESET TERMINAL(RESET ON:L) |
| 78 | OSC1(IN) | - | MAIN SYSTEM CLOCK(10MHz) |
| 79 | Vss | - | GND |
| 80 | OSC2(OUT) | - | MAIN SYSTEM CLOCK(10MHz) |
| 81 | VCL | - | SYSTEM POWER |
| 82 | MODE | - | NC |
| 83 | HS_FFREW | OUT | HIGH SPEED FF/REW CONTROL |
| 84 | CONV.CTL[H] | OUT | RF CONVERTER DETECTION |
| 85 | SB_GAIN | OUT | VOLTAGE CONTROL SIGNAL FOR VIDEO FREQUENCY RESPONSE |
| 86 | PROTECT | IN | CONTROL SIGNAL FOR SWITCHING POWER SUPPLY |
| 87 | A.MUTE2[L] | OUT | AUDIO MUTE CONTROL FOR DVD AUDIO(MUTE:L) |
| 88 | SP_SHORT[H] | OUT | MODE SELECT |
| 89 | TU_V_MUTE[H] | OUT | TUNER VIDEO MUTE CONTROL(MUTE:H) |
| 90 | INT/PROG | OUT | INTERLACE/PROGRESSIVE SELECT |
| 91 | P.CTL[ H$]$ | OUT | POWER ON/OFF PULSE(POWER ON:H) |
| 92 | INT/PROG | OUT | INTERLACE/PROGRESSIVE SELECT |
| 93 | H.REC_ST(H) | OUT | HiFi AUDIO SOUND RECORDING START |
| 94 | A.MUTE(H) | OUT | AUDIO MUTE CONTROL(MUTE:H) |
| 95 | SIOUT | OUT | ADD THE DC BIAS TO S1 OUTPUT |
| 96 | NC | - | NC |
| 97 | NC | - | NC |
| 98 | SUB_REQ[L] | OUT | DVD CPU REQUEST: |
| 99 | N.REC[H] | OUT | NORMAL AUDIO REC MODE:H |
| 100 | N.REC_ST[H] | OUT | NORMAL AUDIO SOUND RECORDING START |
| 101 | LSB | IN | MECHANISM MODE SELECT(B) |
| 102 | DVD[H] | OUT | DVD MODE:H |
| 103 | CTL_GAIN | OUT | CONTROL AMP OUT FREQUENCY RESPONSE SWITCH IN |
| 104 | DFG | IN | DRUM FG PULSE INPUT |
| 105 | D.FF | OUT | ROTATION DETECTION SIGNAL FOR DRUM MOTOR/ TIMING CONTROL SIGNAL FOR REC |
| 106 | A.FF | OUT | AUDIO FF OUTPUT |
| 107 | DRUM_CTL_V | OUT | DRUM MOTOR CONTROL |
| 108 | CAP_CTL_V | OUT | CAPSTAN MOTOR CONTROL |
| 109 | V.PULSE | OUT | V.PULSE ADDITION TIMING CONTROL |
| 110 | Vss | - | GND |
| 111 | C.SYNC/V.REF | IN | DETECTION OF VIDEO SYNC SIGNAL |
| 112 | Vcc | - | SYSTEM POWER |

## NOTE

1. All parts shown in this schematic are ciritical for sefety. 2. This schematic is only for reference. Avoid replacing individual parts
Replace the entire unite only


FDP GRID ASSIGNMENT AND ANODE CONNECTION


| No. | CONNECTION |
| :---: | :---: |
| 1 | Cathode G, J7, H8 |
| 2 | Cathode F, J6, H7 |
| 3 | Cathode E, J5, H6 |
| 4 | Cathode D, J4, H5,H4 |
| 5 | Cathode C, J3, H3 |
| 6 | Cathode B, J2, H2 |
| 7 | Cathode A, J1, H1 |
| 8 | Anode H1~H8 |
| 9 | Anode J1~J7 |
| 10 | Common Anode Digit5 |
| 11 | Common Anode Digit4 |
| 12 | Common Anode Digit3 |
| 13 | Common Anode Digit2 |
| 14 | Common Anode Digit1 |

VIDEO BLOCK DIAGRAM



■ AUDIO BLOCK DIAGRAM



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