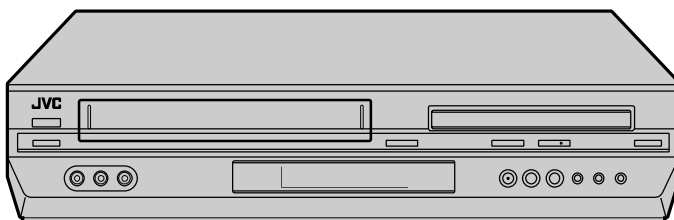


JVC

SERVICE MANUAL

DVD PLAYER & VIDEO CASSETTE RECORDER

HR-XVC28BUC, HR-XVC28BUS, HR-XVC29SUC, HR-XVC29SUS



HR-XVC28BUC, HR-XVC28BUS, HR-XVC29SUC, HR-XVC29SUS [D5PV1]

For disassembling and assembling of MECHANISM ASSEMBLY, refer to the SERVICE MANUAL No.86700(MECHANISM ASSEMBLY).

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SPECIFICATION

GENERAL	
Power requirement	AC 120 V, 60 Hz
Power consumption	
Power on	25 W
Power off	2.0 W
Temperature	
Operating	5°C to 40°C (41°F to 104°F)
Storage	-20°C to 60°C (-4°F to 140°F)
Operating position	Horizontal only
Dimensions (W x H x D)	435 mm x 93 mm x 272 mm
Weight	4.1 kg (9.1lbs)
Format	VHS NTSC standard
Maximum recording time	
(SP)	210 min. with T-210 video cassette
(EP)	630 min. with T-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 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 cm, 8 cm), CD (12 cm, 8 cm)
Audio characteristics	DVD:4 Hz - 22 KHz
Frequency response	CD:4 Hz - 20 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 V _{p-p} /75 Ω
Component-PB/PR	(RCA) 0.7 V _{p-p} /75 Ω
Audio	(RCA) 2 V _{rms} , 1 KΩ
Digital Audio	(COAXIAL) 0.5 V _{p-p} /75 Ω
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 Ω, unbalanced
TIMER	
Clock reference	Quartz
Program capacity	1-year programmable timer/8 programs
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.
- 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.

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 Δ symbol and shaded (■) 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.

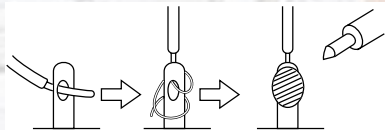


Fig. 1-1-1

- (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

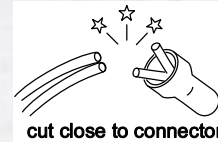
- (10) Also check areas surrounding repaired locations.
- (11) Products using cathode ray tubes (CRTs) In regard to such products, the cathode ray tubes themselves, the high voltage circuits, and related circuits are specified for compliance with recognized codes pertaining to X-ray emission.

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 connector In such cases as when replacing the power transformer in sets where the connections between the power cord and power transformer 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).



cut close to connector

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.

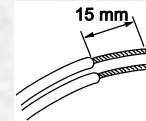


Fig. 1-1-4

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

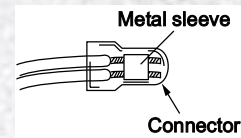


Fig. 1-1-5

- 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.

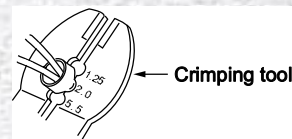


Fig. 1-1-6

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

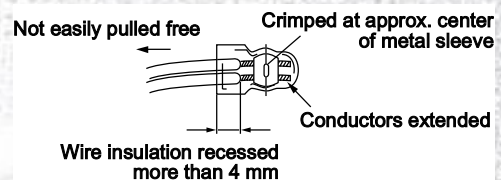


Fig. 1-1-7

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

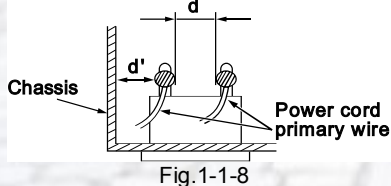
Confirm the specified insulation resistance or greater between power cord plug prongs and externally exposed parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, ear-phone jacks, etc.). See table 1 below.

(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

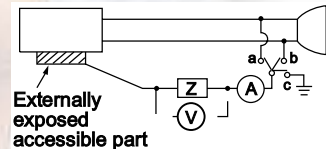
When replacing primary circuit components, confirm specified clearance distance (d), (d') between soldered terminals, and between terminals and surrounding metallic parts. See Fig.1-1-11 below.



(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, ear-phone jacks, etc.).

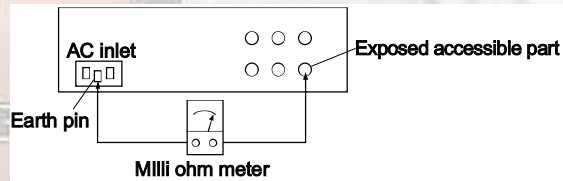
Measuring Method : (Power ON) Insert load Z between earth ground/power cord plug prongs and externally exposed accessible parts. Use an AC voltmeter to measure across both terminals of load Z. See Fig.1-1-9 and following Fig.1-1-12.



(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.



Grounding Specifications

Region	Grounding Impedance (Z)
USA & Canada	$Z \leq 0.1 \text{ ohm}$
Europe & Australia	$Z \leq 0.5 \text{ ohm}$

Fig.1-1-10

AC Line Voltage	Region	Insulation Resistance (R)	Dielectric Strength	Clearance Distance (d), (d')
100 V	Japan	$R \geq 1 \text{ M}\Omega/500 \text{ V DC}$	AC 1 kV 1 minute	$d, d' \geq 3 \text{ mm}$
100 to 240 V			AC 1.5 kV 1 minute	$d, d' \geq 4 \text{ mm}$
110 to 130 V	USA & Canada	$1 \text{ M}\Omega \leq R \leq 12 \text{ M}\Omega/500 \text{ V DC}$	AC 1 kV 1 minute	$d, d' \geq 3.2 \text{ mm}$
110 to 130 V 200 to 240 V	Europe & Australia	$R \geq 10 \text{ M}\Omega/500 \text{ V DC}$	AC 3 kV 1 minute (Class II) AC 1.5 kV 1 minute (Class I)	$d \geq 4 \text{ mm}$ $d' \geq 8 \text{ mm}$ (Power cord) $d' \geq 6 \text{ mm}$ (Primary wire)

Fig.1-1-11

AC Line Voltage	Region	Load Z	Leakage Current (I)	a, b, c
100 V	Japan	$1 \text{ k}\Omega$	$i \leq 1 \text{ mA rms}$	Exposed accessible parts
110 to 130 V	USA & Canada	$0.15 \mu\text{F}$ capacitor in parallel with $1.5 \text{ k}\Omega$ resistor	$i \leq 0.5 \text{ mA rms}$	Exposed accessible parts
110 to 130 V 220 to 240 V	Europe & Australia	$2 \text{ k}\Omega$	$i \leq 0.7 \text{ mA peak}$ $i \leq 2 \text{ mA dc}$	Antenna earth terminals
		$50 \text{ k}\Omega$	$i \leq 0.7 \text{ mA peak}$ $i \leq 2 \text{ mA dc}$	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.

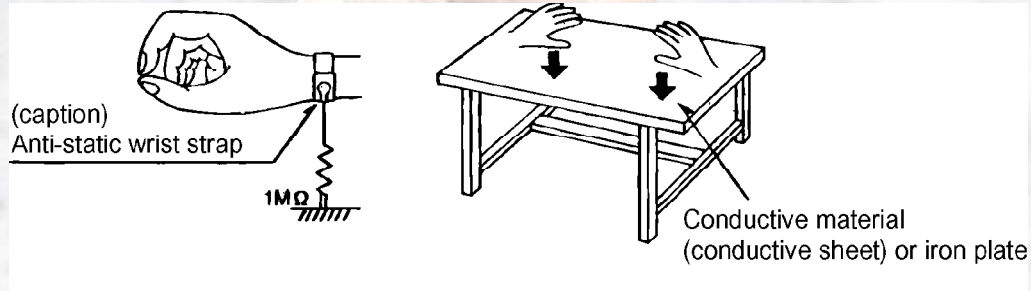
Be careful to use proper grounding in the area where repairs are being performed.

(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

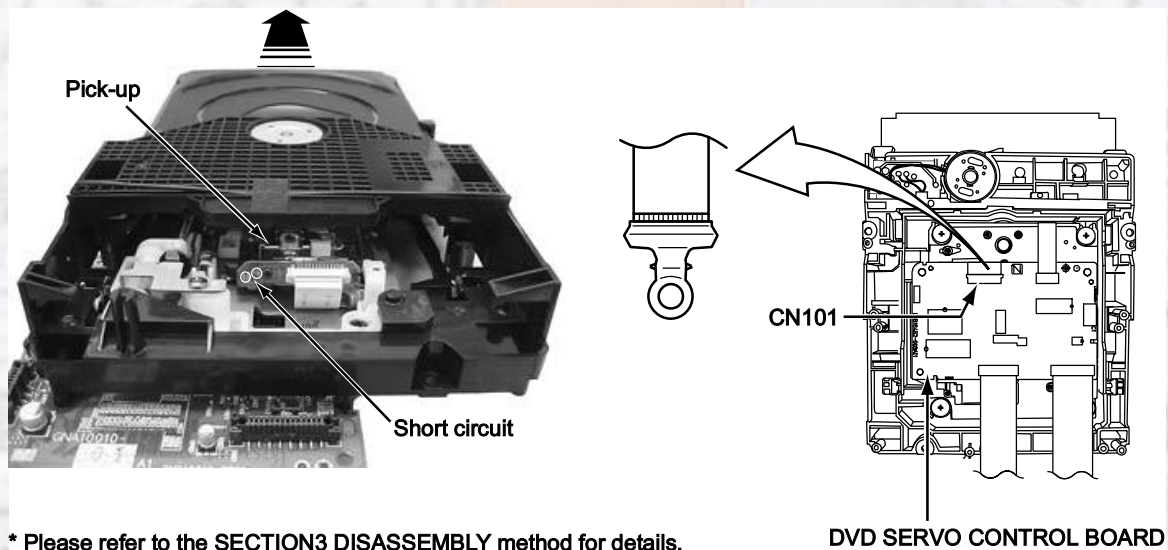
1.3.1 Handling of Traverse Unit and Laser Pickup

- (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 clothing or 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.



SECTION 2

SPECIFIC SERVICE INSTRUCTIONS

2.1 Different table of feature

The following table indicates main different points between models HR-XVC28BUC, HR-XVC28BUS, HR-XVC29SUC and HR-XVC29SUS.

	HR-XVC28BUC	HR-XVC28BUS	HR-XVC29SUC	HR-XVC29SUS
BODY COLOR	BLACK	←	PURE SILVER	←
MP3 PLAYBACK	USED	NOT USED	USED	NOT USED

NOTE :

Mark ← 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.

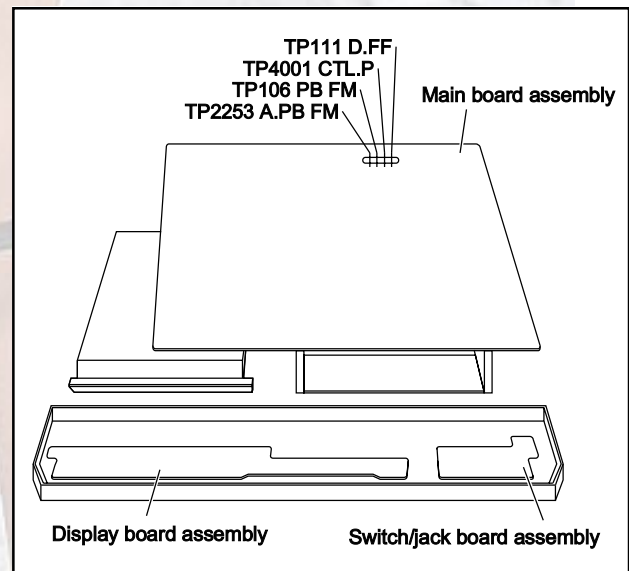


Fig.2-2a

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.

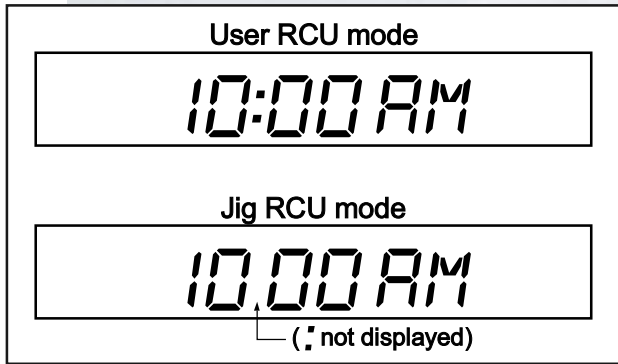


Fig.2-3a User/Jig RCU mode

2.3.1 Setting the Jig RCU mode

- (1) Turn on the power.
- (2) Press the following remote keys continuously within 2 seconds "SET UP" → "2" → "8" → "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 "43-80" 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 "43-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.

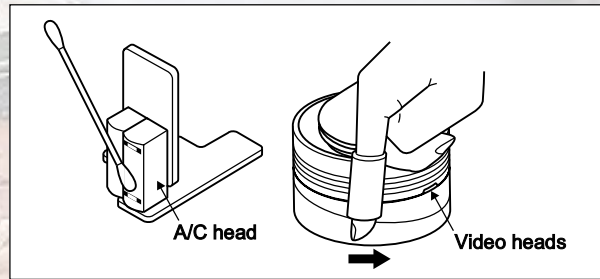


Fig.2-5a

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	
		1000H	2000H
Tape transport	Drum assembly	C,X	X
	A/C head	C,X	C,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	Control plate		X
	Rotary encoder		X

C : Cleaning

X : Inspection or Replacement if necessary

SECTION 3 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.

⇔ : Flat wire ↔ : Wire ↔ : Board to board (B-B)
 : The connector of the side to remove

CONN. No.	CONNECTOR			PIN No.
WR2a	Main	CN101	⇔	Digital CN761 40
WR2b	Main	CN103	⇔	Digital CN762 10

■ Destination of connectors

CONN. No.	CONNECTOR			PIN No.
WR2a	Main	CN7103	⇔	Switch/jack CN7191 10
WR2b	Main	CN3102	⇔	Display CN7003 22
WR3a	Main	CN2001	⇔	A/C head 6
WR3b	Drum assembly		⇔	Main CN1 9
WR4a	Main	CN7302	⇔	DVD servo control CN503 17
WR4b	Main	CN7301	⇔	DVD servo control CN501 19
WR4c	Main	CN3301	⇔	DVD 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.

Step/Loc No.	Part Name	Fig. No.	Point	Note
[1]	Top cover	3-1a	4(S1a),(S1b),3(L1a), 2(SD1a),(P1a),(W1a), CN1(WR1a), ----- 2(S1c)	<Note 1a>
	Bracket			
(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.

P= Spring, W= Washer, S= Screw, L= Locking tab, SD= Solder, CN**(WR**)= Remove the wire (WR**) 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	Fig. No.	Point	Note
[1]	Top cover	3-1d	8(S1a)	
[2]	Front panel assembly (Display board assembly) (Switch/jack board assembly)	3-1a 3-1d	4(L2a),5(L2b),2(S2a) CN7103(WR2a), CN3102(WR2b)	<Note 2a> <Note 2b>
[3]	Mechanism assembly (Drum assembly)	3-1b 3-1c 3-1d	CN2001(WR3a) 3(S3a),(S3b) ----- CN(WR3b) (S3c),(S3d),(S3e)	<Note 2a> <Note 3a> <Note 3b> <Note 3c>
[4]	DVD unit (Bracket)	3-1d	3(S4a),3(S4b), CN7302(WR4a), CN7301(WR4b), CN3301(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.

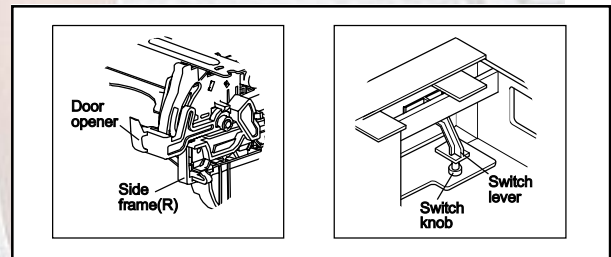


Fig.3-1a

<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 c, d, e.

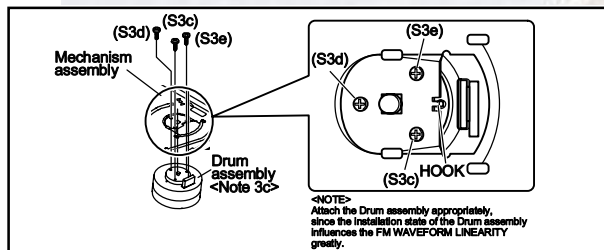


Fig.3-1b

- 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.

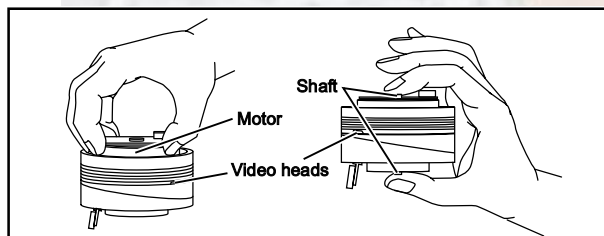
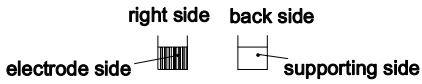


Fig.3-1c

NOTE

1. Insert direction of FFC WIRE as follows.



2. FFC WIRE and DRUM FFC WIRE should be insert as follows.

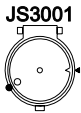


3. Insert the wire to even the root of connector completely at the same time as inserting each wire.

4. Check to see that outside parts. TOP COVER, BOTTOM COVER, FRONT PANEL, etc are fixed certainly to the BOTTOM CHASSIS

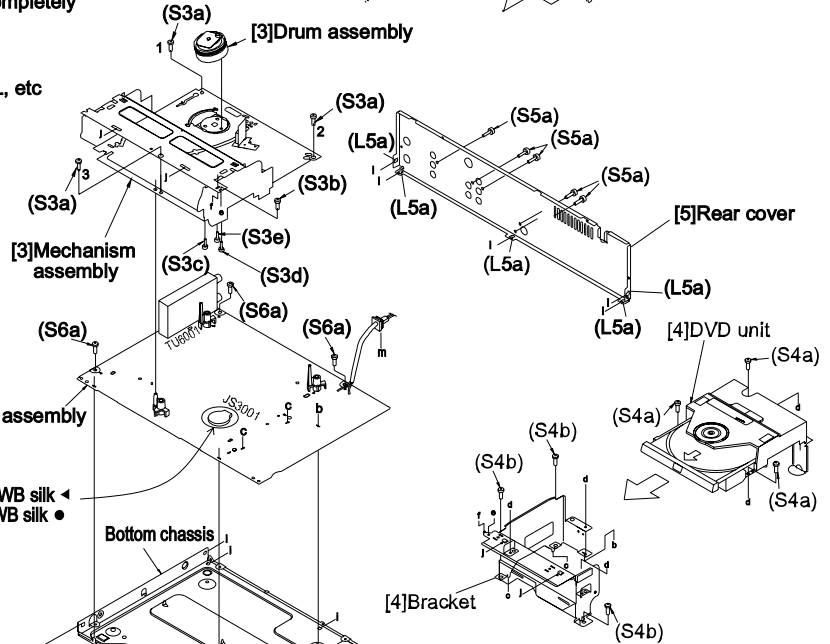
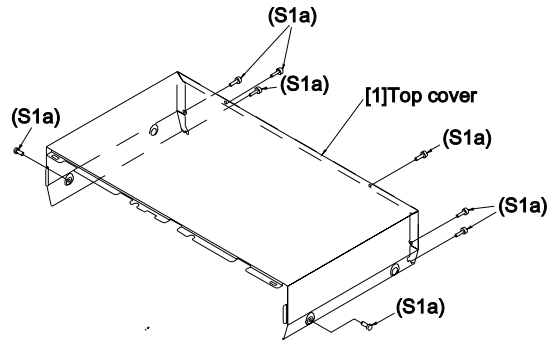
5. Pay attention NOT to make any scratches on FRONT PANEL.

6. Pay close attention not to cut any Sheath of WIRE by sharp edge of CHASSIS while Wiring Process.

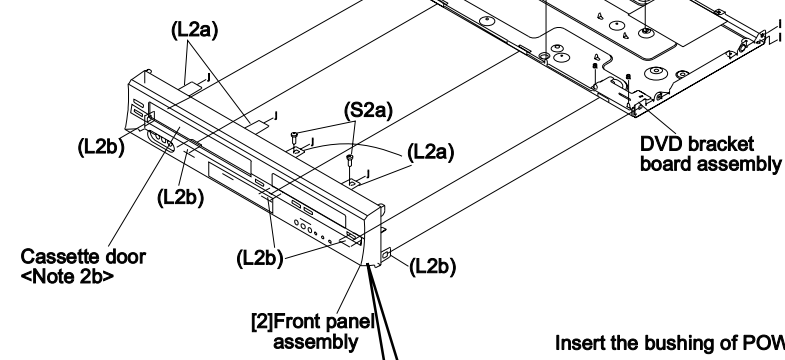


<Phase alignment>

- Accord the position of V gap on R.ENCORDER and PWB silk ◀
- Accord the position of Boss on R.ENCORDER and PWB silk ●



NOTE) FFC WIRE SHOULD BE POSITIONED BELLOW CASSETTE DOOR. (FOR AVOID FFC WIRE DISTURB CASSETTE IN AND OUT.)



Insert the bushing of POWER CORD so as not to twist the cord.

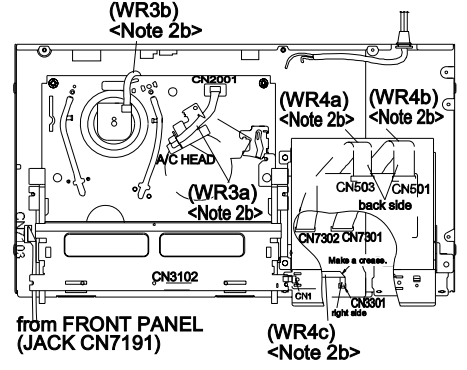
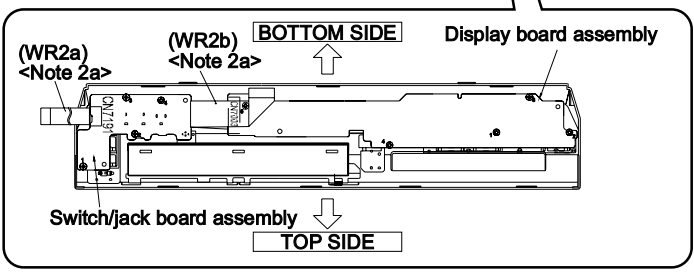


Fig.3-1d

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 3-2a.)
- (2) The tray comes out. Pull the tray in a front direction until it stops.
- (3) Remove the two screws **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 **b** of the loading base. Then, remove the tray upward. (See Figure 3-2d.)

Attaching the tray:

Engage **c** of 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 **d** of the slide cam can be inserted in **e** of the tray. (See Figure 3-2f.)

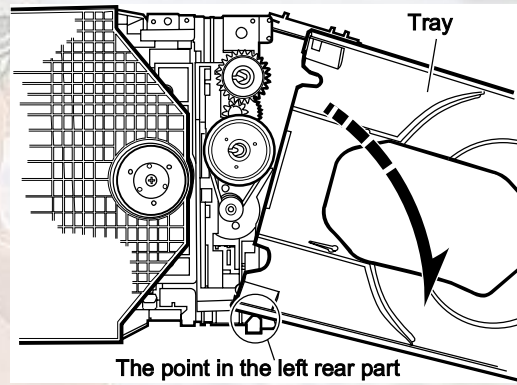


Fig.3-2c

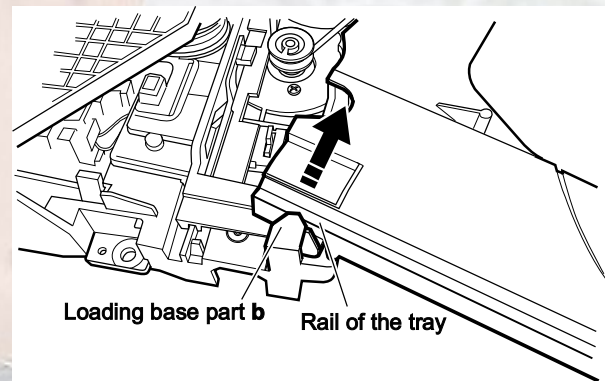


Fig.3-2d

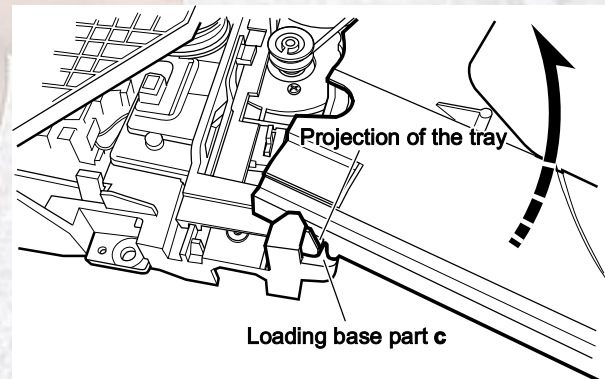


Fig.3-2e

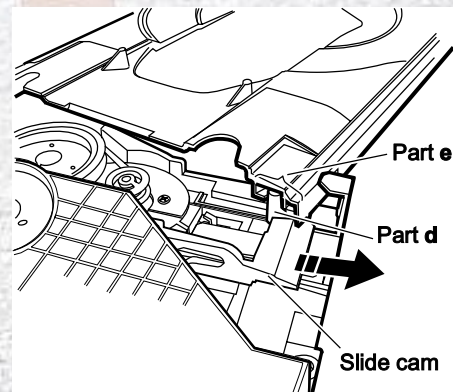


Fig.3-2f

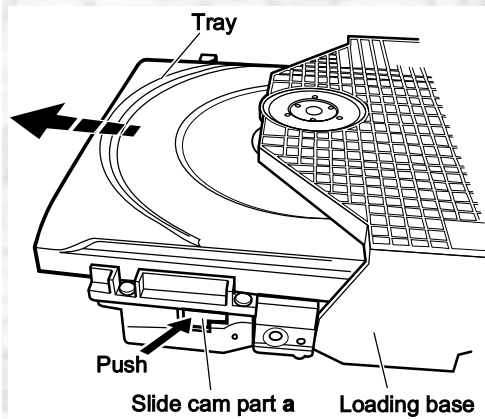


Fig.3-2a

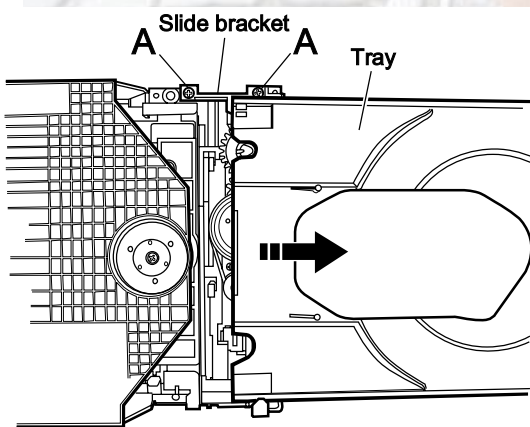


Fig.3-2b

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.

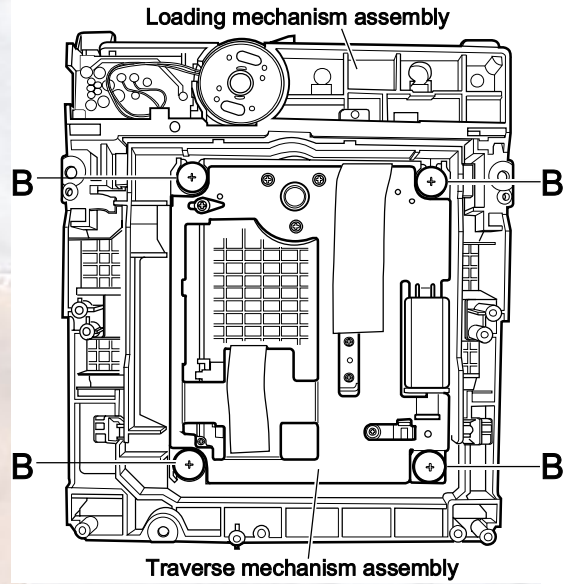


Fig.3-2g

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 **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 **g** to the two shafts on the front part of the elevator. And then, attach the elevator.

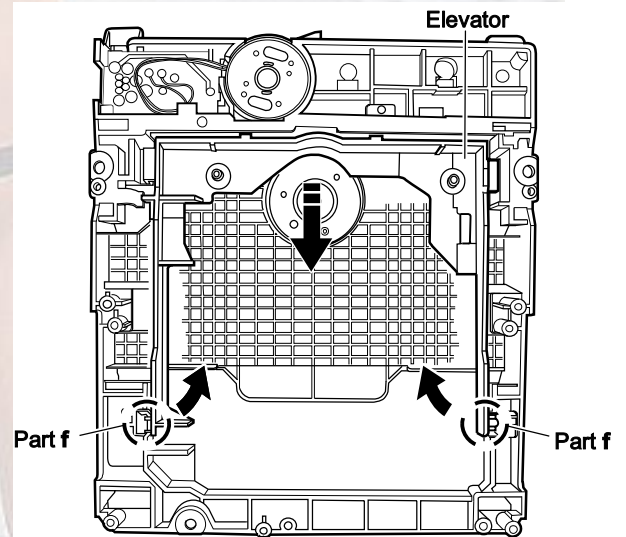


Fig.3-2h

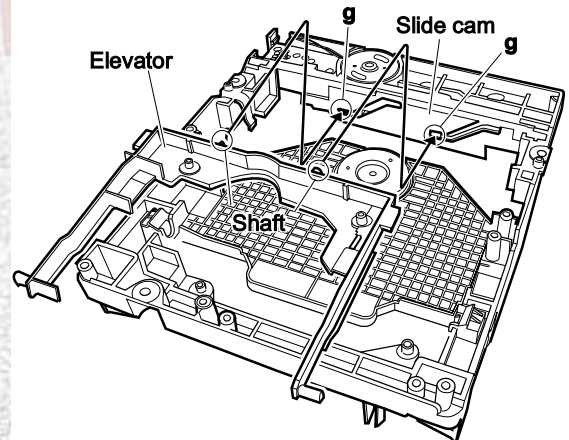


Fig.3-2j

3.2.4 Removing the loading motor (See Figure 3-2k and Figure 3-2l)

- 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 **C** attaching the loading motor.
- (3) Remove two solders **h** on the switch board.

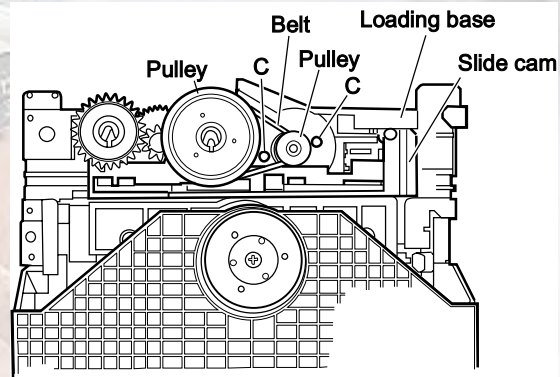


Fig.3-2k

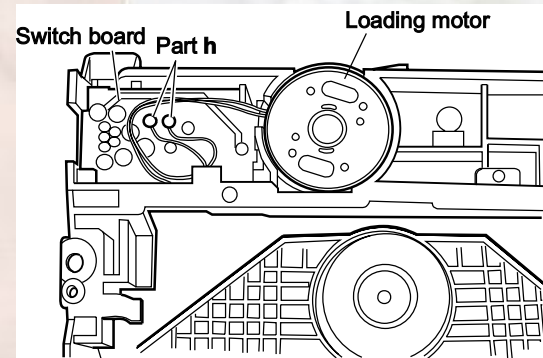


Fig.3-2l

3.3 Traverse mechanism assembly

3.3.1 Removing the pickup (See Figure 3-3a, Figure 3-3b)

- Prior to the following procedure, remove the traverse mechanism assembly.

- (1) Remove one screw **D** attaching the plate.
- (2) Remove the plate and the leaf spring.
- (3) Lift **i** of the shaft 1, and pull out the shaft 1 from **j**.
- (4) Remove **k** of the pickup from the shaft 2.

Attaching the pickup:

- (1) Engage **k** of the pickup to the shaft 2.
- (2) Insert the shaft 1 in **j**, and attach the shaft 1 to **i**.
- (3) Attach the leaf spring, and then attach the plate. Fix the leaf spring and the plate by using the screw **D**.

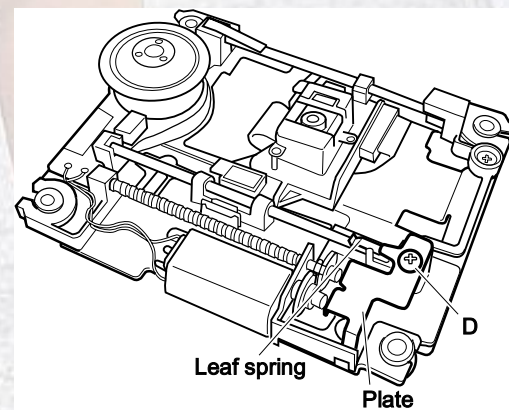


Fig.3-3a

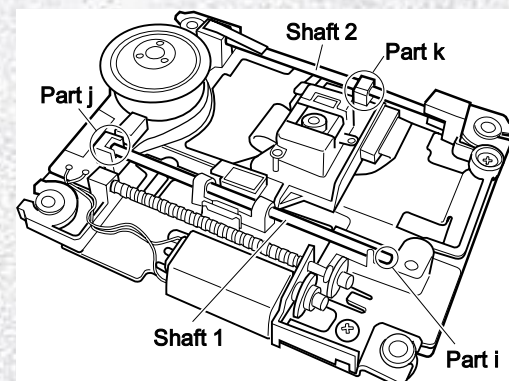


Fig.3-3b

SECTION 4 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.

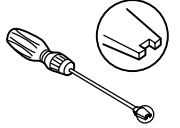
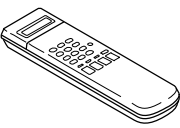
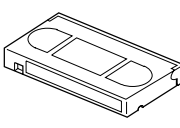
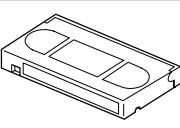
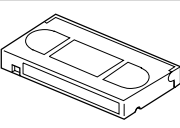
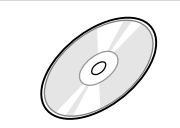
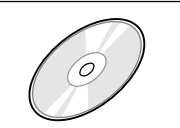
4.1.2 Required test equipments

- 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

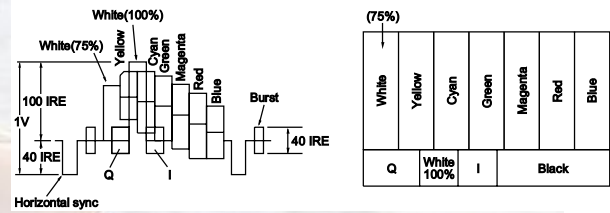
● : Used --- : Not used

	Mechanism compatibility adjustment	Electrical adjustment
Roller driver	●	---
Jig RCU	---	●
Back tension cassette gauge	●	---
Alignment tape(MHP)	●	---
Alignment tape(MHP-L)	●	●

Roller driver PTU94002	Jig RCU PTU94023B	Back tension cassette gauge PUJ48076-2
		
Alignment tape (SP, stairstep, NTSC) MHP	Alignment tape (EP, stairstep, NTSC) MHP-L	DVD test disc VT-501
		
CD-DA test disc CTS-1000		
		

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".)

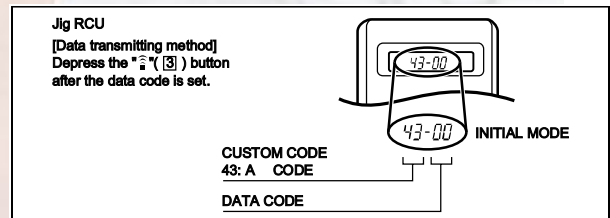


Fig.4-1 Jig RCU [PTU94023B]

- 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/ 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 "TRACKING + and -" button at the same time 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 "TRACKING +/-" 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)	• Back tension cassette gauge [PUJ48076-2]
Mode	(B1) (B2)	• PB • Eject end
Adjustment part	(F)	• Adjust pin [Mechanism assembly]
Specified value	(G)	• 25 - 51 gf·cm (2.45 - 5 x 10 ⁻³ Nm)

- (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.

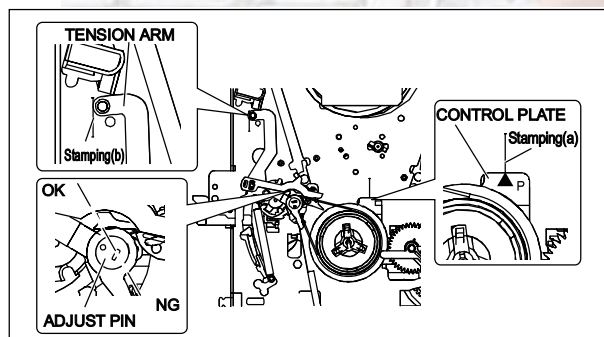


Fig.4-2a

4.2.2 FM waveform linearity

Signal	(A1) (A2)	• Alignment tape(SP, stairstep, NTSC) [MHP] • Alignment tape(EP, stairstep, NTSC) [MHP-L]
Mode	(B)	• PB
Equipment	(C)	• Oscilloscope
Measuring point	(D)	• TP106 (PB, FM)
External trigger	(E)	• TP111 (D,FF)
Adjustment part	(F)	• Guide roller [Mechanism assembly]
Specified value	(G)	• Flat V.PB FM waveform
Adjustment tool	(H)	• Roller driver [PTU94002]

- (1) Play back the alignment tape (A1).
- (2) Apply the external trigger signal to D.F.F (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).

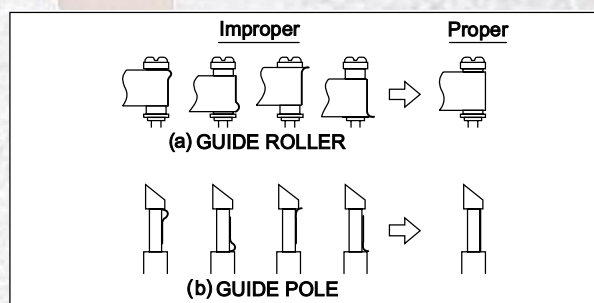


Fig.4-2b

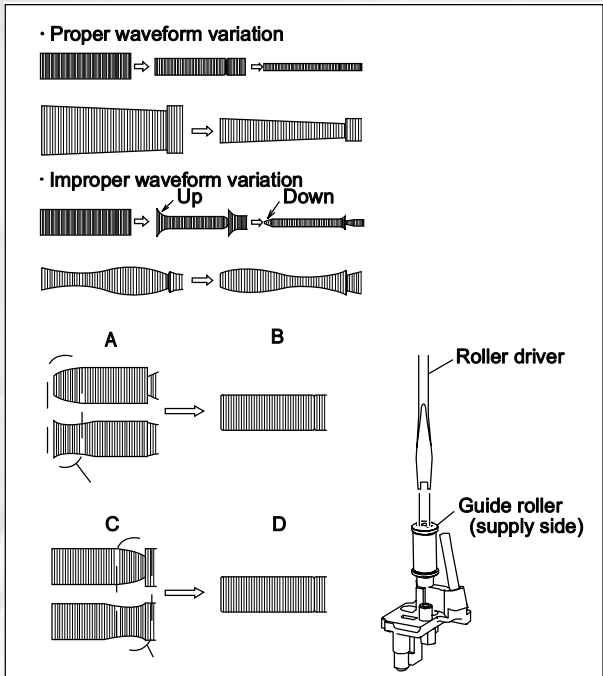


Fig.4-2c

4.2.3 Height and tilt of the A/C head

Note:

- Set a temporary level of the height of the A/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	(D1)	• TP106 (PB, FM)
	(D2)	• TP4001 (CTL, P)
External trigger	(E)	• TP111 (D,FF)
Adjustment part	(F)	• A/C head [Mechanism assembly]
Specified value	(G)	• 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.

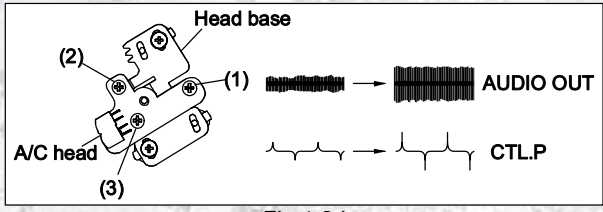


Fig.4-2d

4.2.4 A/C head phase (X-value)

Signal	(A1)	• Alignment tape(SP, stairstep, NTSC) [MHP]
	(A2)	• Alignment tape(EP, stairstep, NTSC) [MHP-L]
Mode	(B)	• PB
Equipment	(C)	• Oscilloscope
Measuring point	(D)	• TP106 (PB, FM)
External trigger	(E)	• TP111 (D,FF)
Adjustment part	(F)	• A/C head base [Mechanism assembly]
Specified value	(G)	• Flat V.PB FM waveform
Adjustment tool	(H)	• 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) Loosen the screws (4) and (5), then set the Roller driver to the innermost projected part of the A/C head. (See Fig. 4-2e.)
- (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.

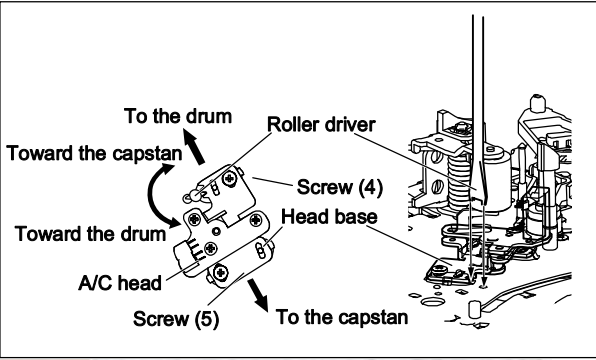


Fig.4-2e

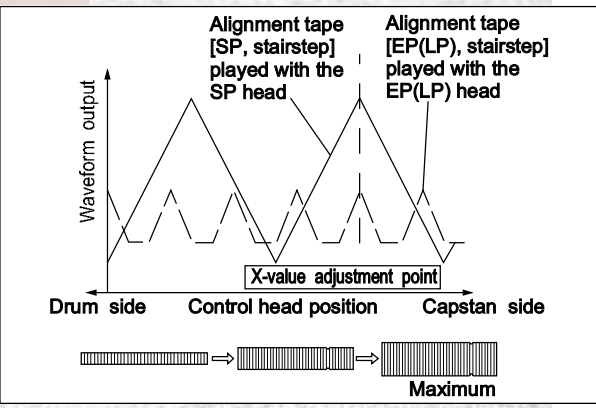


Fig.4-2f

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	(A1) (A2)	• Stairstep signal • Alignment tape(EP,stairstep,NTSC) [MHP-L]
Mode	(B)	• PB
Equipment	(C)	• Oscilloscope
Measuring point	(D)	• VIDEO OUT terminal (75 ohm terminated) • TP106 (PB, FM)
External trigger	(E)	• TP111 (D.FF)
Adjustment part	(F)	• Jig RCU: Code "43-5A"
Specified value	(G)	• 6.5 ± 0.5H
Adjustment tool	(H)	• 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).

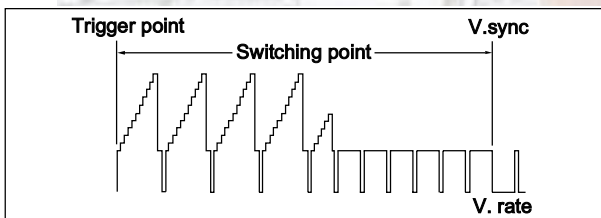


Fig.4-3a Switching point

4.3.1.2 Slow tracking preset

Signal	(A1) (A2)	• Ext. input • Color (colour) bar signal [NTSC]
Mode	(B1) (B2)	• VHS SP • VHS EP
Measuring point	(D)	• TV-Monitor
Adjustment part	(F)	• Jig RCU: Code "43-71" or "43-72"
Specified value	(G)	• minimum noise
Adjustment tool	(H)	• 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 (+1/6x) 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:

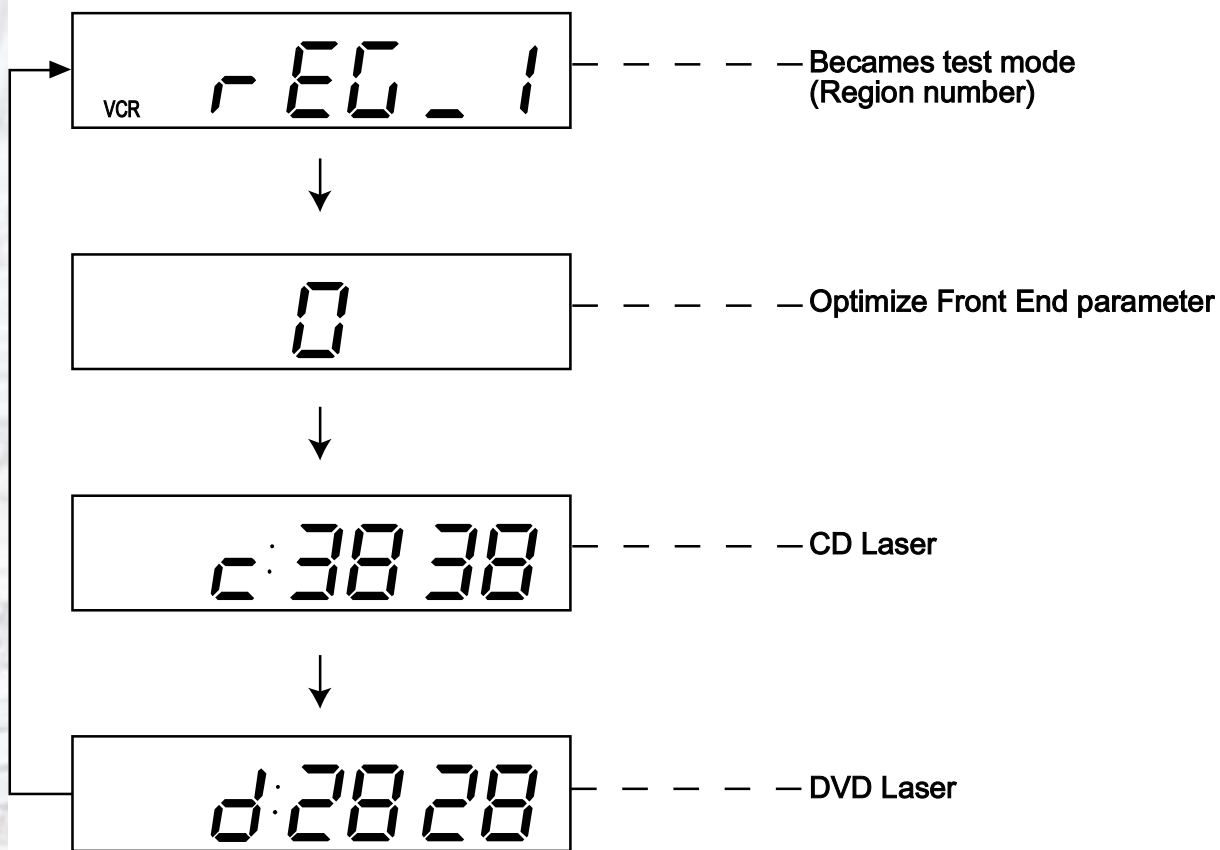
- For FWD slow (+1/6x) playback, transmit the code "43-08" from the Jig RCU to enter the slow playback mode, and transmit the code "43-D0" for REV slow (-1/6x) mode.

4.4 Electrical adjustment (DVD SECTION)

4.4.1 Test mode setting method

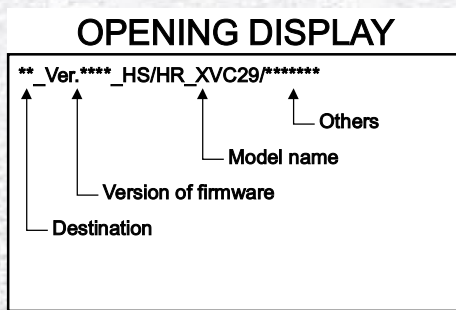
- (1) Press POWER button to turn off the unit.
- (2) Press the following remote keys continuously within 2seconds " SET UP " → " 2 " → " 8 " → " ENTER ".
- (3) The unit becomes JIG RCU mode.
- (4) Press POWER button then press VCR/DVD repeatedly so that the DVD indicator lights up on the front display panel.
- (5) Press the POWER button again to turn off the unit.
- (6) Transmit the code " 43-FA " from the Jig RCU.
- (7) The power supply of the unit turns on automatically then the FDP shows the region number.
- (8) Each pressing of DISPLAY button of the remote controller in test mode as follows.
- (9) To release test mode, press POWER key of the front panel.

FDP(Example)



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.



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 "43-6F" from the Jig RCU.
 - (3) When initialization is completed, the PLAY (▶). 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 (⏮) key of the remote controller for more than 2 seconds.
- (3) When initialization is completed, the PLAY (▶). 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.

4.4.6 Upgrading of firmware

- Firmware update disc supports CD-R media.
- When firmware update is necessary, information is available from the homepage of DIGITAL VIDEO STORAGE CATEGORY, CS group.

4.4.6.1 Creating an update disc

Please check the details of the update disc creation method by JS-NET.

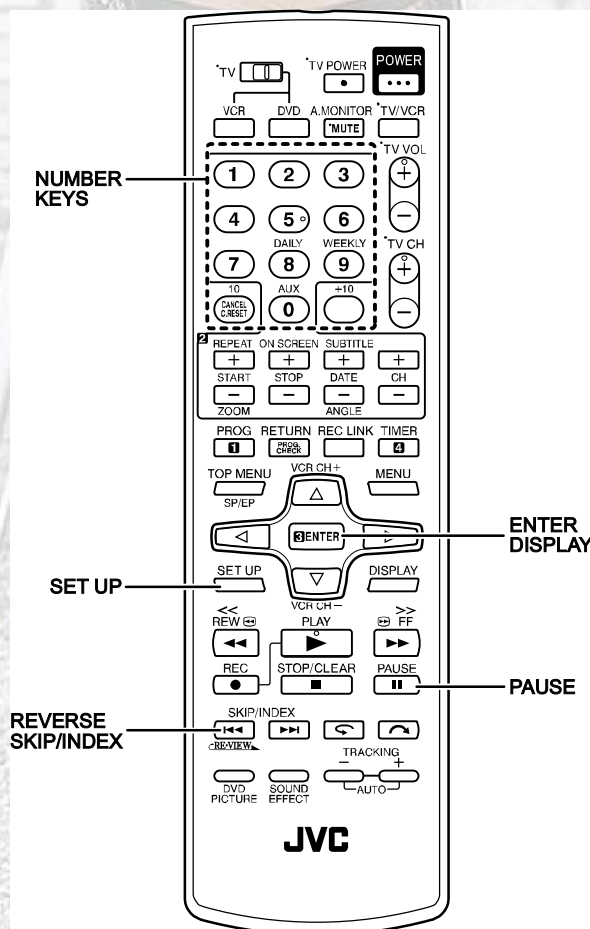
- (1) Down load the update file from JS-NET.
- (2) Write the update file into CD-R. Pay attention in the following points when writing the update disc.
 - Make sure to write in "Disc at Once".
 - Set the file compatibility to "ISO9660 format".

4.4.6.2 Update procedure

- (1) Turn the power ON. Load the update disc on the tray and close the tray.
- (2) Update of the firmware starts automatically then upgrading status is displayed in the monitor screen.
- (3) The tray opens automatically. Remove the upgrade disc.
- (4) Close the tray then press the POWER button to turn off the unit.
- (5) Confirm the version of the firmware.in the test mode.

MONITOR(Example)

```
VERSION UP DISC
PROGRAM&DESTINATION MODE
CURRENT VERSION    0494(or0495)
NEW VERSION        0496
READING....
SECTOR             **
```



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)

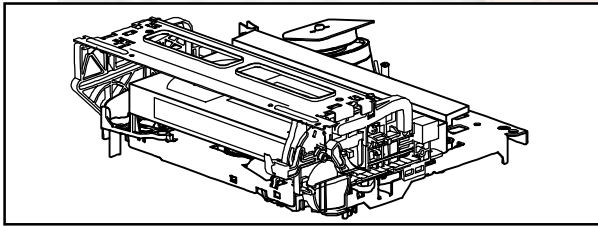


Fig.5-1a

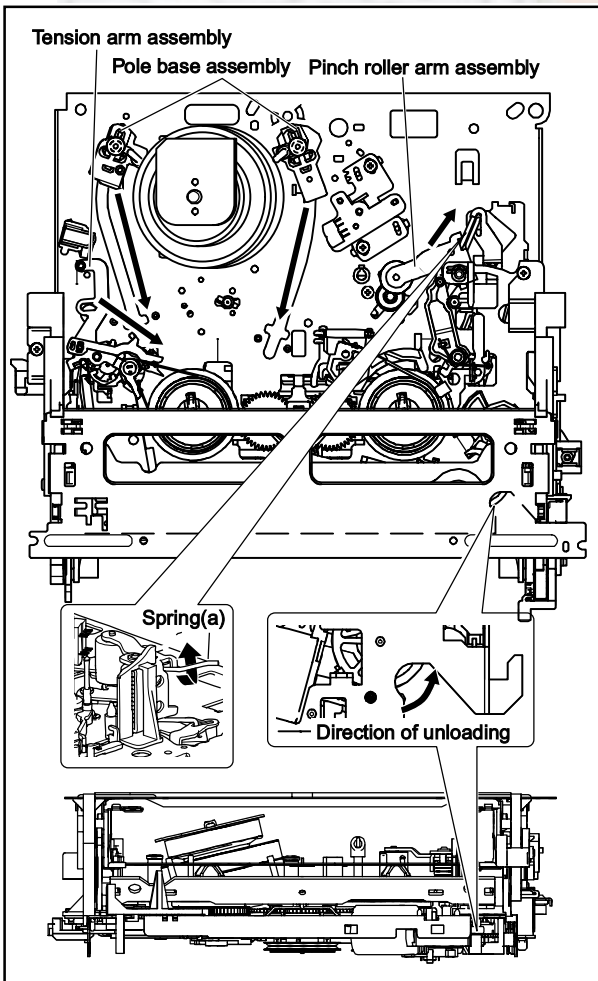


Fig.5-1b

- (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 disengaging the hooks (a) and (b).

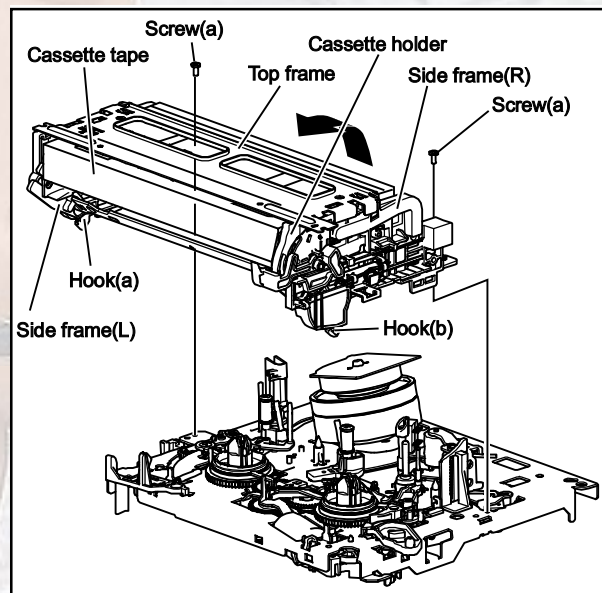


Fig.5-1c

- (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)

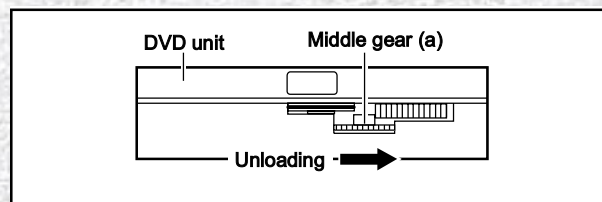


Fig.5-2a

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.

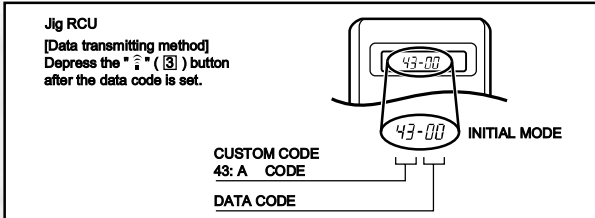


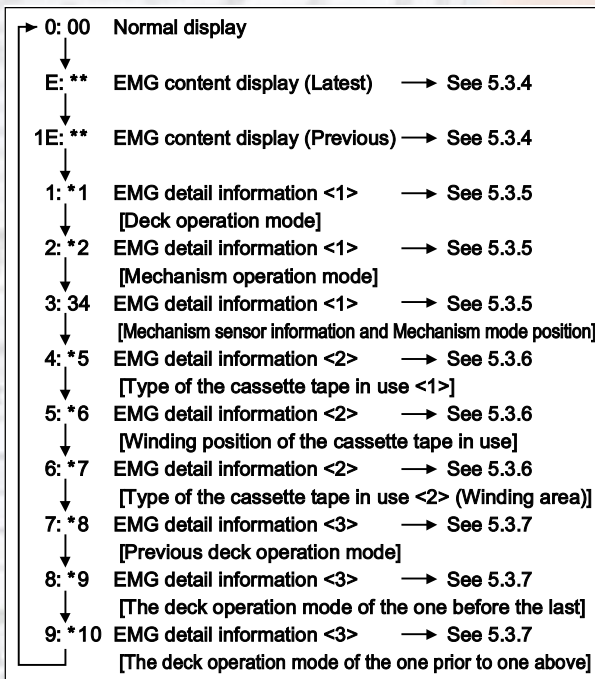
Fig.5-3a Jig RCU [PTU94023B]

5.3.1 Displaying the EMG information

The EMG detail of information can be displayed by transmitting the code "43-59" from the Jig RCU.

Note:

- Press VCR/DVD repeatedly so that the VHS indicator lights up on the front display panel.
- The EMG detail information <1><2> show the information on the latest EMG. It becomes " - - : - - : - - " when there is no latest EMG record.

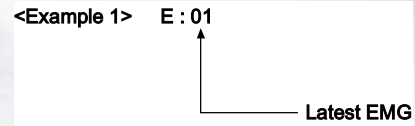


EMG display of 7 FDP display model

Fig.5-3b

EMG display of FDP display mode

- (1) Transmit the code "43-59" from the Jig RCU. The FDP shows the EMG content in the form of "E: ** : **".



- (2) Transmit the code "43-59" 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 "43-59" 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 "43-59" 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 "43-59" 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 "43-36" 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:

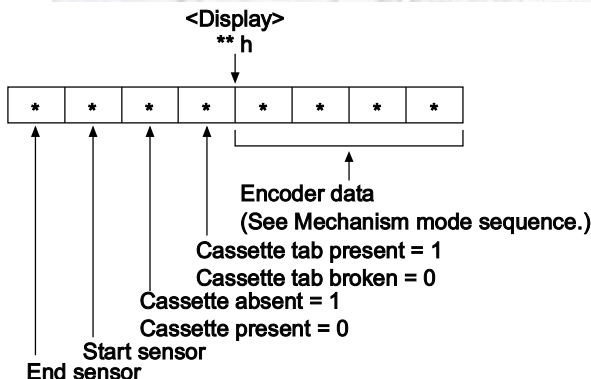
- The display is variable depending on the part No. of the System Control microcomputer (IC3001) built into the VCR. In the following, refer to the figure carrying the same two characters as the top two characters of the part number of your IC.
- The sensor information in the OSD display contents is 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

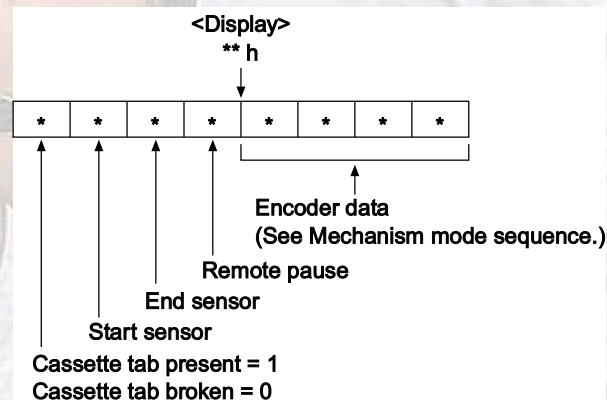


[For *HD only]

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

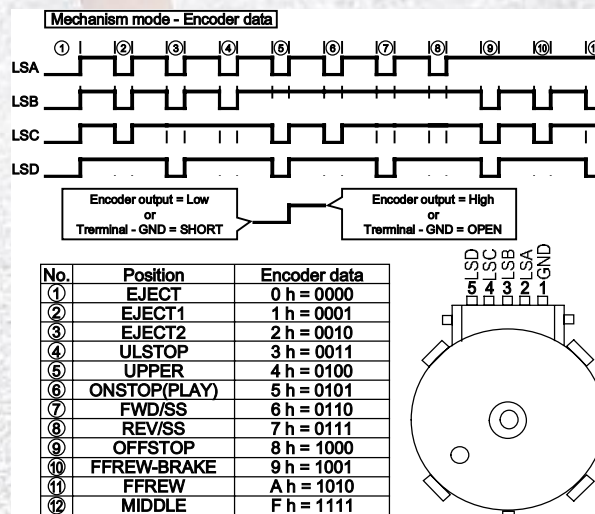
- AA : Key code (JVC code)
 BB : Deck operation mode (See EMG detail information <1>.)
 CC : Mechanism operation mode (See EMG detail information <1>.)
 DD : Sensor information (See sensor information details.)
 EE : Capstan motor speed (Search, double speed)
 FF : Tracking value
 GGGG : Cassette tape 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



[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), [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.	<ol style="list-style-type: none"> The mechanism is locked in the middle of the mode transition during a tape loading operation. 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. 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, [E:02] is identified and the power is turned off.	<ol style="list-style-type: none"> The mechanism is locked in the middle of mode transition. 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) 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 edge of the take-up reel pulse has not been generated for more than 4 seconds in the capstan rotating mode, [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.	<ol style="list-style-type: none"> The take-up reel pulse is not generated in the FWD transport modes (PLAY/FWD SEARCH/FF, etc.) because; <ol style="list-style-type: none"> The idler gear is not meshed with the take-up reel gear because the mechanism mal-functions for some reason. The idler gear is meshed with the take-up reel gear, but incapable of winding due to too large mechanical load (abnormal tension); The reel is rotating normally but an FG pulse is not generated due to the take-up reel sensor failure. The supply reel pulse is not generated in the REV transport modes (REV SEARCH/REW, etc.) because; <ol style="list-style-type: none"> The idler gear is not meshed with the supply reel gear because the mechanism mal-functions for some reason. The idler gear is meshed with the supply reel gear, but incapable of winding due to too large a mechanical load (abnormal tension); The reel rotates normally but the FG pulse is not generated due to a supply reel sensor failure. Power 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, [E:04] is identified, the pinch rollers are turned off and stopped, and the power is turned off.	<ol style="list-style-type: none"> The drum could not start or the drum rotation has stopped due to too large a load on the tape, because; <ol style="list-style-type: none"> The tape tension is abnormally high; The tape is damaged or a foreign object (grease, etc.) adheres to the tape. The drum FG pulse did not reach the System controller CPU because; <ol style="list-style-type: none"> The signal circuit is disconnected in the middle; The FG pulse generator (hall device) of the drum is faulty. The drum control voltage (DRUM CTL V) is not supplied to the MDA. 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, [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. 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 pulling-in operation. If the cassette does not reach the eject position within about 0.7 seconds after the drive mode reversal operation, [E:05] is identified and the power is switched OFF immediately.	<ol style="list-style-type: none"> The cassette cannot be ejected due to a failure in the drive mechanism of the housing. When the housing load increases during ejection, the loading motor is stopped because of lack of headroom in its drive torque. Housing load increasing factors: Temperature environment (low temperature, etc.), mechanism wear or failure. The sensor/switch for detecting the end of ejection are not functioning normally. The loading motor drive voltage is lower than specified or power (M12V) is not supplied to the motor (MDA). 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 EMG	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. 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.	<ol style="list-style-type: none"> The capstan could not start or the capstan rotation has stopped due to too large a load on the tape, because; <ol style="list-style-type: none"> The tape tension is abnormally high (mechanical lock); The tape is damaged or a foreign object (grease, etc.) is adhered to the tape (occurrence of tape entangling, etc.). The capstan FG pulse did not reach the System controller CPU because; <ol style="list-style-type: none"> The signal circuit is disconnected in the middle; The FG pulse generator (MR device) of the capstans is faulty. The capstan control voltage (CAPSTAN CTL V) is not supplied to the MDA. 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, [E:07] is identified, all the motors are stopped and the power is turned off.	<ol style="list-style-type: none"> The SW 5 V power supply circuit is shorted with GND. 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	<ol style="list-style-type: none"> The DVD unit is defective. 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.	<ol style="list-style-type: none"> The FG sensor is defective. (The soldered parts have separated.) The pull-up resistor at the FG sensor output is defective. (The soldered parts have separated.) Contact failure or soldering failure of the pins of the connector (board-to-board) to the FG sensor. The power (5V) to the sensor is not supplied. (Connection failure/soldering failure) The FG pulse is not sent to the System Controller CPU. The tilt motor is defective. (The soldered parts have separated.) The drive power to the tilt motor is not supplied. (Connection failure/soldering failure) The tilt motor drive MDA-IC is defective. 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, [E:0A] 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.	<ol style="list-style-type: none"> The supply reel pulse is not generated in the FWD transport mode (PLAY/FWD SEARCH/FF, etc.) because; <ol style="list-style-type: none"> PLAY/FWD or SEARCH/FF is started while the tape in the inserted cassette is cut in the middle; 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; The reel is rotating normally but the FG pulse is not generated due to a supply reel sensor failure. The take-up reel pulse is not generated in the REV transport mode (REV SEARCH/REW, etc.). <ol style="list-style-type: none"> REV SEARCH/REW is started when the tape in the inserted cassette has been cut in the middle; 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; The reel is rotating normally but the FG pulse is not generated due to a take-up reel sensor failure. The power (SW 5V) to a reel sensor is not supplied.
EU1: Head clog warning history	Presupposing the presence of the control pulse output in the PLAY mode, when the value obtained by mixing the two V.FM output channels (without regard to the A.FM output) has remained below a certain threshold level for more than 10 seconds, [E:U1] is identified and recorded in the emergency history. During the period in which the head clog is detected, the FDP shows "U:01" and the OSD repeats the "3 seconds of warning display" and the "7" seconds of noise picture display" alternately. EMG code : "E:C1" or "E:U1" / FDP : "U:01" / OSD : "Try cleaning tape." or "Use cleaning cassette." The head clog warning is reset when the above-mentioned threshold has been exceeded for more than 2 seconds or the mode is changed to another mode than PLAY.	

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 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)
0C	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
2C	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 MN*]

Display	Mechanism operation mode
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	Loading 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)
0A	Transition from pinch roller OFF to STOP at power OFF
0B	Transition from pinch roller ON to STOP at power ON
0C	Transition to PLAY
0D	Transition to Search FF
0E	Transition to REC
0F	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 HD*]

Display	Mechanism operation mode
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)
0E	REC
11	Cassette ejected
22	FF
26	FWD SEARCH (variable speed) including x2-speed
2E	INSERT REC
43	REW
47	REV SEARCH
4C	AUDIO DUB
6E	INSERT REC (VIDEO + AUDIO)
84	FWD STILL/SLOW
85	REV STILL/SLOW
8F	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 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
F8	Transition from STOP with pinch roller pressure off to STOP with pinch roller pressure on
FA	Transition from STOP with pinch roller pressure off to FF/REW
FB	Transition from STOP with pinch roller pressure off to REC.P (T.REC,etc.)
FC	Transition from STOP with pinch roller pressure off to cassette type detection SEARCH
FD	Short REV being executed after END sensor on during unloading
FE	Tension loosening being executed after tape loading (STOP with pinch roller pressure on)
FF	Tape being unloaded

3- : Mechanism sensor information

[Common table of MN* and HD*]

Display	Mechanism sensor information			
	REC safety SW	Start sensor	End sensor	Mechanism 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 Sensor ON = 0 Sensor ON = 0
 Tab present = 1 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 (0, 2, 4, 6, 8, A, C, E)	-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 (1, 3, 5, 7, 9, B, D, F)	-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) Word data (Beginning) (End)
00	Cassette type not identified	
04 - 08	C cassette, thick tape TC-10	(0497 - 0506) (0732 - 0858)
05 - 06	Small reel, thick tape T-20	(05A9 - 0661)
05 - 0C	C cassette, thick tape TC-20P	(0599 - 05FF) (0AA1 - 0C07)
06 - 0C	C cassette, thin tape TC-40	(0623 - 063D) (0C41 - 0CC3)
06 - 0C	C cassette, thin tape TC-30	(0611 - 0638) (0C0C - 0CB2)
07 - 08	Small reel, thick tape T-40	(07CC - 08E5)
09 - 0B	Small reel, thick tape T-60	(09FD - 0B78)
0C - 0D	Small reel, thick tape T-80(DF-160)	(0C20 - 0DFC)
0D - 0F	Small reel, thick tape T-90(DF-180)	(0D31 - 0F3E)
0E - 10	Small reel, thick tape T-100	(0E43 - 107F)
10 - 12	Small reel, thin tape T-140	(10E1 - 120C)
10 - 13	Small reel, thick tape T-120(DF-240)	(1073 - 1313)
11 - 14	Small reel, thick tape T-130	(1185 - 1429)
12 - 14	Small reel, thin tape T-160	(12D3 - 141F)
13 - 14	Small reel, thin tape T-210(DF-420)	(1373 - 14C3)
13 - 14	Small reel, thin tape T-180(DF-360)	(1357 - 14C0)
13 - 14	Small reel, thin tape T-168	(1395 - 14EE)
13 - 14	Small reel, thick tape DF-300	(13A8 - 14CE)
15 - 16	Large reel T-20	(1536 - 1618)
16 - 17	Large reel T-30	(1647 - 175A)
17 - 18	Large reel T-40	(1759 - 189C)
19 - 1B	Large reel T-60	(1989 - 1B2F)

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>".



JVC

Victor Company of Japan, Limited
AV & MULTIMEDIA COMPANY DIGITAL VIDEO STORAGE CATEGORY 12, 3-chome, Moriya-cho, kanagawa-ku, Yokohama, kanagawa-prefecture, 221-8528, Japan

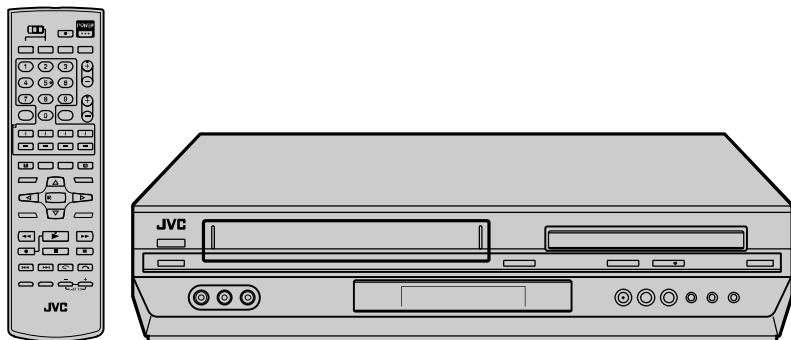
(No.YD052)

JVC



DVD PLAYER & VIDEO CASSETTE RECORDER

HR-XVC29SU



Hi-Fi

VHS

SQPB

DVD
VIDEO

dts
2.0+DIGITAL OUT

DOLBY
DIGITAL

COMPACT
disc
DIGITAL VIDEO

COMPACT
disc
DIGITAL AUDIO

COMPACT
disc
SUPER VIDEO

INSTRUCTIONS

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

CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN



CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK,
DO NOT REMOVE COVER (OR BACK).
NO USER-SERVICEABLE PARTS INSIDE.
REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.



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:
TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS UNIT TO RAIN OR MOISTURE.

CAUTION:

This unit should be used with AC 120V \sim , 60Hz 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:

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

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.

ATTENTION - RAYONNEMENT LASER VISIBLE OU INVISIBLE EN CAS D'OUVERTURE.
NE PAS REGARDER DANS LE FAISCEAU.

LP41077-002A

Declaration of Conformity

Model Number: HR-XVC29SU
Trade Name: JVC
Responsible Party: JVC Americas Corp.
Address: 1700 Valley Road Wayne, N.J. 07470
Telephone Number: 973-317-5000

This device complies with Part 15 of FCC Rules.
Operation is subject to the following two conditions:

(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.

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 alternating-current 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

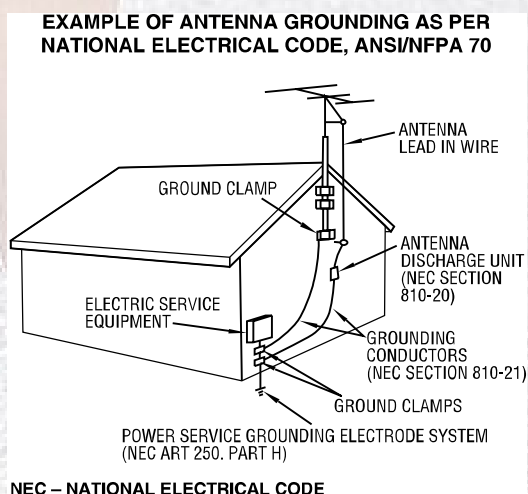
If an outside antenna or cable system is connected to the product, be sure the antenna or cable system is grounded so as to provide some protection against voltage surges and built-up static charges. Article 810 of the National Electrical Code, ANSI/NFPA 70, provides information with regard to proper 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.



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 short-out 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:

- When the power supply cord or plug is damaged.
- If liquid has been spilled, or objects have fallen into the product.
- If the product has been exposed to rain or water.
- 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.
- If the product has been dropped or damaged in any way.
- 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 9 – 12 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  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™ is an official trademark of DIRECTV, Inc., a unit of GM Hughes Electronics. DISH Network™ is a trademark of Echostar Communications Corporation.



- 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 U.S. patents and other intellectual property rights. Use of this copyright protection technology must be authorized by Macrovision, and is intended for home and other limited viewing uses only unless otherwise authorized by Macrovision. Reverse engineering or disassembly is prohibited.

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 discs with the following logos for playback only.

DVD VIDEO 	Video CD/Super Video CD 
Audio CD CD-DA files 	

- 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 Video CD, SVCD (Super Video CD), or Audio CD format and finalized.
 - CD-R/-RW discs written in JPEG in accordance with the "ISO 9660" format. (See page 49 for details.)
- This unit can also play back audio signals recorded in MIX-MODE CD, CD-G, CD-EXTRA, and CD TEXT.
- The image may be sometimes poor or noisy due to defects in the disc itself.
- With some discs, operations may not be possible.

Marks of discs in this instruction manual

 Allows operation with a DVD VIDEO disc.	 Allows operation with a Video CD disc.
 Allows operation with a SVCD disc.	 Allows operation with an Audio CD disc.

Unplayable Discs

The following types of discs cannot be played using this unit.

- CD-ROM discs (including PHOTO-CD)
- DVD AUDIO discs
- Super Audio CDs (SACD)
- DVD-RW discs recorded in VR format
- DVD-RAM discs
- DVD-ROM discs

In addition, this unit does not play:

- Unfinalized discs
- Discs of irregular shape or discs with tape, seals, or paste on either the label side or playback side. Playing back these discs may damage the unit.

The Non-DVD side of a "DualDisc" does not comply with the "Compact Disc Digital Audio" standard. Therefore, the use of Non-DVD side of a DualDisc on this product may not be recommended.

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.






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

	Number of subtitles		Number of angles
	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)
 	Video playback is in Wide video mode (16:9) on wide televisions, but in letter box on televisions with standard 4:3 aspect ratio.		
 	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).		

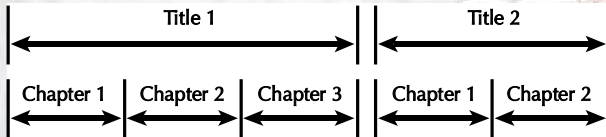
Marks related to audio

	Number of audio tracks
	Dolby Digital mark Dolby Laboratories has developed a digital surround system for the home. This mark indicates that you may enjoy 5.1-channel audio (front left and right, center, rear left and right, and a channel for LFE (Low-Frequency Effects)).
	DTS (Digital Theater System) You can enjoy DTS audio if you connect an amplifier with a built-in DTS decoder to the DIGITAL AUDIO OUT connector of the 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.

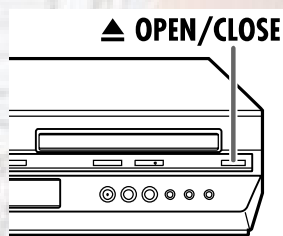
For more details, refer to "Locating a Desired Scene Using the Menu of the Video CD with Playback Control (PBC) Function" (▶ pg. 41).

Placing a Disc

1 Open the disc tray.

Press **▲ OPEN/CLOSE** on the DVD deck to open the disc tray.

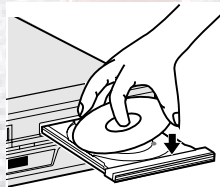
- The unit's power comes on automatically.
- Do not block the disc tray with your hand while it is opening or closing as this may result in hardware failure.
- Do not place unplayable discs or any object other than a disc in the disc tray.
- Do not press down strongly on the disc tray or place any heavy 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.
- To insert an 8 cm disc, place it according to the inner groove.



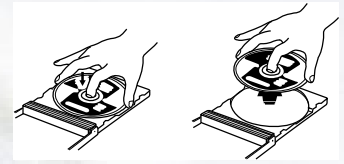
3 Press **▲ OPEN/CLOSE** on the DVD deck to close the disc tray.

- Pressing **▶ PLAY** also closes the disc tray.
- Playback begins automatically if an auto-playback DVD disc is loaded. Although the VHS deck is selected, the DVD deck is selected automatically (except when the VHS deck is in the timer mode or the Automatic Satellite Programme Recording mode.)

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

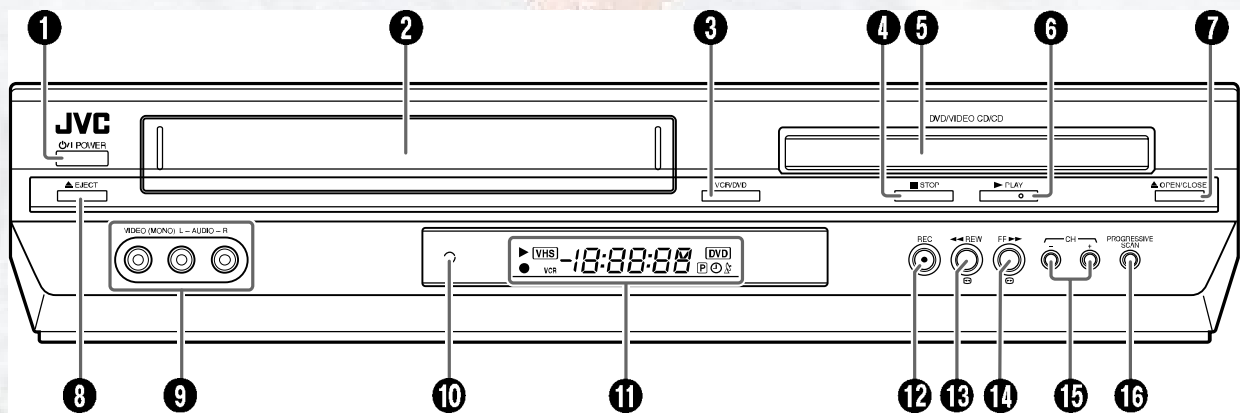
Make sure that discs are kept in their cases. If discs are piled on top of one another without their protective cases, they can be damaged. Do not put discs in a location where they may be exposed to direct sunlight, or in a place where the humidity or temperature is high. Avoid leaving discs in your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



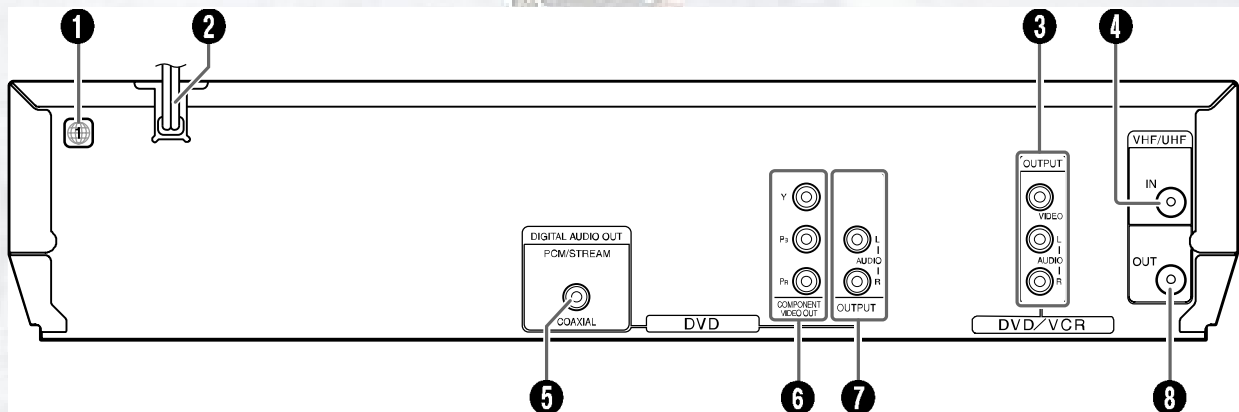
Front View



- ❶ Power Button (POWER) ↗ pg. 15, 17, 29, 56
- ❷ VHS Cassette Loading Slot
- ❸ VCR/DVD Button ↗ pg. 26, 31, 40, 50
- ❹ Stop Button (■ STOP) ↗ pg. 26, 31, 40, 50
- ❺ Disc Tray ↗ pg. 8
- ❻ Play Button (▶ PLAY) ↗ pg. 26, 31, 40, 50, 56
- ❼ DVD Open/Close Button (▲ OPEN/CLOSE) ↗ pg. 8, 40, 50
- ❽ VHS Eject Button (▲ EJECT) ↗ pg. 26, 29, 31

- ❾ Video/Audio Input Connectors (VIDEO/AUDIO) ↗ pg. 52
- ❿ Remote Sensor
- ⓫ Front Display Panel ↗ pg. 10
- ⓬ Record Button (● REC) ↗ pg. 31, 32
- ⓭ Rewind Button (◀◀ REW) ↗ pg. 26, 27, 42
- ⓮ Fast Forward Button (FF ▶▶) ↗ pg. 26, 27, 42
- ⓯ Channel Button (CH +/-) ↗ pg. 27, 31, 32
- ⓰ Progressive Scan Button (PROGRESSIVE SCAN) ↗ pg. 15

Rear View

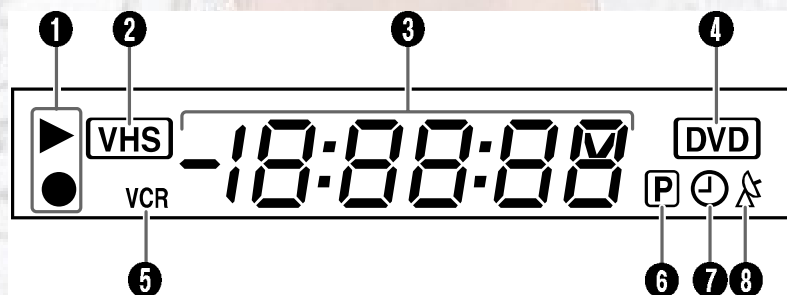


- ❶ Region Number Label pg. 7
- ❷ AC Power Cord pg. 13, 14
- ❸ Audio/Video Output Connectors (AUDIO/VIDEO OUTPUT) pg. 13, 14, 53
- ❹ Antenna Input Connector (VHF/UHF IN) pg. 13, 14

- ❺ Digital Audio Output Connector (DIGITAL AUDIO OUT)* pg. 55
- ❻ Component Video Output Connectors (COMPONENT VIDEO OUT)* pg. 14
- ❼ Audio Output Connectors (AUDIO OUTPUT (L/R))*
- ❽ Antenna Output Connector (VHF/UHF OUT) pg. 13, 14

* These connectors are only for DVD deck.

Front Display Panel



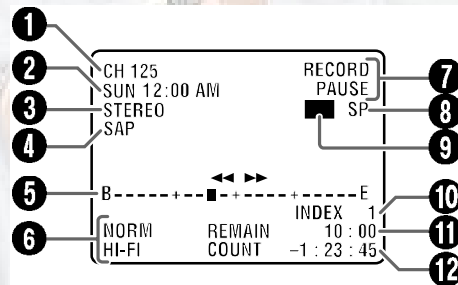
- ❶ Operation Mode Indicators
- ❷ VHS Indicator*
 - * Lights up when selecting the VCR deck by pressing VCR/DVD on the unit or VCR on the Remote.
- ❸ Channel/Clock
 - Auxiliary Input Mode Display (F-1) (VCR deck only)
 - Counter Display (VCR deck)
 - Tape Speed (SP/EP) (VCR deck only)
 - Multi-information window** (DVD deck)
 - **The current group/title/track/chapter number(s), time and status information.
- ❹ DVD Indicator

- ❺ VCR Indicator pg. 32
- ❻ Progressive Mode Indicator pg. 15
- ❼ "Timer" Indicator (VCR deck only) pg. 35, 39
- ❽ Satellite Auto Recording Indicator (⚡) (VCR deck only) pg. 39

On-Screen Display (VCR deck)

If you press **ON SCREEN** on the Remote when "SUPERIMPOSE" is set to "ON" (pg. 59), various operational indicators appear on the TV screen.

For On-screen display for DVD deck, refer to "Using the on-screen bar" (pg. 47).



① Channel Position Number/Auxiliary Input Indicator (F-1)

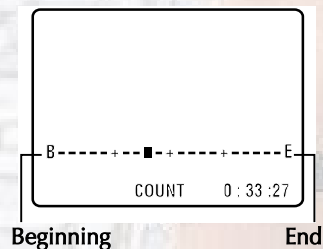
② Day/Clock Display

③ Stereo Program Indicator pg. 33

④ SAP Indicator pg. 33

⑤ Tape Position Indicator

The tape position indicator appears on the TV screen when you press **REW** (◀◀) or **FF** (▶▶) from the Stop mode or perform an Index Search. (pg. 28) The position of "I" 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.

⑥ Audio Mode Display pg. 30

⑦ Operation Mode Indicators

⑧ Tape Speed (SP/EP)

⑨ "Cassette Loaded" Mark

⑩ Index number pg. 28

⑪ Tape Remaining Time Indicator pg. 33

⑫ Counter Display

To recall an indication

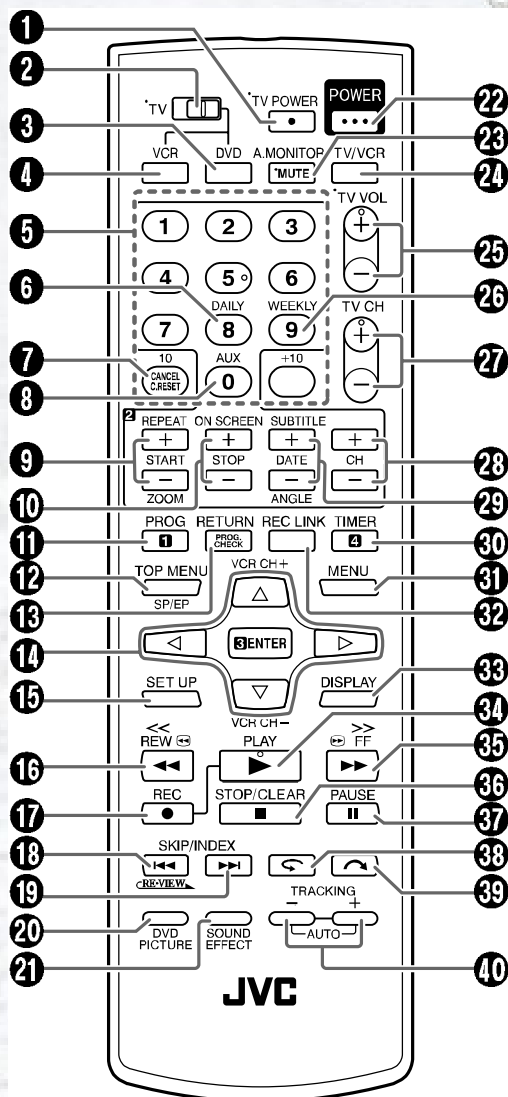
1 Press **ON SCREEN**.

- 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 (TV POWER (●/⏻), TV/VCR, TV VOL+/-, TV CH +/-, MUTE) can also be used to operate a JVC's TV after setting the TV/VCR/DVD switch to the left.

- 1 TV Power Button (TV POWER) ☞ See above.
- 2 TV/VCR/DVD switch ☞ pg. 15, 17, 18, 26, 31, 40, 50
- 3 DVD Button ☞ pg. 17, 19, 40, 50, 61
- 4 VCR Button ☞ pg. 18, 22, 24, 26, 31, 58
- 5 Number Keys
- 6 Daily Button (DAILY) ☞ pg. 35
- 7 Cancel Button (CANCEL) ☞ pg. 37
Reset Button (C.RESET) ☞ pg. 33
- 8 Auxiliary Button (AUX) ☞ pg. 52
- 9 Start Time Button (START +/-) ☞ pg. 34
Repeat Button (REPEAT) ☞ pg. 43, 51
Zooming Button (ZOOM) ☞ pg. 42, 51
- 10 Stop Time Button (STOP +/-) ☞ pg. 34
On-Screen Button (ON SCREEN) ☞ pg. 11, 47
- 11 Programing Button (PROG) ☞ pg. 34
- 12 SP/EP Button ☞ pg. 31, 35, 39
Top Menu Button (TOP MENU) ☞ pg. 41

- 13 Program Check Button (PROG. CHECK) ☞ pg. 36
Return Button (RETURN) ☞ pg. 41
- 14 ▲▼ Button
◀▶ Button
ENTER Button
VCR Channel Button (TV/VCR CH +/-)
- 15 Set Up Button (SET UP) ☞ pg. 17, 18, 19, 20, 22, 24, 58, 61
- 16 Rewind Button (◀◀ REW) ☞ pg. 26, 27, 42
- 17 Record Button (● REC) ☞ pg. 31, 32
- 18 Reverse Skip/Index Button (◀◀ SKIP/INDEX) ☞ pg. 28, 41, 50
Review Button (◀◀ REVIEW ▶▶)
- 19 Forward Skip/Index Button (▶▶ SKIP/INDEX) ☞ pg. 28, 41, 50
- 20 DVD Picture Button (DVD PICTURE) ☞ pg. 46
- 21 Sound Effect Button (SOUND EFFECT) ☞ pg. 46
- 22 Power Button (POWER) ☞ pg. 15, 17, 29, 56
- 23 TV Muting Button (MUTE) ☞ See the left column
Audio Monitor Button (A.MONITOR) ☞ pg. 30, 45
- 24 TV/VCR Button ☞ pg. 32, left column
- 25 TV Volume Button (TV VOL+/-) ☞ See the left column
- 26 Weekly Button (WEEKLY) ☞ pg. 35
- 27 TV Channel Button (TV CH +/-) ☞ See the left column
- 28 Channel Button (CH +/-) ☞ pg. 31
- 29 Date Button (DATE +/-) ☞ pg. 34
Subtitle Button (SUBTITLE) ☞ pg. 44
Angle Button (ANGLE) ☞ pg. 45
- 30 Timer Button (TIMER) ☞ pg. 35
- 31 Menu Button (MENU) ☞ pg. 41
- 32 Satellite Auto Recording Button (REC LINK) ☞ pg. 39
- 33 Display Button (DISPLAY) ☞ pg. 33, 40
- 34 Play Button (▶ PLAY) ☞ pg. 26, 31, 40, 50
- 35 Fast Forward Button (FF ▶▶) ☞ pg. 26, 27, 42
- 36 Stop Button (■ STOP) ☞ pg. 26, 31, 40, 50
Clear Button* (CLEAR)
**Does not function with this unit.*
- 37 Pause Button (|| PAUSE) ☞ pg. 27, 31, 40, 42, 50
- 38 One Touch Replay Button (↶) ☞ pg. 29, 42
- 39 Skip Search Button (↷) ☞ pg. 28
- 40 Tracking Button (TRACKING +/-) ☞ pg. 30

How To Use

Before use, insert two AA size batteries into the Remote with the polarity (⊕ and ⊖) matched correctly as indicated on the battery compartment or on the lid.

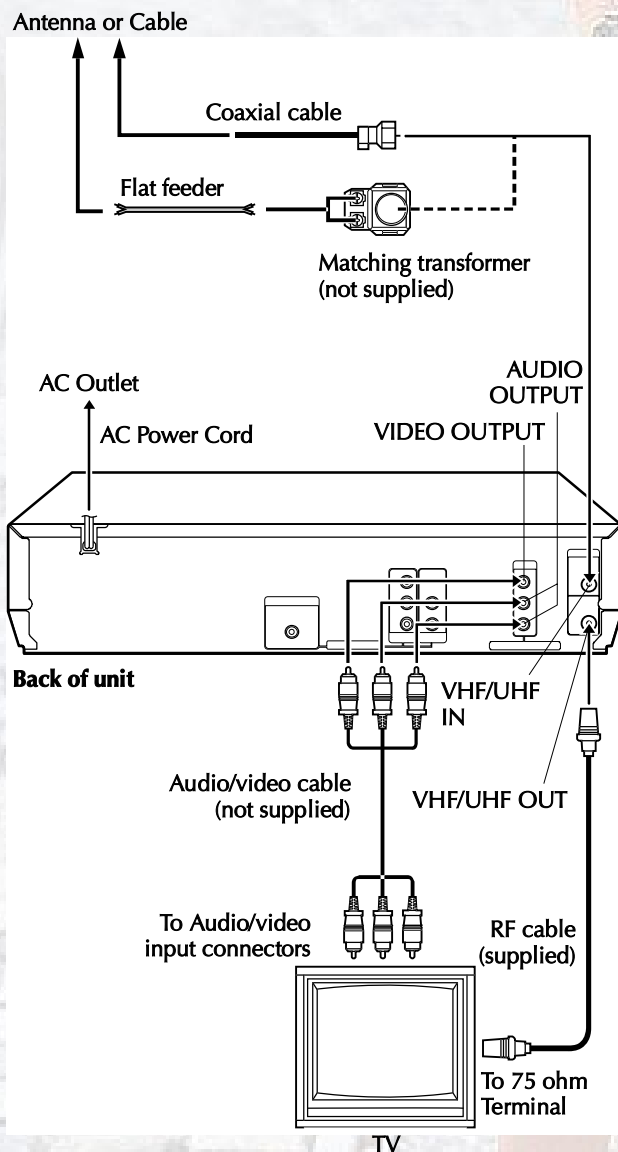
The Remote can operate most of your unit's functions, as well as basic functions of TV sets of JVC. (☞ See the left column)

- 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 71.

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 —

- 1 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 Component Video Connection. (DVD deck only) (pg. 14)

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. (pg. 16)

- 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 CH" or "4 CH."

- The VCR channel is preset to "3 CH." Set to "4 CH" if the Channel 3 is used for broadcasting in your area.
- With AV connection, set the VCR channel to "- CH" (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 VHS indicator lights up on the front display panel.

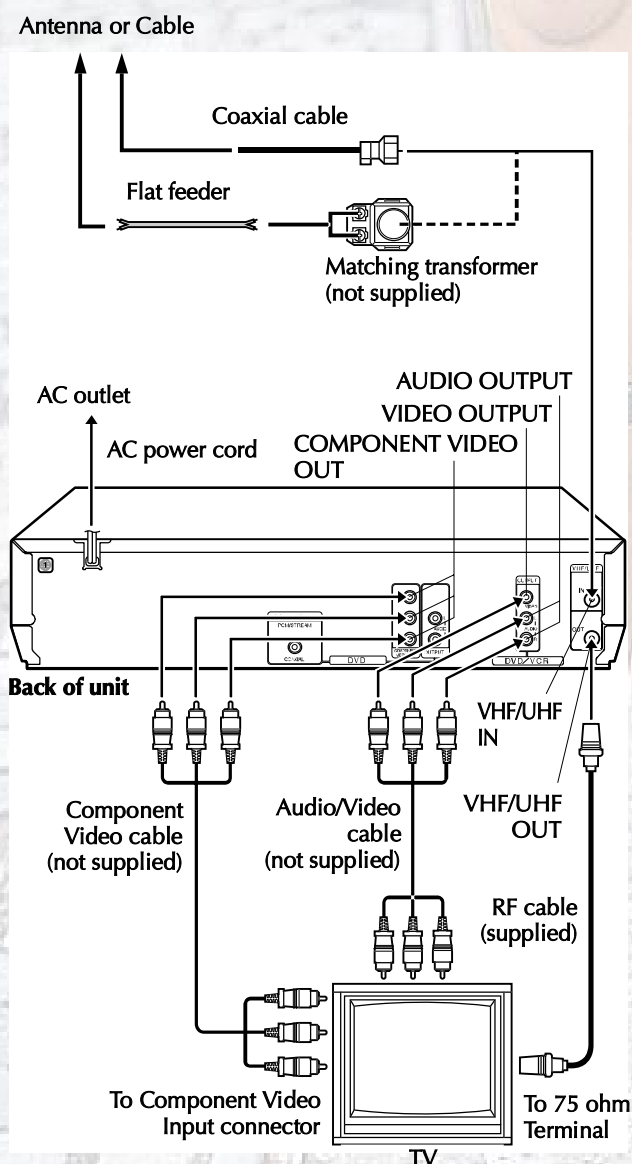
- 1 Press **POWER** to turn off the unit, then press **STOP** on the unit for more than 5 seconds. "3 CH" appears on the front display panel.
- 2 Press **CH +/-** on the Remote to select "3 CH," "4 CH" or "- CH" (off), then press **ENTER**.

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.



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

1 Connect the unit to TV.

- 1 Connect the antenna, unit and TV as per "AV Connection." (pg. 13)
- 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. (pg. 16)

- 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 VHS indicator lights up on the front display panel.

- 1 Press **POWER** to turn off the unit, then press **STOP** on the unit for more than 5 seconds. "3 CH" appears on the front display panel.
- 2 Press **CH +/-** on the Remote to select "- CH" (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 JVC 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 only)" (pg. 15).

Scan Mode Set

(DVD deck only)

This unit supports the progressive scan system (eg. 480p*) as well as the conventional interlaced scan system (eg. 480i*).

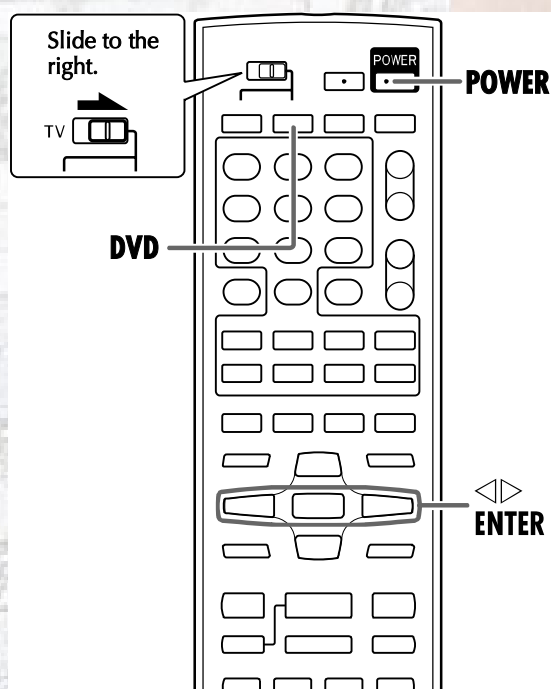
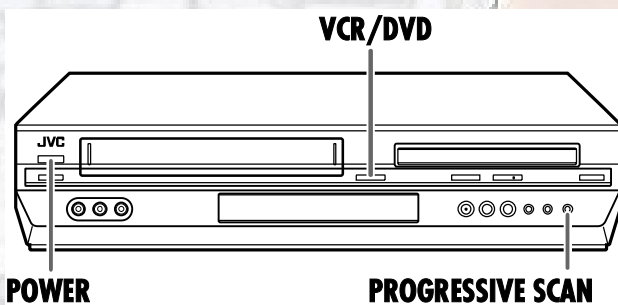
If your TV equipped with component video connectors supports the progressive video input, you can enjoy a high quality picture by setting the progressive scan mode to active.

- 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.

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



1 Turn on the unit.

Press **POWER**.

2 Select the DVD deck.

On the unit

Press **VCR/DVD** repeatedly so that the DVD indicator lights up on the front display panel.

On the Remote

Press **DVD** so that the DVD indicator lights up on the front display panel.

3 Switch the mode.

- 1 Press and hold **PROGRESSIVE SCAN** on the unit for more than 3 seconds.

The current scan mode blinks on the front display panel.

- 2 While the current scan mode blinks, press **◀▶** to select "ProGr" (for the progressive scan mode) or "IntEr" (for the interlaced scan mode), then press **ENTER**.

- If the current scan mode stops blinking before you make the setting, start from step 1 again.

NOTE:

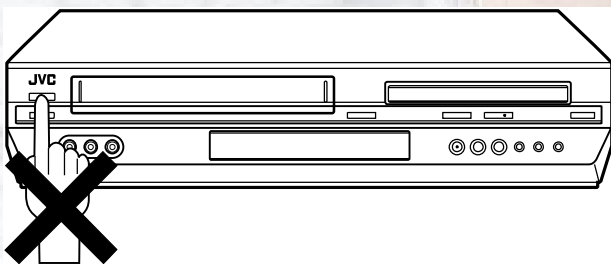
When the progressive scan mode is selected, the Progressive mode indicator (P) lights up on the front display panel.

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. (☞ pg. 22 – 24)
- 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.

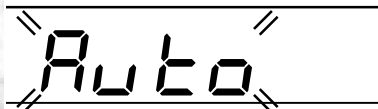
1 Perform Plug & Play setup.

Connect the antenna cable to the unit. (☞ pg. 13) Then connect the AC power cord to an AC outlet. Do not turn on the unit.

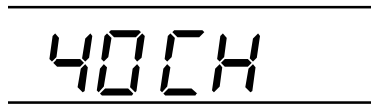
The clock and tuner channels will be set automatically.

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” (☞ pg. 22) and “Tuner Set” (☞ pg. 24). If, however, you want to add or delete channels, refer to “Manual Channel Set” (☞ pg. 25).



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” (☞ pg. 23), 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”. (☞ pg. 23)
- 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

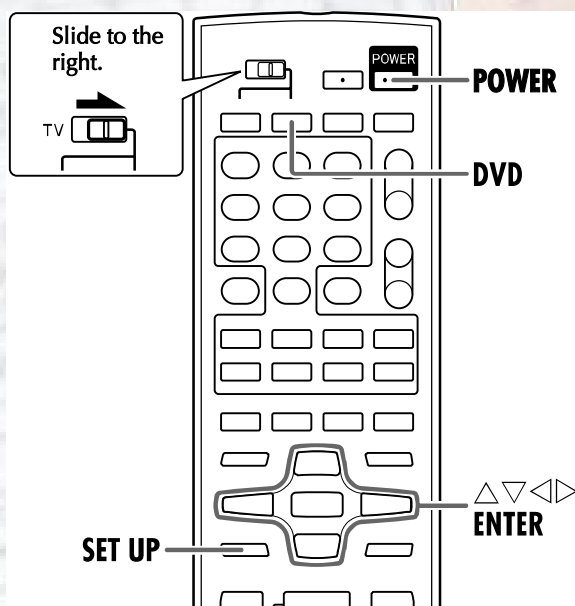
- If an incorrect time is displayed on the front display panel, you may be receiving the clock setting data of a PBS channel from an adjacent time zone, or an incorrect PBS channel from a cable TV system. In this case, perform “Semiauto Clock Set” (☞ pg. 23) or “Manual Clock Set” (☞ pg. 23).
- If “--:--” 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” (☞ pg. 23) and “Auto Channel Set” (☞ pg. 24) or “Manual Channel Set” (☞ pg. 25).

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 on the Remote to the right.



1 Turn on the unit.

Press **POWER**.

2 Select the DVD deck.

On the unit

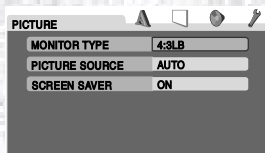
Press **VCR/DVD** repeatedly so that the DVD indicator lights up on the front display panel.

On the Remote

Press **DVD** so that the DVD indicator lights up on the front display panel.

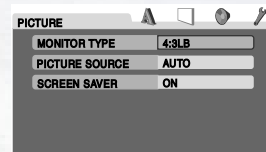
3 Access the DVD Set Up menu screen.

- 1 Press **SET UP**.
- 2 Press **◀▶** to select "PICTURE."



4 Select the mode.

Press **△▽** to move the highlight to "MONITOR TYPE," then press **ENTER**.



5 Select the mode setting.

Press **△▽** to select the desired setting, then press **ENTER**.

6 Return to the normal screen.

Press **SET UP**.

* 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.

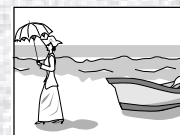
Pan&Scan/Letter Box

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.



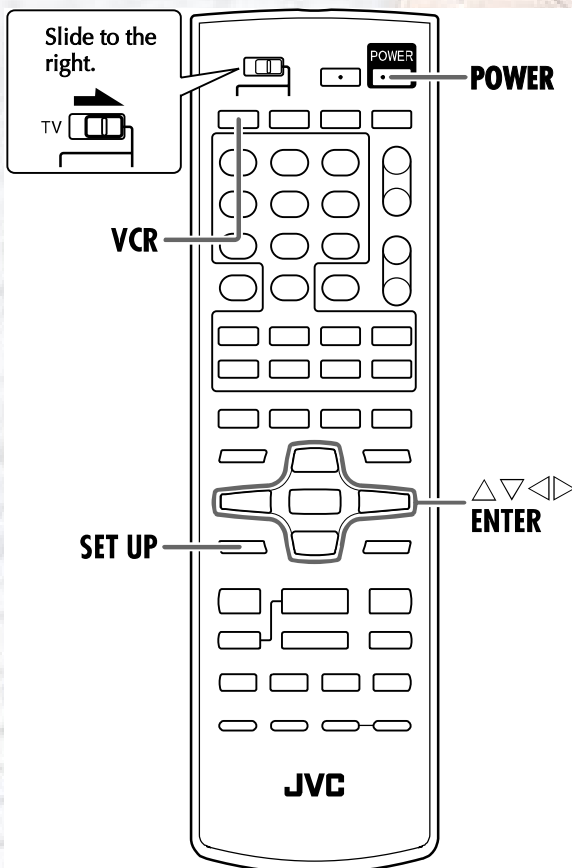
Letter Box

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 on the Remote 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**.

2 Select the VCR deck.

On the unit

Press **VCR/DVD** repeatedly so that the VHS indicator lights up on the front display panel.

On the Remote

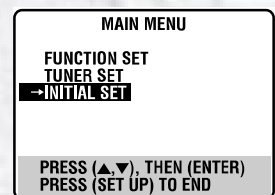
Press **VCR** so that the VHS indicator lights up on the front display panel.

3 Access the Main Menu screen.

Press **SET UP**.

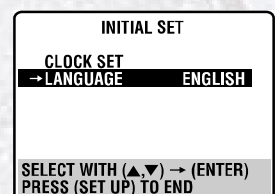
4 Access the Initial Set screen.

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



5 Select the language.

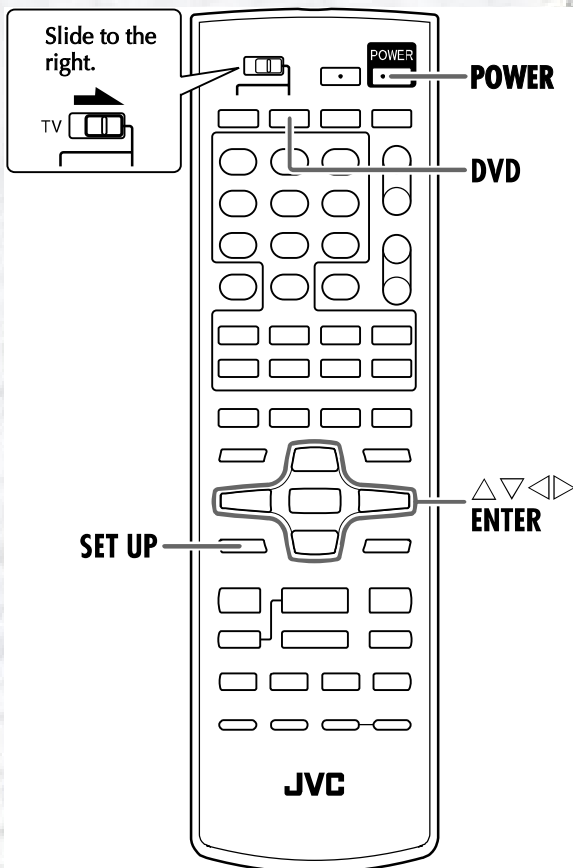
Press $\Delta \nabla$ to move the highlight bar (arrow) to "LANGUAGE," then press **ENTER** or \triangleright repeatedly until the desired language is selected.



6 Return to the normal screen.

Press **SET UP**.

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



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**.

2 Select the DVD deck.

On the unit

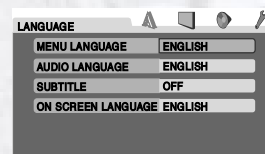
Press **VCR/DVD** repeatedly so that the DVD indicator lights up on the front display panel.

On the Remote

Press **DVD** so that the DVD indicator lights up on the front display panel.

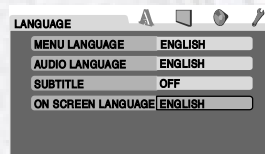
3 Access the DVD Set Up menu screen.

- 1 Press **SET UP**.
- 2 Press **◀▶** to select "▲ LANGUAGE."



4 Select the mode.

Press **▲▼** to move the highlight to "ON SCREEN LANGUAGE," then press **ENTER**.



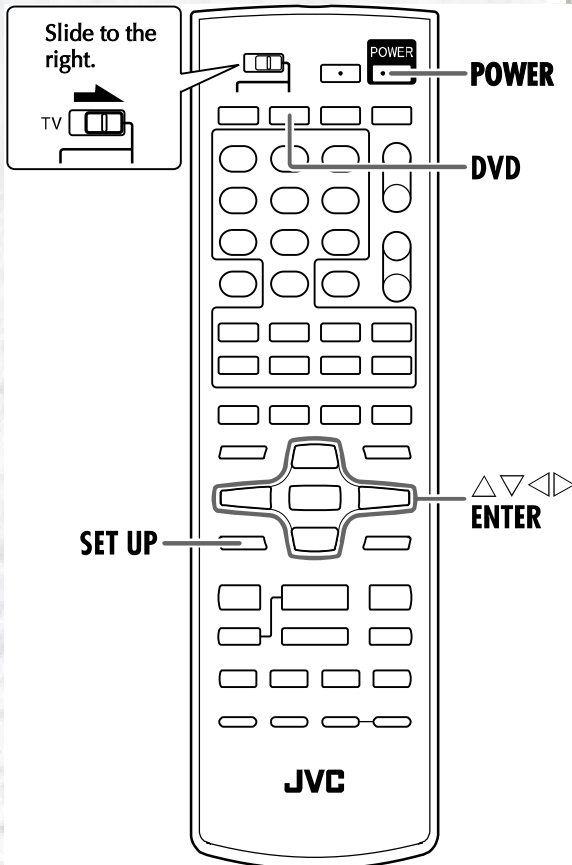
5 Select the mode setting.

Press **▲▼** to select the desired setting, then press **ENTER**.

6 Return to the normal screen.

Press **SET UP**.

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



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**.

2 Select the DVD deck.

On the unit

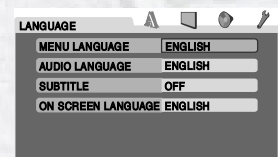
Press **VCR/DVD** repeatedly so that the DVD indicator lights up on the front display panel.

On the Remote

Press **DVD** so that the DVD indicator lights up on the front display panel.

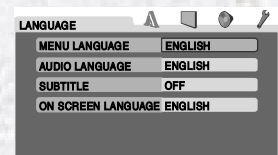
3 Access the DVD Set Up menu screen.

- 1 Press **SET UP**.
- 2 Press **<>** to select "▲ LANGUAGE."



4 Select the mode.

Press **△▽** to move the highlight to "MENU LANGUAGE," then press **ENTER**.



5 Select the mode setting.

Press **△▽** to select the desired setting, then press **ENTER**.

- See "Language Code List" (pg. 21).

6 Return to the normal screen.

Press **SET UP**.

NOTE:

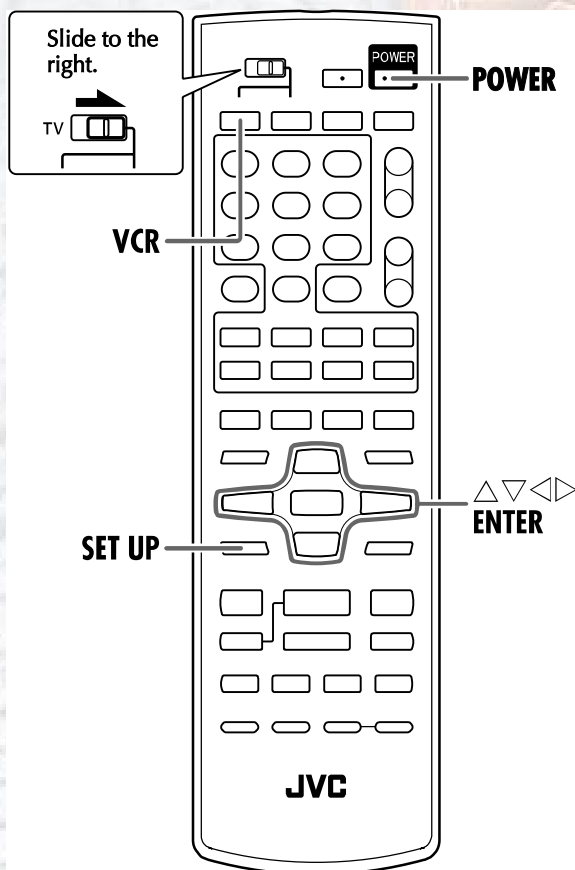
When the selected language is not available on the disc, the disc's default menu language is played back.

Language Code List

AA	Afar	IK	Inupiak	RN	Kirundi
AB	Abkhazian	IN	Indonesian	RO	Rumanian
AF	Afrikaans	IS	Icelandic	RU	Russian
AM	Ameharic	IW	Hebrew	RW	Kinyarwanda
AR	Arabic	JL	Yiddish	SA	Sanskrit
AS	Assamese	JW	Javanese	SD	Sindhi
AY	Aymara	KA	Georgian	SG	Sangho
AZ	Azerbaijani	KK	Kazakh	SH	Serbo-Croatian
BA	Bashkir	KL	Greenlandic	SI	Singhalese
BE	Byelorussian	KM	Cambodian	SK	Slovak
BG	Bulgarian	KN	Kannada	SL	Slovenian
BH	Bihari	KO	Korean (KOR)	SM	Samoaan
BI	Bislama	KS	Kashmiri	SN	Shona
BN	Bengali, Bangla	KU	Kurdish	SO	Somali
BO	Tibetan	KY	Kirghiz	SQ	Albanian
BR	Breton	LA	Latin	SR	Serbian
CA	Catalan	LN	Lingala	SS	Siswati
CO	Corsican	LO	Laothian	ST	Sesotho
CS	Czech	LT	Lithuanian	SU	Sundanese
CY	Welsh	LV	Latvian, Lettish	SV	Swedish
DA	Danish	MG	Malagasy	SW	Swahili
DZ	Bhutani	MI	Maori	TA	Tamil
EL	Greek	MK	Macedonian	TE	Telugu
EO	Esperanto	ML	Malayalam	TG	Tajik
ET	Estonian	MN	Mongolian	TH	Thai
EU	Basque	MO	Moldavian	TI	Tigrinya
FA	Persian	MR	Marathi	TK	Turkmen
FI	Finnish	MS	Malay (MAY)	TL	Tagalog
FJ	Fiji	MT	Maltese	TN	Setswana
FO	Faroese	MY	Burmese	TO	Tonga
FY	Frisian	NA	Nauru	TR	Turkish
GA	Irish	NE	Nepali	TS	Tsonga
GD	Scots Gaelic	NL	Dutch	TT	Tatar
GL	Galician	NO	Norwegian	TW	Twi
GN	Guarani	OC	Occitan	UK	Ukrainian
GU	Gujarati	OM	(Afan) Oromo	UR	Urdu
HA	Hausa	OR	Oriya	UZ	Uzbek
HI	Hindi	PA	Panjabi	VI	Vietnamese
HR	Croatian	PL	Polish	VO	Volapuk
HU	Hungarian	PS	Pashto, Pushto	WO	Wolof
HY	Armenian	PT	Portuguese	XH	Xhosa
IA	Interlingua	QU	Quechua	YO	Yoruba
IE	Interlingue	RM	Rhaeto-Romance	ZU	Zulu

Clock Set

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

2 Select the VCR deck.

On the unit

Press **VCR/DVD** repeatedly so that the VHS indicator lights up on the front display panel.

On the Remote

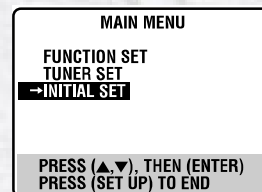
Press **VCR** so that the VHS indicator lights up on the front display panel.

3 Access the Main Menu screen.

Press **SET UP**.

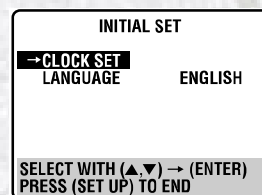
4 Access the Initial Set screen.

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



5 Access the Clock Set screen.

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



Semiauto Clock Set

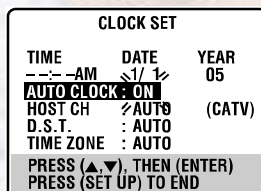
You can change the host channel/D.S.T. (Daylight Saving Time)/time zone setting manually. First follow steps 1 to 5 in "Preparations" (pg. 22), then go to the following steps.

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 **▷** repeatedly to move the highlight bar to "AUTO CLOCK," then press **△▽** so that "ON" is selected.



2 Select the host channel.

You can either select "AUTO" or enter a PBS channel number. Press **ENTER** or **▷** to move the highlight bar to "HOST CH," then press **△▽** 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 **▷** to move the highlight bar to "D.S.T.," then press **△▽** 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 **▷** to move the highlight bar to "TIME ZONE," then press **△▽** repeatedly until "AUTO" or the desired time zone is selected. Each time you press the button, the time zone changes as follows:

↔AUTO↔ATLANTIC↔EASTERN↔CENTRAL↔
MOUNTAIN↔PACIFIC↔ALASKA↔HAWAII↔
(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 2, 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.

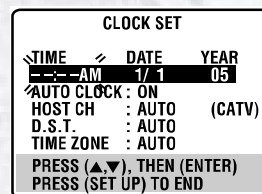
Manual Clock Set

First follow steps 1 to 5 in "Preparations" (pg. 22), then go to the following steps.

1 Set time, date and year.

Press **△▽** until the desired time appears, then press **ENTER** or **▷**. Set the date and year in the same way.

- Holding **△▽** changes the time in 30-minute intervals, or changes the date in 15-day intervals.

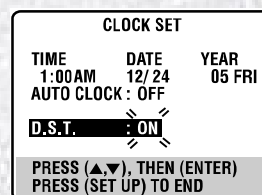


2 Select D.S.T. mode.

Press **ENTER** or **▷** to move the highlight bar to "D.S.T.," then press **△▽** 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 clock.

Press **SET UP** and normal screen appears.

To make corrections any time during the process

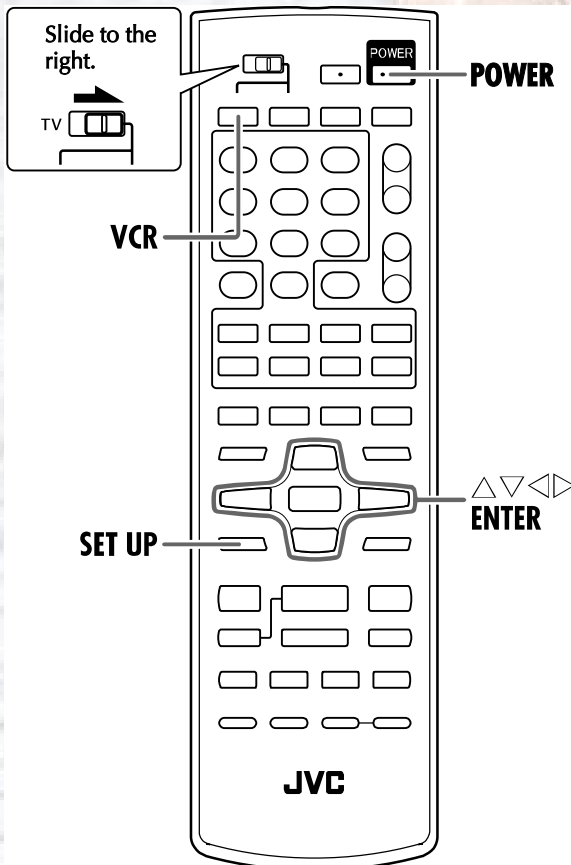
Press **ENTER** or **▷** repeatedly until the item you want to change blinks, then press **△▽**.

Tuner Set

Auto Channel Set

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

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

1 Turn on the unit.

Press **POWER**.

2 Select the VCR deck.

On the unit
Press **VCR/DVD** repeatedly so that the VHS indicator lights up on the front display panel.

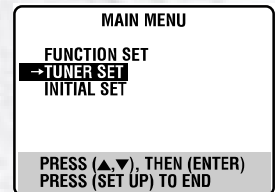
On the Remote
Press **VCR** so that the VHS indicator lights up on the front display panel.

3 Access the Main Menu screen.

Press **SET UP**.

4 Access the Tuner Set screen.

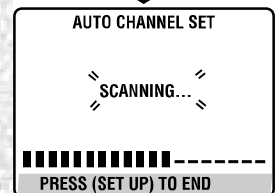
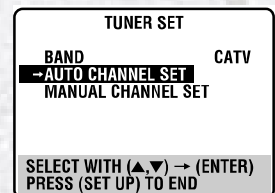
Press $\Delta \nabla$ to move the highlight bar (arrow) to "TUNER SET," then press **ENTER** or \triangleright .



5 Perform Auto Channel Set.

Press $\Delta \nabla$ to move the highlight bar (arrow) to "AUTO CHANNEL SET," then press **ENTER** or \triangleright . You can automatically set the receivable channels in your area in the order of their frequencies.

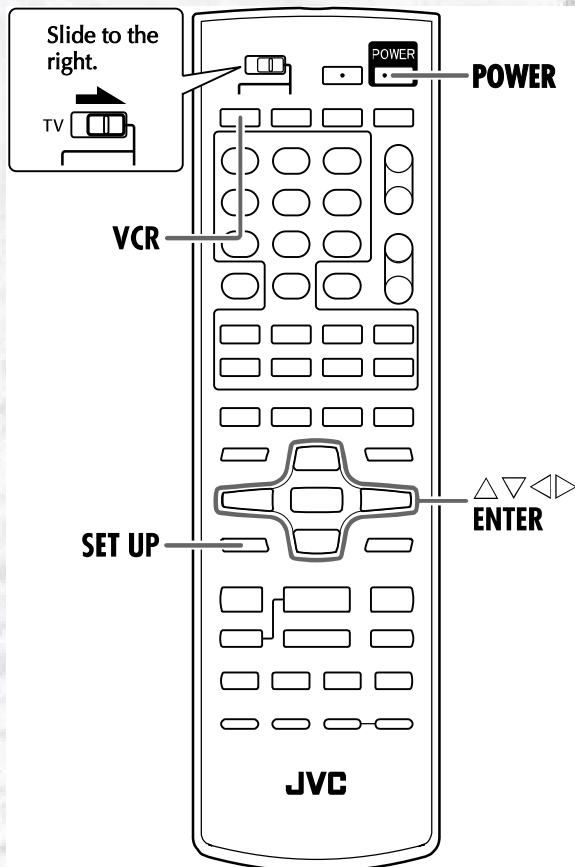
- As Auto Set Up progresses, the "■" mark on the TV screen moves from left to right.
- When Auto Channel Set is complete, "SCAN COMPLETED" appears on the TV screen.
- If the scan was unsuccessful, "SCAN COMPLETED-NO SIGNAL-" appears on screen. Check the connections and start again.



6 Return to the normal screen.

Press **SET UP**.

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



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**.

2 Select the VCR deck.

On the unit

Press **VCR/DVD** repeatedly so that the VHS indicator lights up on the front display panel.

On the Remote

Press **VCR** so that the VHS indicator lights up on the front display panel.

3 Access the Main Menu screen.

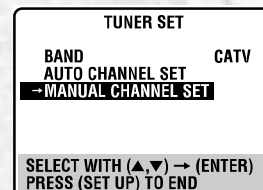
Press **SET UP**.

4 Access the Tuner Set screen.

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

5 Access the Manual Channel Set screen.

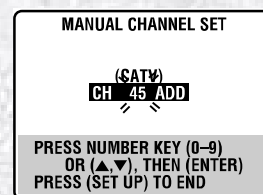
Press $\Delta\nabla$ to move the highlight bar (arrow) to "MANUAL CHANNEL SET," then press **ENTER** or \triangleright .



6 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 \triangleright to set to "ADD."
- 3 Repeat **1** to **2** to add other channels.



To skip channels

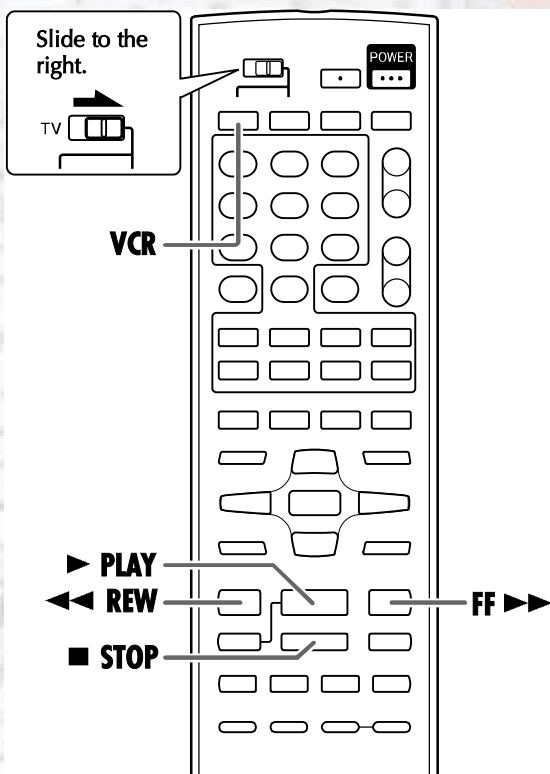
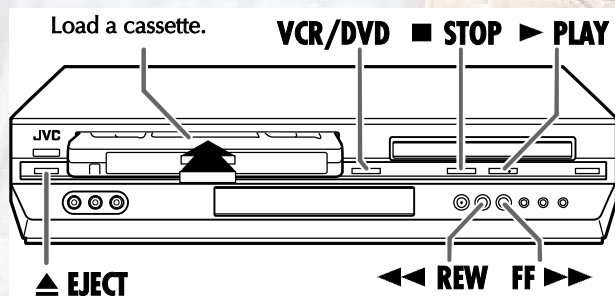
- 1 Press $\Delta\nabla$ or the **number keys** to select a channel number you want to skip.
- 2 Press **ENTER** or \triangleright to set to "SKIP."
- 3 Repeat **1** and **2** to skip other channels.

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 on the Remote 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"). (pg. 59)

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.
- 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 VHS indicator lights up on the front display panel.

On the Remote

Press **VCR** so that the VHS indicator lights up on the front display panel.

3 Find the program start point.

If the tape is advanced past the start point, press **REW**. To go forward, press **FF**.

4 Start playback.

Press **PLAY**.

5 Stop playback.

Press **STOP**. Then press **EJECT** 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**

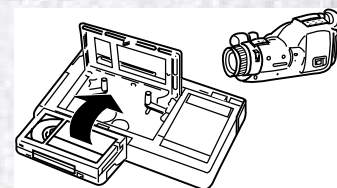
Compact VHS*

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.

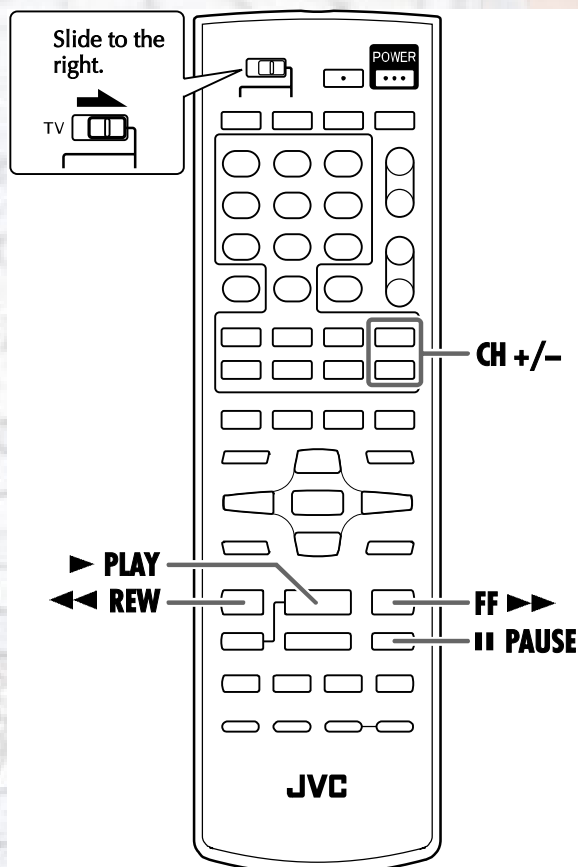
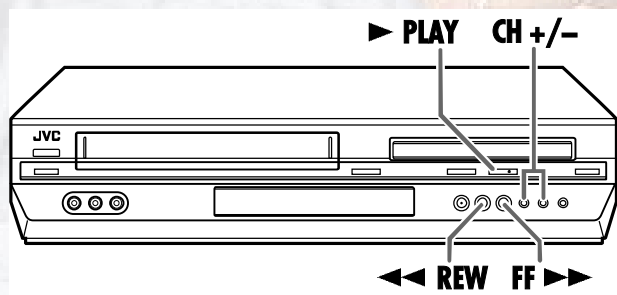
** This unit can record on regular VHS and Super VHS cassettes. However, it will record regular VHS signals only.

- 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 S-VHS format 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 on the Remote 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 color.
- you cannot hear the sound.

Still Picture/Frame-By-Frame Playback

1 Pause during playback.

Press **⏸ PAUSE**.

- If there is vertical jitter, press **CH +/-** on the Remote or on the unit to correct the picture.

2 Activate frame-by-frame playback.

Press **⏸ PAUSE** to advance a still picture.

Slow Motion

1 Pause during playback.

Press **⏸ PAUSE**.

2 Activate slow motion playback.

Press and hold **⏸ PAUSE** for 2 seconds, then release.

Press **⏸ PAUSE** 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 or on the unit to eliminate the noises.

Variable Speed Search

During playback, press **FF ▶▶** for forward variable speed search, or **◀◀ REW** for reverse variable speed search.

- The speed changes for each direction by pressing **◀◀ REW** and **FF ▶▶** repeatedly.

When pressing **FF ▶▶**:

(SP): +5x ↔ +7x

(EP): +11x ↔ +21x

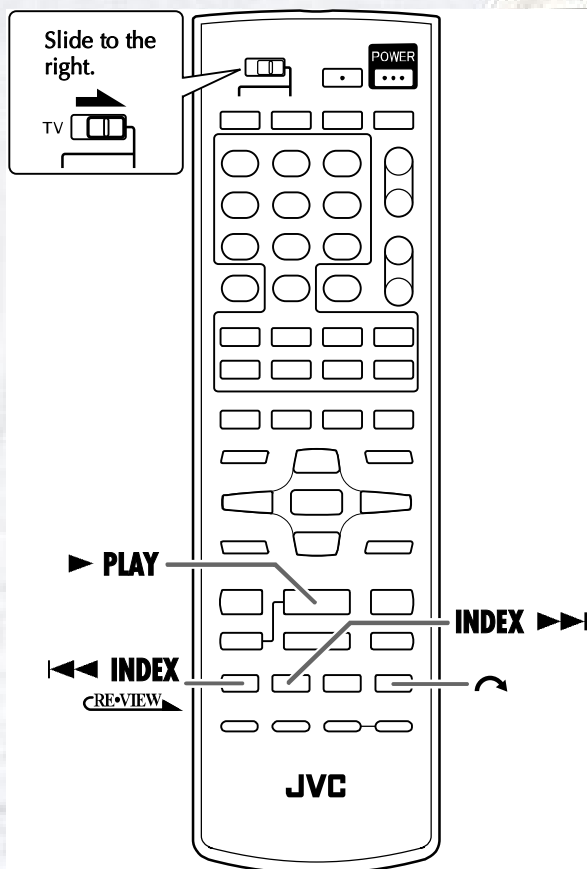
When pressing **◀◀ REW**:

Once **◀◀ REW** is pressed, reverse search starts in -1x normal playback speed. After this process, each press of **◀◀ REW** changes the search speed between -5x and -7x in SP mode, -11x and -21x in EP mode.

(SP): -1x ↔ -5x ↔ -7x

(EP): -1x ↔ -11x ↔ -21x

To resume normal playback, press **▶ PLAY**.



Skip Search

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

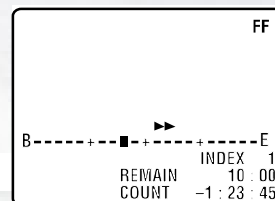
To resume normal playback during a Skip Search, press ▶ PLAY.

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.

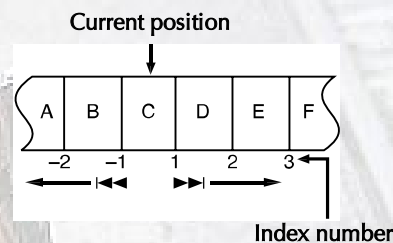
Press ◀◀ INDEX or INDEX ▶▶. "INDEX -1" or "INDEX 1" is displayed on the TV screen and search begins in the corresponding direction.

- To access index codes 2 through 9, press ◀◀ INDEX or INDEX ▶▶ repeatedly until the correct index number is displayed.

Example:

To locate the beginning of B from the current position, press ◀◀ INDEX twice.

To locate the beginning of D from the current position, press INDEX ▶▶ 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.

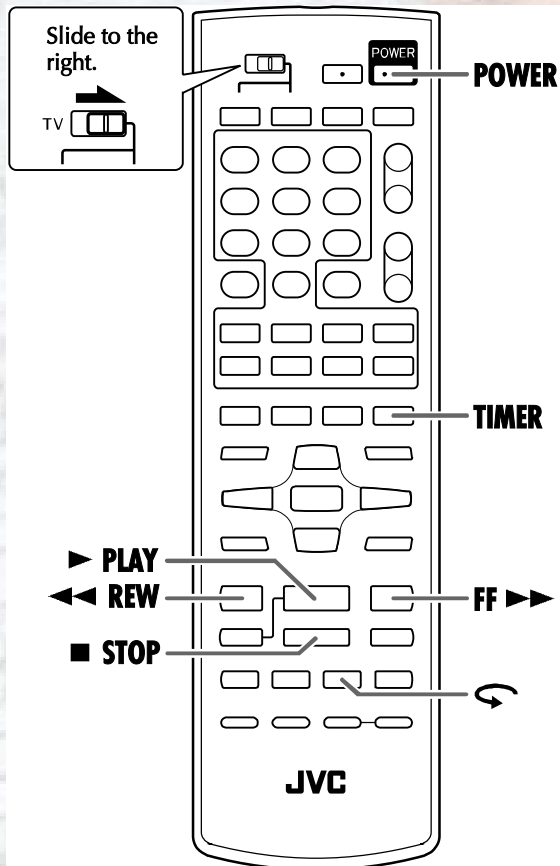
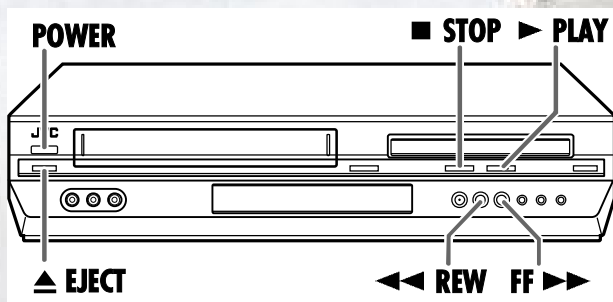
NOTE:

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

Activate Instant ReView.

Press ◀◀ REVIEW. 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 ◀◀ REVIEW 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, then press ▶ PLAY within 2 seconds.
- b- For Automatic Power Off
Press ◀◀ REW, then press POWER 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, then press ▲ EJECT within 2 seconds.

Repeat Playback

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

1 Start playback.

Press ▶ PLAY.

2 Activate Repeat Playback.

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

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

3 Stop Repeat Playback.

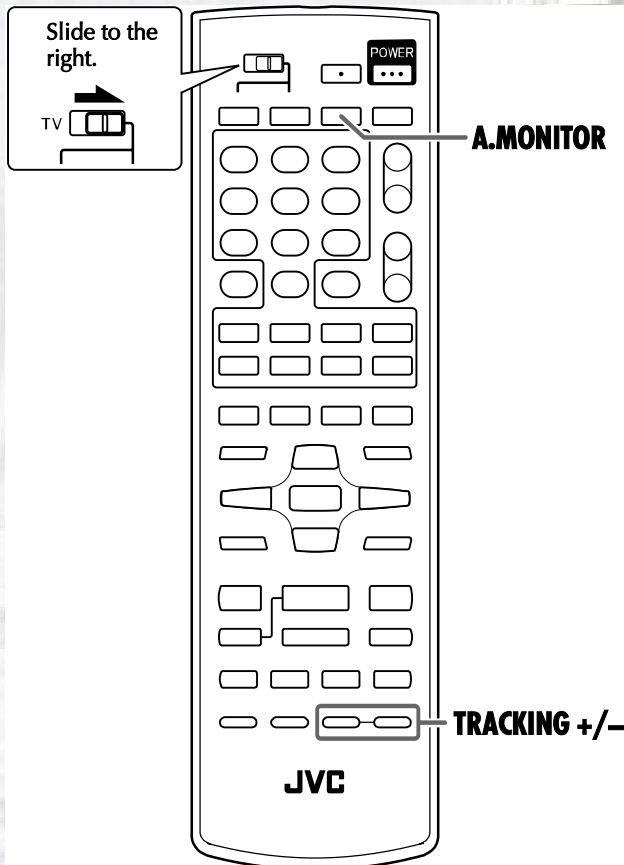
Press ■ STOP at any time.

- Pressing ▶ PLAY, ◀◀ REW, FF ▶▶ or || PAUSE also stops Repeat Playback.

One Touch Replay

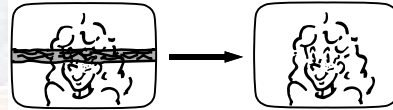
Press ↶ during playback.

Pressing ↶ once moves the playback position back to about 7 seconds before the current position. You can press ↶ up to 4 times each One Touch Replay.



Manual Tracking

Your unit is equipped with automatic tracking control. During playback, you can override this and adjust the tracking manually by pressing the **TRACKING +/-** buttons.



1 Override automatic tracking.

During playback, press **TRACKING +** and **-** at the same time.

2 Adjust the tracking manually.

Press **TRACKING +/-**.

- Press **TRACKING +** and **-** at the same time 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. (pg. 60)

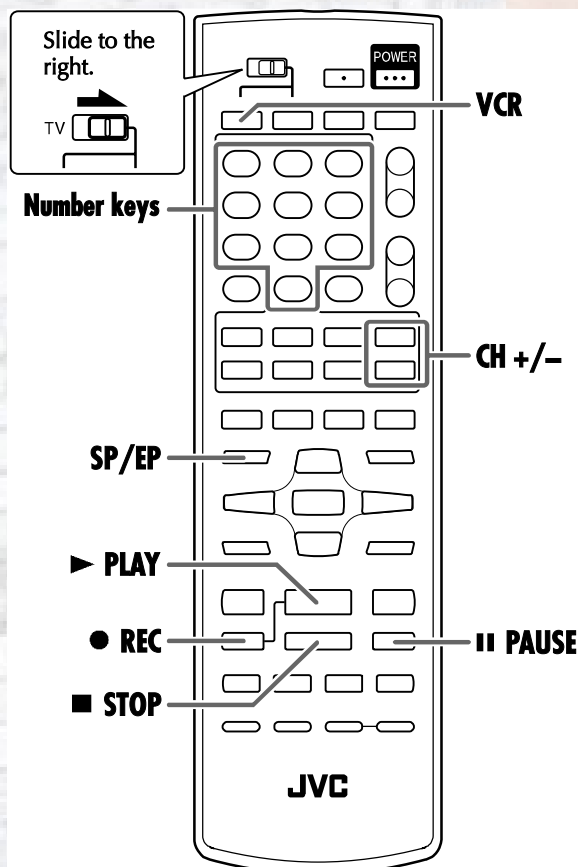
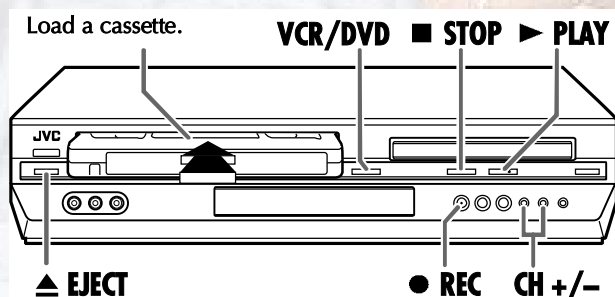
TRACK	USE
On-Screen Display	
H I-F I	Hi-Fi sound is played back
H I-F I L	Sound on the left Hi-Fi channel is played back
H I-F I R	Sound on the right Hi-Fi channel is played back
NORM	Sound on the normal track is played back
NORM H I-F I	Both sounds on the Hi-Fi track and normal track are mixed and played 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. (pg. 59)

Basic Recording

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



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 VHS indicator lights up on the front display panel.

On the Remote

Press **VCR** so that the VHS indicator lights up on the front display panel.

3 Choose a program.

Press **CH +/-** 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** and press ► **PLAY** on the Remote, or press ● **REC** on the unit.

6 Pause/Resume recording.

Press || **PAUSE**. Press ► **PLAY** to resume recording.

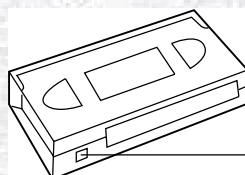
- You can select channel during the Record Pause mode.

7 Stop recording.

Press ■ **STOP**. Then press ▲ **EJECT** on the VCR deck to remove the cassette.

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.



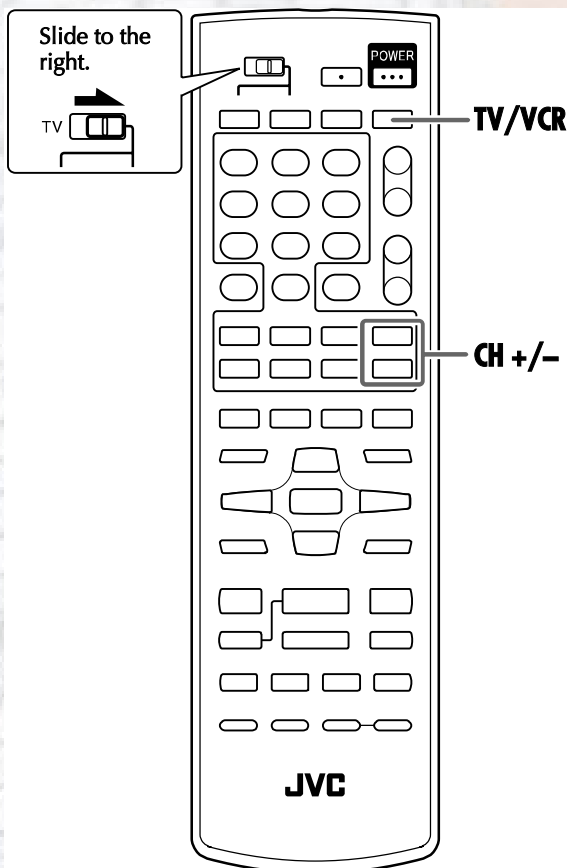
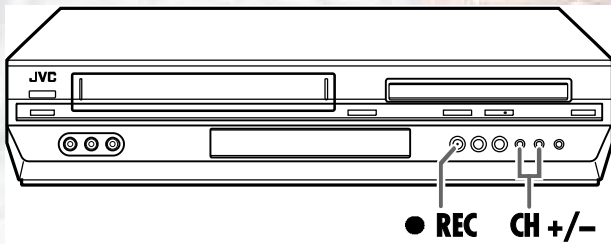
Record safety tab

NOTE:

When the end of the tape is reached during recording, the unit stops and "○" and "▷" blink on the front display panel.

Recording Features

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



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 **CH** 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.

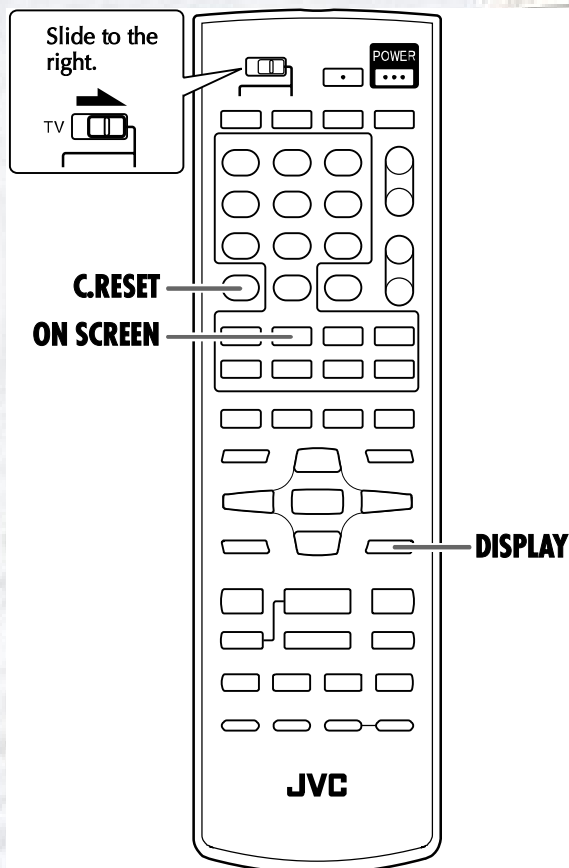
Press ● **REC** again. "○" blinks and "0:30" appears on the front display panel.

3 Set the recording duration.

If you want to record for more than 30 minutes, press ● **REC** to extend the time. Each press extends recording time by 30 minutes.

NOTES:

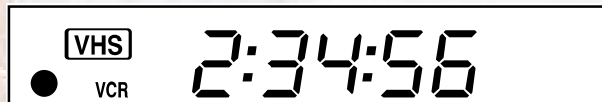
- You can only perform ITR using the ● **REC** button on the unit's front panel.
- Still picture playback stops automatically after 5 minutes to protect the heads.
- When the end of the tape is reached during Instant Timer Recording or timer recording, the unit is turned off and "○" and "▷" blink on the front display panel.
- During Instant Timer Recording, any other timer programmed recording won't start even if their start time has come. In such a case, the timer programmed recording starts (if the end time of the timer programmed 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." (pg. 60)

NOTE:

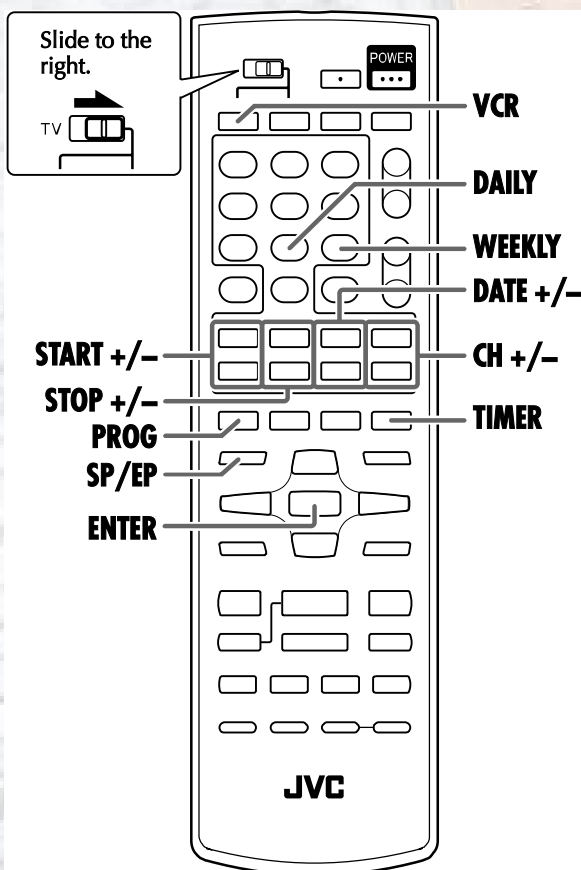
When the channel is changed on the unit;

- 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 Programming

Before performing Express Timer Programming:

- 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 on the Remote to the right.



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

1 Select the VCR deck.

On the unit

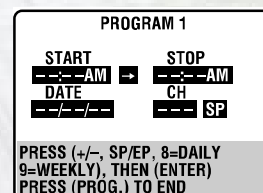
Press **VCR/DVD** repeatedly so that the VHS indicator lights up on the front display panel.

On the Remote

Press **VCR** so that the VHS indicator lights up on the front display panel.

2 Access the Program screen.

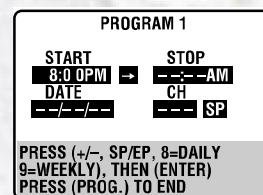
Press **PROG.** (If you're just starting out, "PROGRAM 1" appears.)



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 38.

- Repeat steps 2 – 8 for each additional program.

9 Engage the unit's timer mode.

Press **TIMER**. The unit turns off automatically and "⓪" appears on the front display panel.

- To disengage the timer mode, press **TIMER** again.

To Timer-Record Weekly Or Daily Serials:

— anytime during steps 2 through 7, press **WEEKLY** (number 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 corresponding indication disappear.

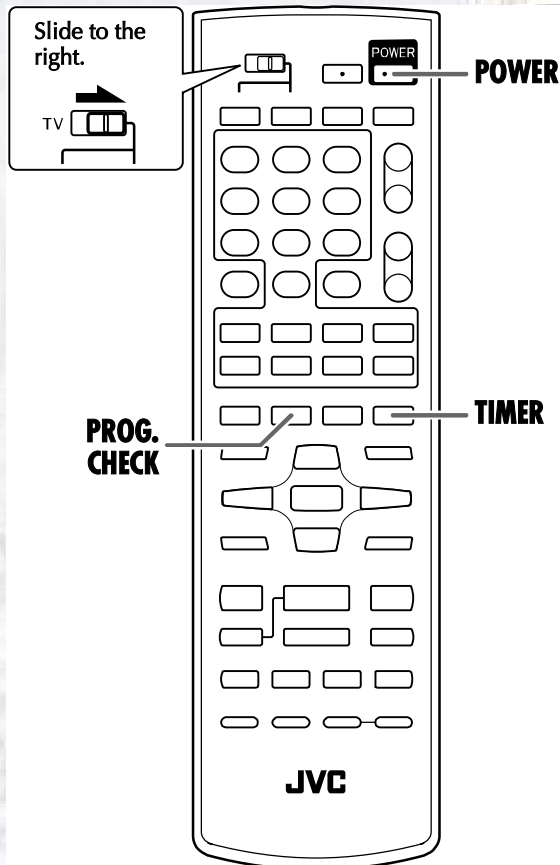
NOTES:

- 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. (pg. 37)
- 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 Programming:

- 1 Perform steps 1 – 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**.

2 Access the Program Check screen.

Press **PROG. CHECK**.

PR	START	STOP	CH	DATE
1	8:00P	10:00	12	12/24
2	10:00A	10:45	40	12/25
3	11:30P	1:00	125	12/25
4				
5				
6				
7				
8				

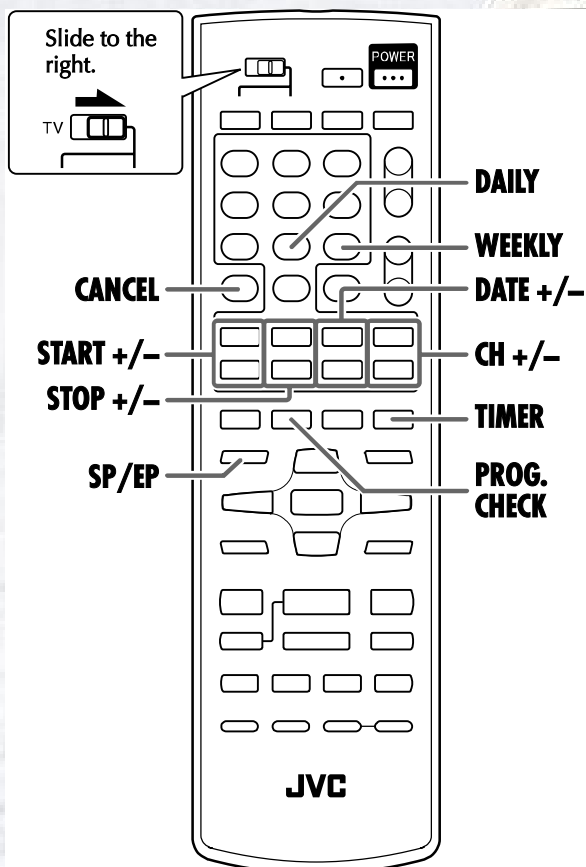
PRESS (CHECK) TO NEXT

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.

PROGRAM 1			
START	8:00AM	→	STOP
			10:00AM
DATE	12/24/03		CH
			12 SP
	WED		TV

PRESS (CANCEL) TO CANCEL
PRESS (CHECK) TO NEXT



To cancel or change a program

4 Cancel or change a program.

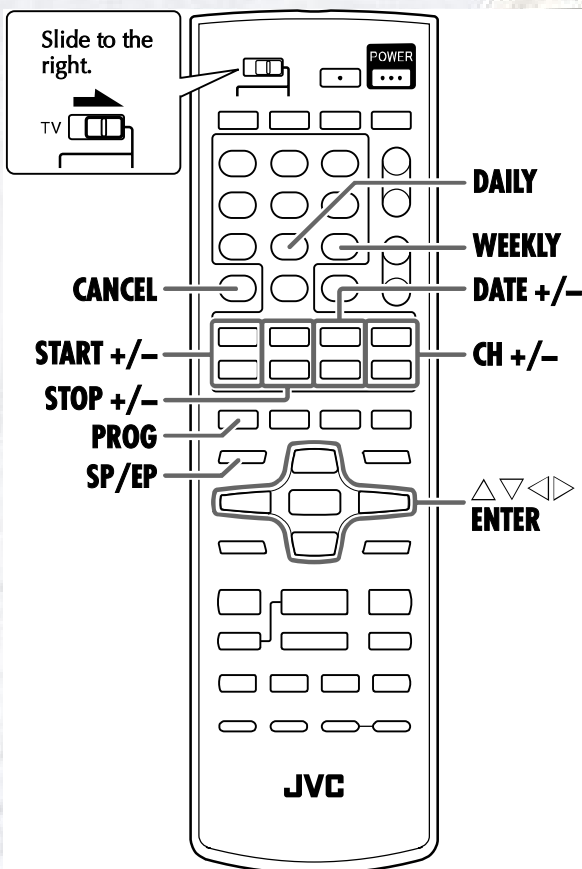
Press **CANCEL** to cancel a program. To change program settings, press the appropriate button: **START +/-**, **STOP +/-**, **DATE +/-**, **CH +/-**, **DAILY** (number key "8"), **WEEKLY** (number key "9") and/or **SP/EP**.

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 6.

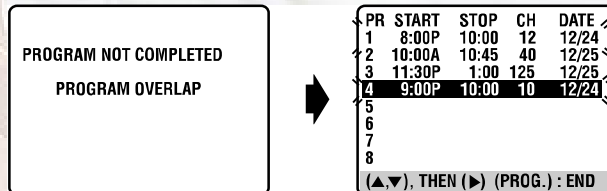
6 Return to the timer mode.

Press **TIMER**.



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 ▲▼, then press ENTER or ▶.

- 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.

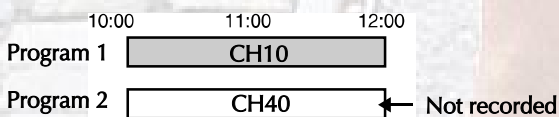
NOTE:

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.

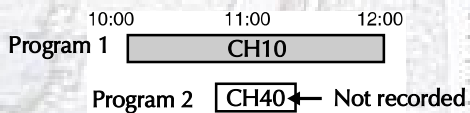
ATTENTION

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.

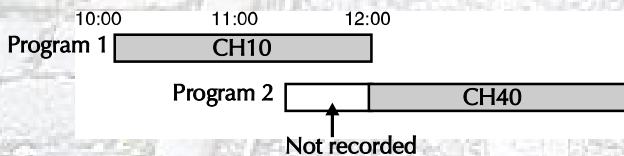
Pattern 1: The program with the lower program number will be recorded.



Pattern 2: The program starting earlier will be recorded.



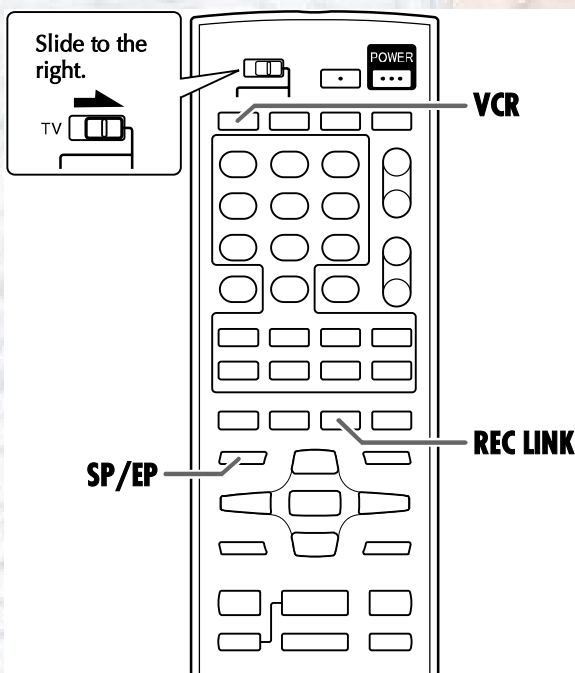
Pattern 3: The program starting earlier will be recorded, followed by the remaining portion of the other program.



Satellite Auto Recording

This function allows you to automatically record a satellite program which is timer-programmed on your external DBS receiver. Connect a DBS receiver to the unit's AUDIO/VIDEO input (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.

1 Select the VCR deck.

On the unit

Press **VCR/DVD** repeatedly so that the VHS indicator lights up on the front display panel.

On the Remote

Press **VCR** so that the VHS indicator lights up on the front display panel.

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 "⏏" and "⏻" indicators light up and the unit turns off automatically.

VHS



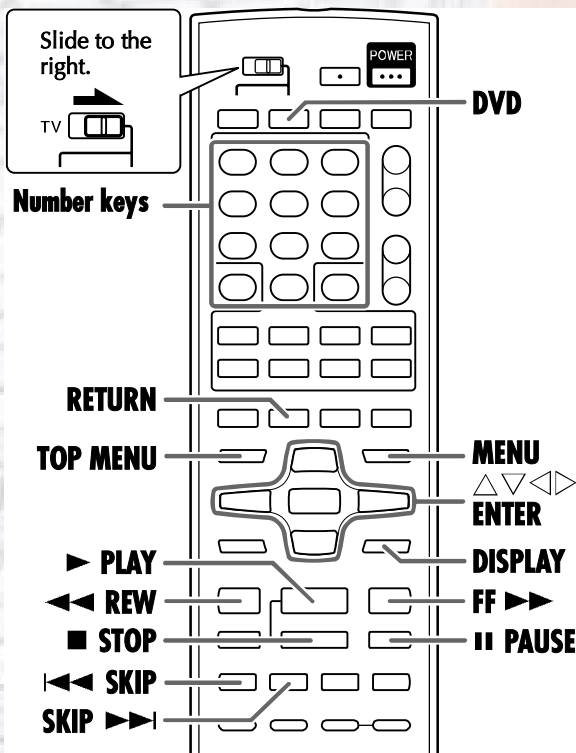
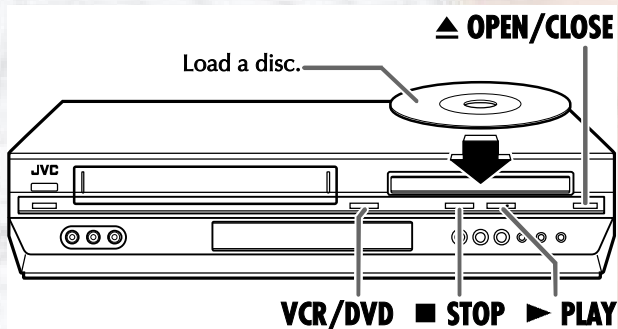
NOTES:

- 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 "⏏" 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 "⏏" 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 Programming" (pg. 34) 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 "⏏" indicator blinks while Satellite Auto Recording is in progress.
- For timer programming 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** 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 "⏻" 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



- Turn on the TV and select the VCR channel (or AV mode).
- Slide the TV/VCR/DVD switch on the Remote 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.
- If the unit does not accept an operation, \odot appears on the TV screen. (Operations are occasionally unacceptable even if \odot is not displayed.)

To play back a JPEG disc, see pages 49 – 51.

1 Load the disc.

- For details, refer to "Placing a Disc" (pg. 8).

2 Select the DVD deck.

On the unit

Press **VCR/DVD** repeatedly so that the DVD indicator lights up on the front display panel.

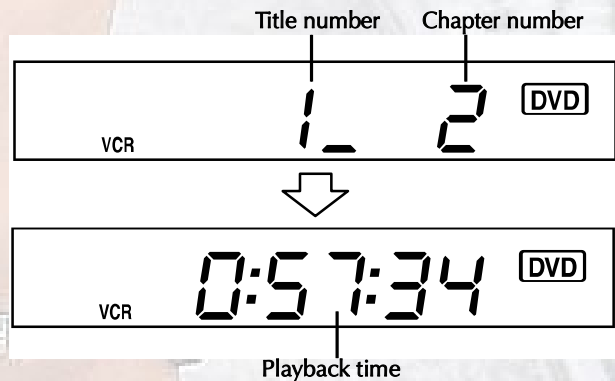
On the Remote

Press **DVD** so that the DVD indicator lights up on the front display panel.

3 Start playback.

Press **▶ PLAY**.

Example: DVD VIDEO



- You can switch the display on the front display panel between the title/chapter/track number and the playback time by pressing **DISPLAY**.
- It may take a few seconds to start playback.
- When inserting a DVD or Video CD disc, a menu display may appear on the TV screen. To play back from the menu, refer to "Locating a Desired Scene Using the Menu of the Video CD with Playback Control (PBC) Function" (pg. 41) or "Locating a desired scene using the DVD menu" (pg. 41).

4 Pause playback.

Press **|| PAUSE**.

- To resume normal playback, press **▶ PLAY**.

5 Stop playback.

Press **■ STOP**.

- When "RESUME" (pg. 64) is "ON," the unit memorizes the position on the disc where you have interrupted playback.
 - To resume playback, press **▶ PLAY**.
 - To stop playback completely, press **■ STOP** again.
- Press **▲ OPEN/CLOSE** on the DVD deck to open the disc tray, then remove the disc.

Playback Features

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

Locating a desired scene using the DVD menu

DVD VIDEO

DVD VIDEO discs generally have their own menus which show the disc contents. These menus contain various items such as titles of movies, names of songs, or artist information, and display them on the TV screen. You can locate a desired scene using the DVD menu.

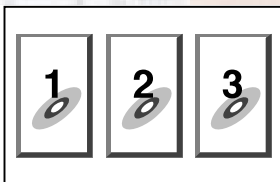
1 Access the DVD menu.

Press TOP MENU or MENU.

2 Start playback.

Press $\Delta \nabla \triangleleft \triangleright$ 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.



Example:

Locating a Desired Scene Using the Menu of the Video CD with Playback Control (PBC) Function

Video CD SVCD

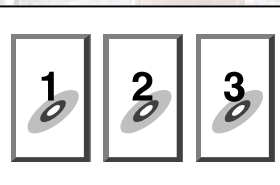
Some Video CD discs supports the PBC function. PBC is an abbreviation of "PlayBack Control." A Video CD disc recorded with PBC has its own menus, such as a list of the songs of the disc. You can locate a specific scene by using the menu.

1 Access the PBC menu.

In stop mode
Press \blacktriangleright PLAY.

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

During playback
Press RETURN.



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 $\blacktriangleright\blacktriangleright$ advances to the next page. Pressing $\blacktriangleleft\blacktriangleleft$ SKIP returns to the previous page.
- The method of the operation is different depending on the disc.

To cancel PBC

Start playback by using the number keys instead of \blacktriangleright PLAY.

To reactivate PBC

- Press TOP MENU or MENU.
- Press \blacksquare STOP to stop playback, then press \blacktriangleright PLAY.

Locating the Start Point of the Item or Skip the Item

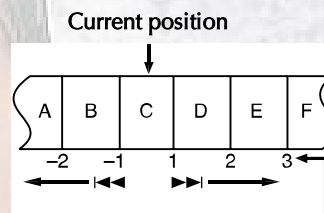
DVD VIDEO Video CD SVCD Audio CD

Press $\blacktriangleleft\blacktriangleleft$ SKIP or SKIP $\blacktriangleright\blacktriangleright$ during playback.

Example:

To locate the beginning of item B from the current position, press $\blacktriangleleft\blacktriangleleft$ SKIP twice.

To locate the beginning of item D from the current position, press SKIP $\blacktriangleright\blacktriangleright$ once.

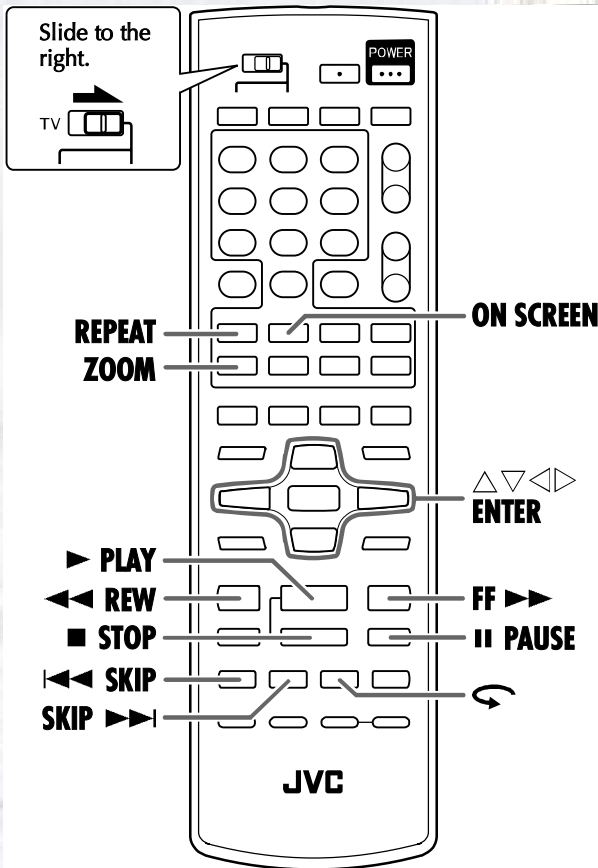


The number you press the button

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

NOTE:

When you press $\blacktriangleleft\blacktriangleleft$ SKIP or SKIP $\blacktriangleright\blacktriangleright$, the counter display may appear instead of title number/chapter number depending on the discs.



Still Picture/Frame-By-Frame Playback



1 Pause during playback.

Press **II PAUSE**.

2 Activate frame-by-frame playback.

Press **II PAUSE** to advance a still picture.

- To resume normal playback, press **▶ PLAY**.

Slow Motion



During playback, press **II PAUSE**, then press **FF ▶▶** for forward slow motion playback, or **◀◀ REW** for reverse slow motion playback.

- Each press of **FF ▶▶** changes the playback speed as follows: 1/32 → 1/16 → 1/8 → 1/4 → 1/2
- Each press of **◀◀ REW** changes the playback speed as follows (only for DVD VIDEO discs): -1/32 → -1/16 → -1/8 → -1/4 → -1/2
- To resume normal playback, press **▶ PLAY**.

NOTES:

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

Variable Speed Search



During playback, press **FF ▶▶** for forward variable speed search, or **◀◀ REW** for reverse variable speed search.

- Each press of **FF ▶▶** changes the playback speed as follows: +2x → +5x → +20x → +60x
- Each press of **◀◀ REW** changes the playback speed as follows: -2x → -5x → -20x → -60x
- To resume normal playback, press **▶ PLAY**.

OR

During playback, press and hold **SKIP ▶▶I** for forward search, or press and hold **I◀◀ SKIP** for reverse search.

- While you press and hold the button, the image is played back at 5x speed.
- To resume normal playback, release **I◀◀ SKIP** or **SKIP ▶▶I**.

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.

One Touch Replay



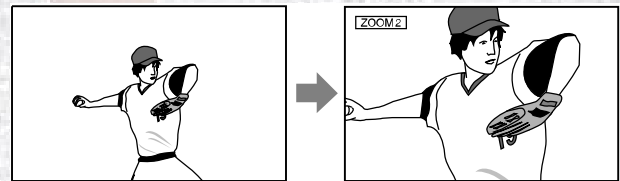
Press **↶** while playing back a DVD VIDEO disc. The playback position moves back about 10 seconds before the current position (only within the same title).

Zooming



Press **ZOOM** during playback or while paused.

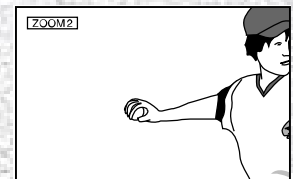
- Each press of **ZOOM** changes the magnification in the following steps: ZOOM OFF → ZOOM 1 → ZOOM 2 → ZOOM 3 → ZOOM 4 → ZOOM 5 → ZOOM 6 → (Back to the beginning)
- While zoomed, the picture may look coarse or distorted.



Current magnification

Zoomed-in area

Press **△▽◀▶** to move the zoomed-in scene.



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 deactivated

1 Access the repeat mode.

Press **REPEAT**.

- Repeat mode is displayed on the TV.

2 Select the repeat mode.

Press **REPEAT** repeatedly to select the desired repeat mode.

DVD VIDEO

CHAPTER→TITLE→OFF→(Back to the beginning)

CHAPTER:	The current chapter is played back repeatedly.
TITLE:	The current title is played back repeatedly.
OFF:	Each title and chapter is played back once.

Video CD/SVCD/CD

TRACK→ALL→OFF→(Back to the beginning)

TRACK:	The current track is played back repeatedly.
ALL:	All tracks are played back repeatedly.
OFF:	Each track is played back once.

- The pop-up window disappears if no operation is done for about 5 seconds.

To cancel Repeat Playback

Press **REPEAT** repeatedly until "OFF" appears on the TV screen.

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




You can repeat the desired part.

1 Access the on-screen bar.

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

2 Select menu item.

Press ◀▶ to highlight , then press **ENTER**.

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



3 Select the repeat mode.

Press ▲▼ 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

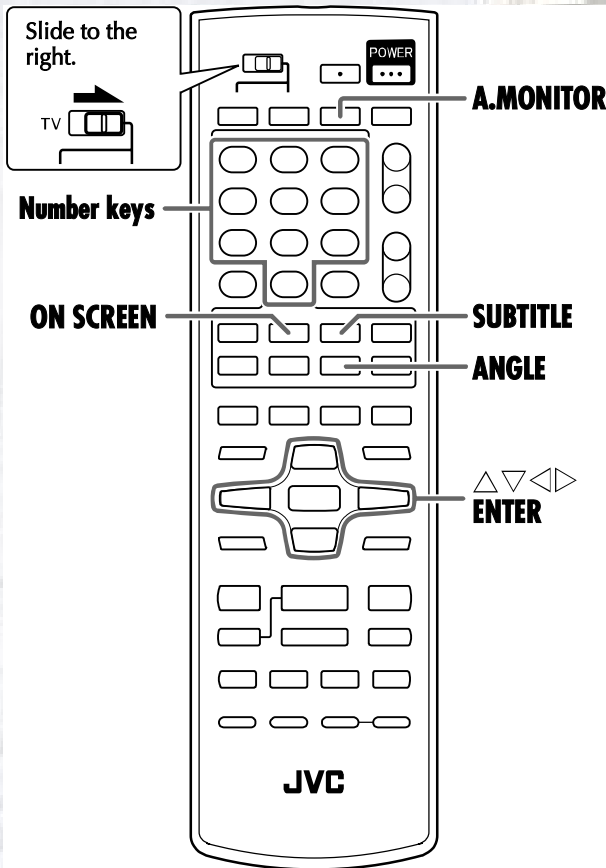
Repeat from step 1, select "OFF" in step 3, then press **ENTER**.

To clear the on-screen bar

Press **ON SCREEN**.

NOTE:

The points A and B must be set in the same title or track.



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



If you have specified a wrong selection, Press < 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**.

NOTE:
Some DVD VIDEO discs do not contain time information, and it is no possible to use the Time Search function.

Subtitle Selection



You can select subtitle language.

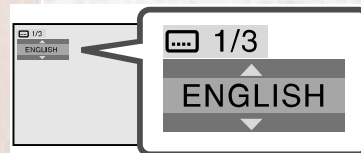
- During playback

1 Access the menu.

Press **SUBTITLE**.

- 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 $\Delta \nabla$ repeatedly to select the desired subtitle language. To turn off the subtitle, press **SUBTITLE** repeatedly 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.

NOTES:

- For DVD VIDEO
Some subtitle languages are abbreviated in the pop-up window. See "Language Code List" (pg. 21).
- For SVCD
An SVCD can contain up to four subtitles. Pressing **SUBTITLE** changes the subtitles regardless of whether the subtitles are recorded or not.

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.

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 highlight $\odot \rightarrow$, 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**.

Angle Selection



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.

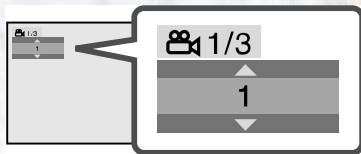
- During playback

1 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.



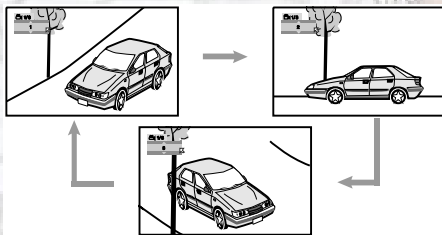
2 Select the view angle.

Press Δ / ∇ 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 → 2/3 → 3/3 → (Back to the beginning)



Audio Language and Sound Selection



The audio selection setting allows you to change the audio language of a movie, or to listen to karaoke with or without the vocal.

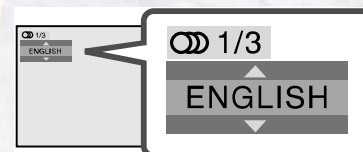
- During playback

1 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 during DVD VIDEO playback.



2 Select the audio setting.

Press Δ / ∇ or **A.MONITOR** repeatedly to select the desired audio language.

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

DVD VIDEO (example)

1/3 ENGLISH → 2/3 FRENCH → 3/3 SPANISH → (Back to the beginning)

Video CD

ST → L → R → (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.

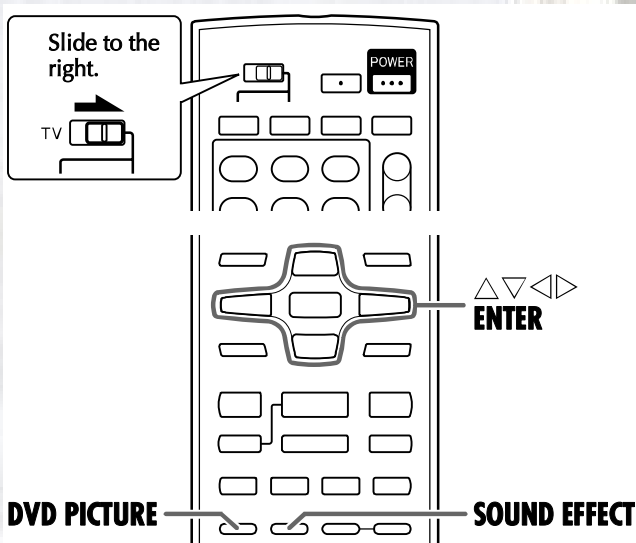
SVCD

ST 1 → ST 2 → L 1 → R 1 → L 2 → R 2 → (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:	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.

NOTE:

For DVD VIDEO discs, some audio languages are abbreviated in the pop-up window. See "Language Code List" (pg. 21).



Sound Effect



Using the Sound Effect function, you can change the sound field.

- This function works only for analog audio output.

1 Access the selection menu.

Press **SOUND EFFECT** during playback.

- The current setting appears on the TV screen.

2 Turn on the Sound Effect function.

Press **SOUND EFFECT** to turn on the function.

- Each time you press **SOUND EFFECT**, the Sound Effect function turns on and off:
SOUND EFFECT:ON → **SOUND EFFECT:OFF**
- The selection menu disappears if no operation is done for about several seconds.

NOTES:

- The Sound Effect function works correctly only for a DVD VIDEO disc recorded in the 5.1-channel audio format.
- You may not feel the effect of this function well depending on the source recorded on the disc.

VFP function

— Adjusting the picture quality



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

1 Access the VFP setting menu.

Press **DVD PICTURE** during playback.

- The current setting appears on the TV screen.

NORMAL	
GAMMA	0
BRIGHTNESS	0
CONTRAST	0
SATURATION	0
TINT	0
SHARPNESS	+3

2 Select the VFP mode.

Press $\triangleleft \triangleright$ repeatedly.

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

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

To adjust picture appearance manually

3 Access USER menu.

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

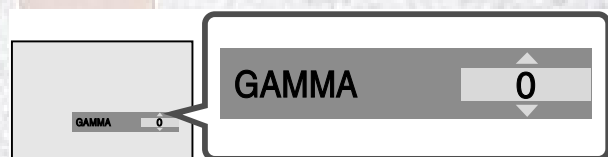
4 Select the parameter.

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 (-3 to +3):	Adjust this if the neutral color is bright or dark. The brightness of dark and bright portions is maintained.
BRIGHTNESS (-8 to +8):	Adjust this if the picture is bright or dark on the whole.
CONTRAST (-7 to +7):	Adjust this if the objects in far and near positions look unnatural.
SATURATION (-7 to +7):	Adjust this if the picture is whitish or blackish.
TINT (-7 to +7):	Adjust this if the appearance of flesh tone is unnatural.
SHARPNESS (-8 to +8):	Adjust this if the picture is indistinct.

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



5 Adjust the parameter.

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

- The current VFP settings appear again.
- Repeat steps 4 and 5 to adjust other parameters.

To return to the normal screen

Press **DVD PICTURE**.

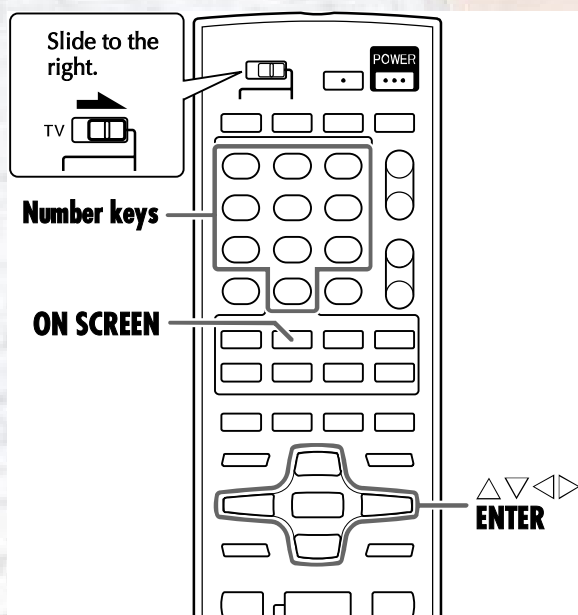
NOTE:

The VFP setting screen disappears if no operation is done for more than about 10 seconds.

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.



Basic operation on the on-screen bar

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 menu item.

Press **◀▶** to highlight the item you want to work with, then press **ENTER**. The pop-up window appears under the selected item.

After pressing ENTER

- When a pull-down menu appears, press **△▽** to select the setting you want, then press **ENTER**.
- When a number-entry box appears, use the **number key** to enter the number you want, then press **ENTER**.
- When changing the indication of playback time, press **ENTER** repeatedly to select the setting you want.

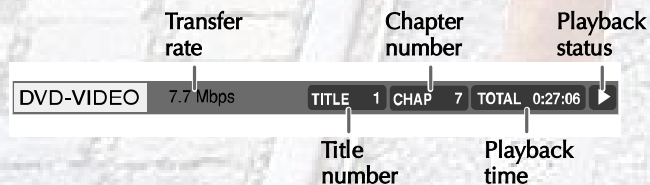
For details about each function, see page 48.

How to Access the On-Screen Bar

1 Access the status bar.

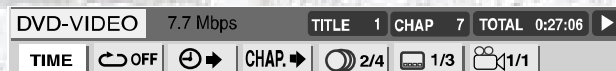
Press **ON SCREEN** when a disc is loaded. The status bar appears on the TV screen.

Example: During DVD VIDEO playback



2 Access the menu bar.

Press **ON SCREEN** again. The menu bar appears under the status bar.



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

Menu Bar Functions for DVD VIDEO

■ Time mode selection

During playback, selects the time mode shown in the status bar and on the front display.

- **TOTAL:** Current title elapsed time
- **T.REM:** Current title remaining time
- **TIME:** Current chapter elapsed time
- **REM:** Current chapter remaining time

■ Repeat mode (See also page 43)

Selects the repeat mode during playback.

- **CHAPTER:** Current chapter repeat
- **TITLE:** Current title repeat
- **A-B:** A-B repeat
- **OFF:** Repeat mode deactivated

■ Time search (See also page 44)

Specifies a time from the beginning of the current title as the point from which to begin playback.

■ Chapter search

During playback, specifies a desired chapter to be played back from.

■ Audio selection (See also page 45)

During playback, selects the audio language or sound track.

■ Subtitle selection* (See also page 44)

During playback, selects the subtitle language.

* 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 SUBTITLE repeatedly until "OFF" is selected.

■ Angle selection (See also page 45)

During playback, selects a desired scene angle in a multi-angle part.

Menu Bar Functions for SVCD/Video CD/Audio CD

■ Time mode selection

Selects the time mode shown in the status bar and on the front display.

- **TIME:** Current track elapsed time
- **REM:** Current track remaining time (while in stop mode, current track total time)
- **TOTAL:** Disc elapsed time
- **T.REM:** Disc remaining time (while in stop mode, disc total time)

■ Repeat mode (See also page 43)

Selects the repeat mode.

- **TRACK:** Current track repeat
- **ALL:** All track repeat
- **A-B:** A-B repeat
- **OFF:** Repeat mode deactivated

■ Time search (See also page 44)

Specifies a time from the beginning of the disc as the point from which to begin playback.

■ Audio selection (See also page 45)

During Video CD/SVCD playback, selects the audio channel(s).

■ Subtitle selection (See also page 44)

During SVCD playback, selects the subtitle.

JPEG Files Playback

Control display

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

Example

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

FILE		
Group (1/3)	File (1/14) (Total 41)	
Sea	Anemone fish	
Mountain	Bonito	
Sky	Butterfly fish	
	Dolphin	
	Garden eel	
	Manta ray	
	Seal	
	Swordfish	
	Thunder	
	Tuna	
	Whale	
	Whale shark	
Current group number	Current file	Total file number on disc
Current group		

Outline

This unit can play back JPEG files on a personally recorded on CD-R/RW.

- This unit may be unable to play back the disc due to the characteristics or recording conditions.

Precautions

About files and folders (groups) on the disc

- 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.
- Add the appropriate extension, such as "jpeg" to the file name.
- This unit supports the JPEG files whose resolution is 32 to 8192 pixel in width and 32 to 7680 pixel in height.
- We recommend to record a file at 640 x 480 resolution. (If a file has been recorded at a resolution of more than 640 x 480, it will take a longer time to be displayed.)

For making your own disc:

- Use "UDF format" as the disc format for CD-R/RW.
- Use "ISO 9660" as the disc format for CD-R/RW.
- The unit does not support "packet writing" for CD-R/RW.
- The unit supports discs recorded with up to five multiple sessions.
- Finalize the disc.

NOTES:

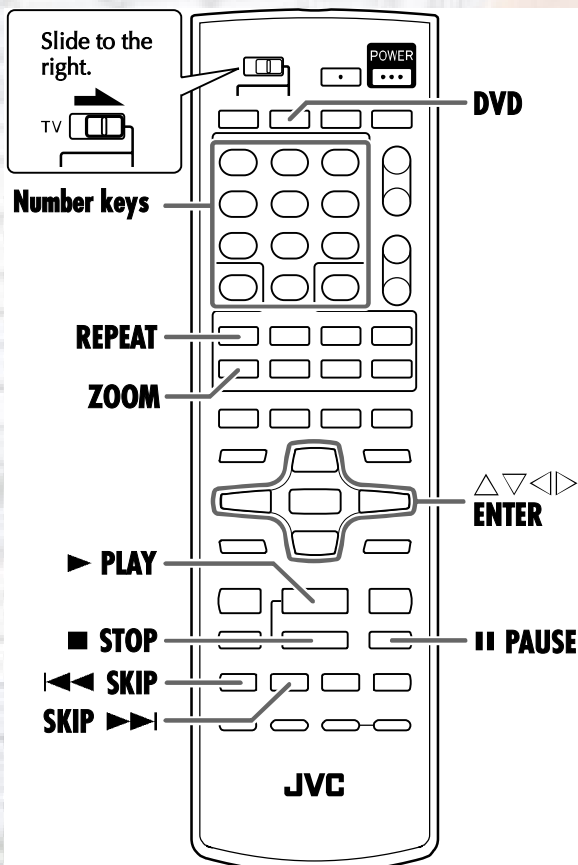
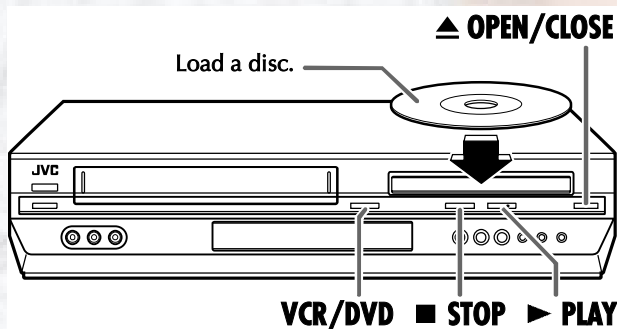
- Because of the disc characteristics or recording condition, some discs may not be played back or it takes time to start playback.
- The unit does not support "packet writing" discs.
- If there are any files which are stored on a disc directly and do not belong to any group, the unit recognized them as belonging to an independent group.
- The unit plays back groups/files on a disc in the alphabetical order. Therefore, playback order may be different from the order recorded on a disc.

Basic Playback

When you insert a disc with groups and files, the control display that shows the contents of the disc automatically appears on the TV screen. (pg. 49)

You can specify and play back the desired group/file from the control display using the following procedure.

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



NOTES:

- ►► PLAY, ■ STOP, II PAUSE, ◀◀ SKIP and SKIP ►► buttons function the same as with Audio CD discs, however, FF ►► and ◀◀ REW buttons do not function for JPEG files playback.
- Resume playback also does not function for JPEG files playback.

1 Load the disc.

- For details, refer to "Placing a Disc" (pg. 8).

The control display appears on the TV screen. (pg. 49)

2 Select the DVD deck.

On the unit

Press VCR/DVD repeatedly so that the DVD indicator lights up on the front display panel.

On the Remote

Press DVD so that the DVD indicator lights up on the front display panel.

3 Select the group.

Press ▲▼ to select the desired group, then press ▷.

4 Start playback.

Press ▲▼ to select the desired file, then press ENTER or ► PLAY.

- 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 to start 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.

5 Pause playback.

Press II PAUSE.

- To resume normal playback, press ► PLAY.

6 Stop playback.

Press ■ STOP.

- Press ▲ OPEN/CLOSE on the DVD deck to open the disc tray, then remove the disc.

Group/File Selection

To start playback by specifying the group/file 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 file number.

Example:

- To select 3: Press 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.

- 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.

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 or all groups.

- While the control display is on the TV screen:

1 Select the mode.

Press **REPEAT** to select the desired repeat mode.

- Each time you press **REPEAT**, the mode changes as follows:

GROUP→**ALL**→**OFF (No indication)**→(Back to the beginning)

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

2 Start playback.

Press **▶ PLAY**.

To cancel Repeat Playback

Press **REPEAT** repeatedly until the repeat mode display disappears from the TV screen.

To return to the control display

Press **■ STOP**.

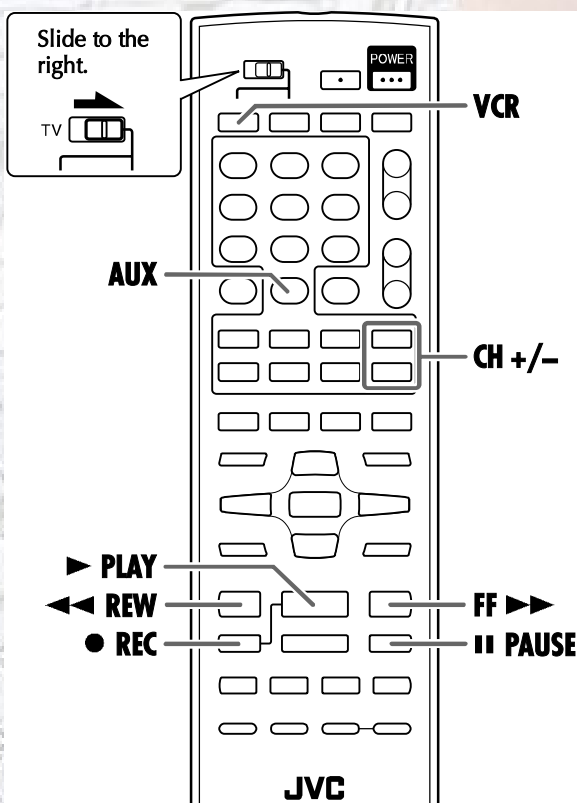
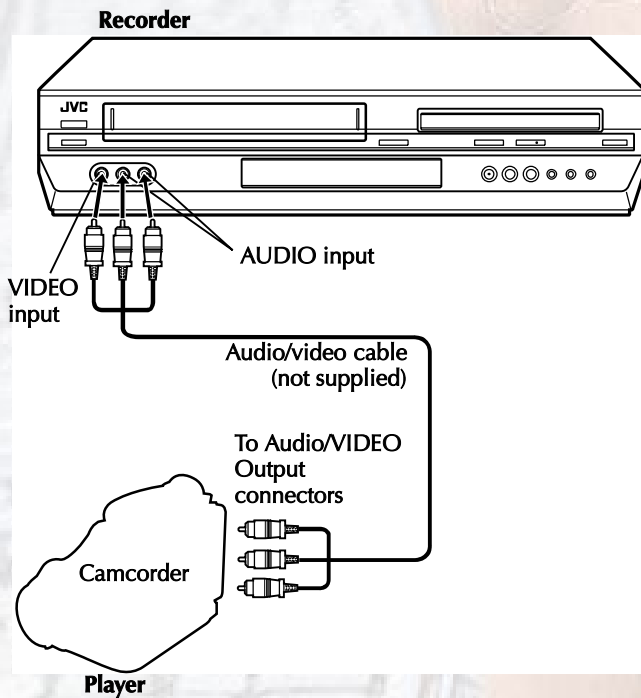
Zooming a still picture

Press **ZOOM** while playing back a JPEG file.

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

Edit From A Camcorder

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



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

1 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 VHS indicator lights up on the front display panel.

On the Remote

Press **VCR** so that the VHS indicator lights up on the front display panel.

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 59.

5 Engage the Record Pause mode.

Use ▶ **PLAY**, FF ▶▶, or ◀◀ **REW** to locate the point where you start recording, then press and hold || **PAUSE** 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** 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 1, be sure to select "NORM" after you finish dubbing the tapes.

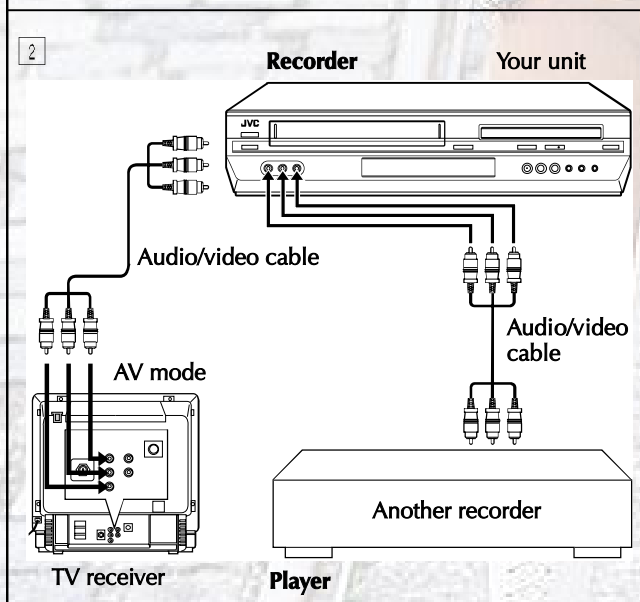
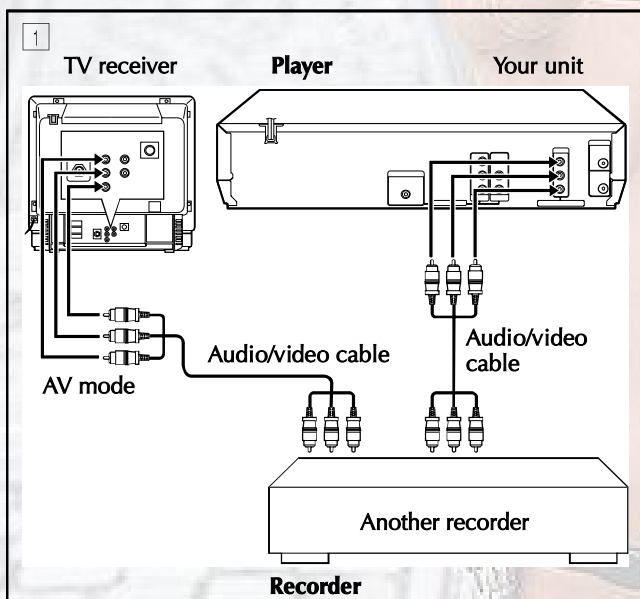
Edit To Or From Another Video Recorder

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

Slide the **TV/VCR/DVD** switch on the Remote to the right.

1 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 VHS indicator lights up on the front display panel.

On the Remote
Press **VCR** so that the VHS indicator lights up on the front display panel.

3 Set the input mode of recording deck.

With this video unit, press **AUX** (number key "0") and/or **CH +/-** to select "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 59.

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.

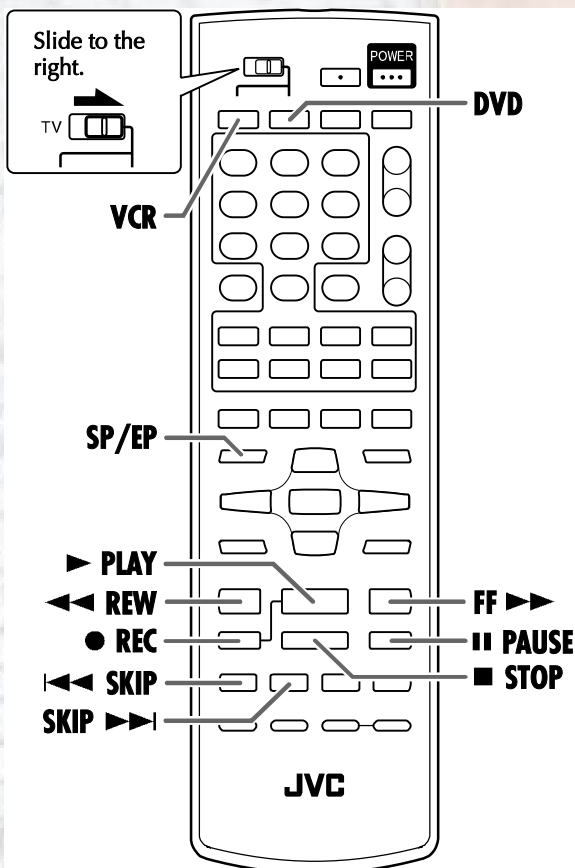
NOTES:

- All necessary cables can be obtained from your dealer.
- When you select "EDIT" to dub tapes in step 1, 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. (pg. 59)

Dubbing

(from DVD to VCR)

- Turn on the TV and select the VCR channel (or AV mode).
- Slide the TV/VCR/DVD switch on the Remote 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, "Err" 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

For details, refer to "Placing a Disc" (pg. 8).

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 ►► or ◀◀ REW then press ■ STOP.

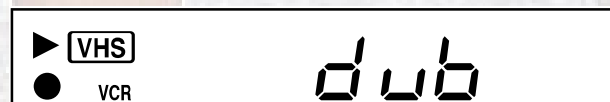
3 Prepare the DVD deck for dubbing.

- 1 Press DVD.
 - 2 Search for the point where you want to start dubbing by pressing ► PLAY, FF ►►, ◀◀ REW, SKIP ►► or ◀◀ SKIP.
 - 3 Press ■ PAUSE to pause playback a little before the start point.
- Turn off the on-screen bar if it appears on the TV screen.

4 Start dubbing.

Press and hold ● REC, then press ► PLAY on the Remote (on DVD deck mode).

- "dub" lights on the front display panel.



5 End dubbing.

Press ■ STOP.

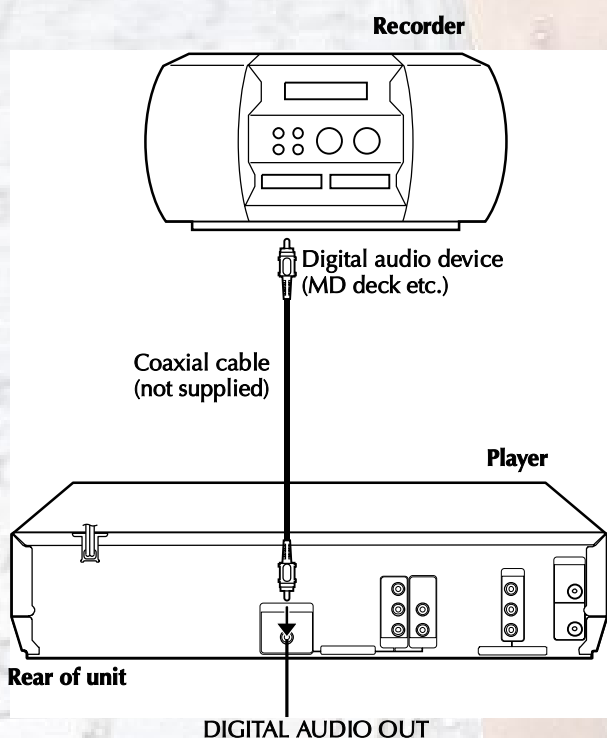
- Be sure to press ■ STOP while the VCR indicator lights up on the unit.

NOTES:

- You can dub from DVD to VCR regardless of the scan mode setting. (pg. 15) However, the progressive signals will be converted to the interlace signals when dubbing.
- Set "ON SCREEN GUIDE" to "OFF" (pg. 64) 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." (pg. 59)

Digital Audio Dubbing

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

For details, refer to "Placing a Disc" (pg. 8).

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**, **FF ▶▶** or **◀◀ REW** then press **■ STOP**.
- 3 Press **◀◀ REW** a little, then press **▶ PLAY** to start playback.
- 4 Press **⏸ PAUSE** to pause playback a little before the start point.

4 Prepare the audio device for dubbing.

Select the input mode.

5 Start dubbing.

- 1 Press **▶ PLAY** to start playback on the DVD deck.
- 2 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." (pg. 62)

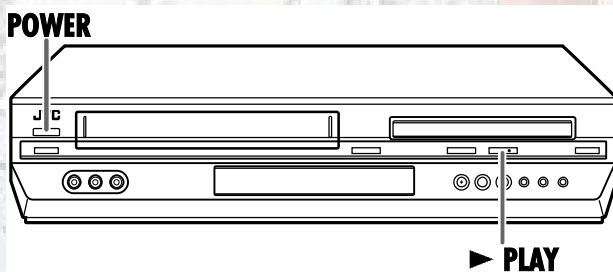
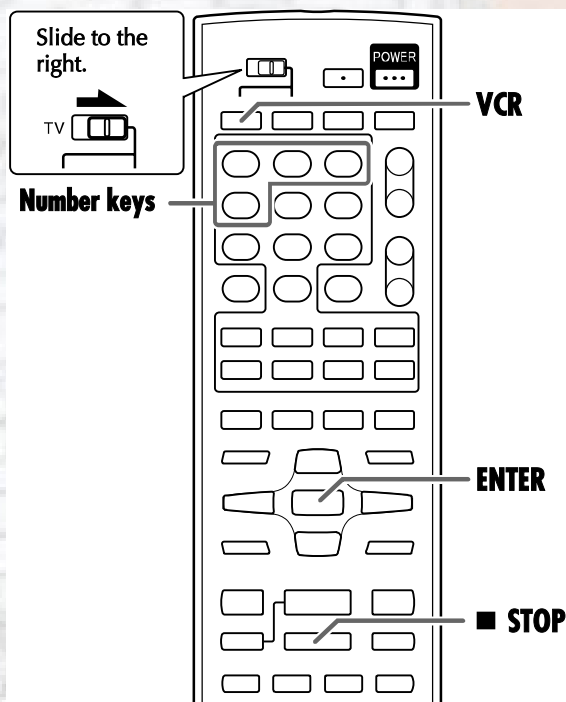
Remote Control Functions

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 B, C or D code signals.

Before performing the following steps:

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



On the Remote

Keep pressing VCR down during steps 1 – 2.

1 Change the remote control code.

Press the number key "1" for A, "2" for B, "3" for C or "4" for D.

2 Set the remote control code.

Press ENTER to set the code.

NOTE:

Once the batteries are removed, the remote control code is back to A.

On the unit

1 Turn off the unit.

Press POWER on the unit.

2 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 3.

3 Change the unit's code.

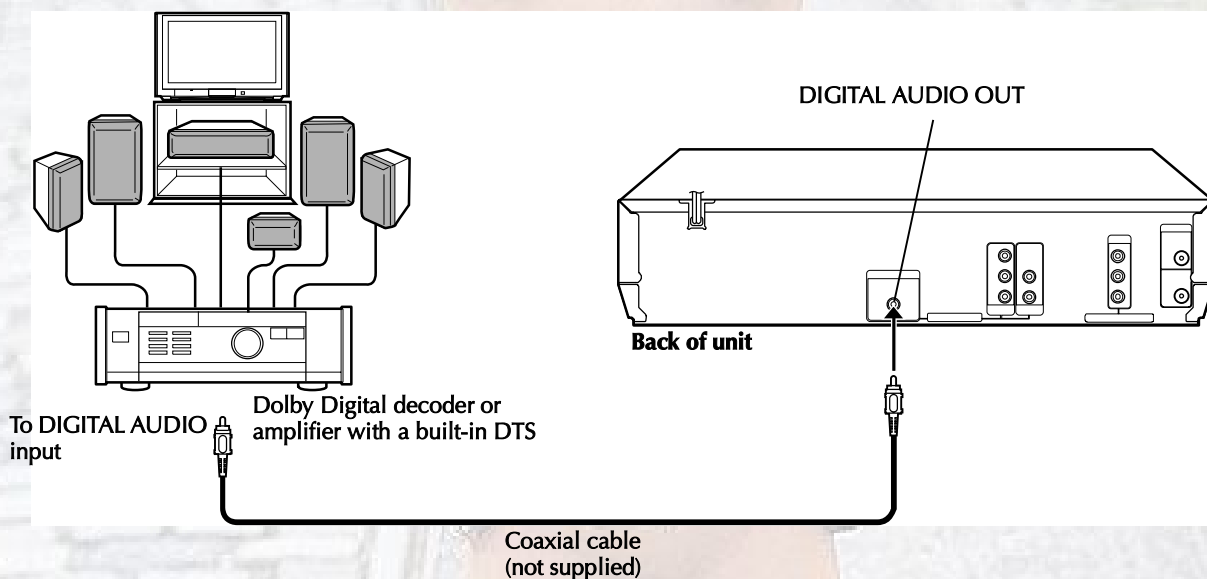
Press ■ STOP on the Remote. The code currently set on the Remote will be applied to the unit.

NOTE:

Even if you unplug the end of the mains power cord from the mains, the code currently set remains.

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." (☞ pg. 62)
- For DTS sound, set "DIGITAL AUDIO OUTPUT" to "STREAM/PCM." (☞ pg. 62)

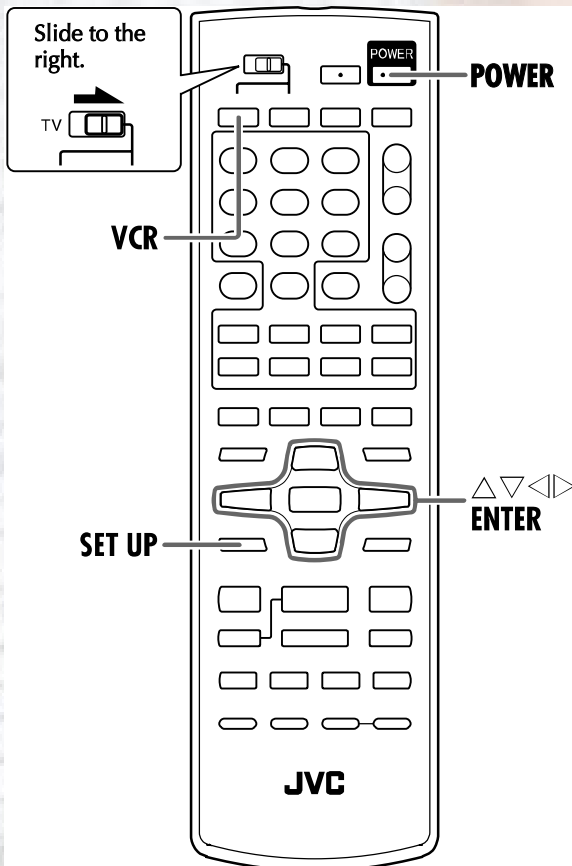
CAUTIONS:

- 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 Hi-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

(VCR deck)

- Turn on the TV and select the VCR channel (or AV mode).
- Slide the TV/VCR/DVD switch on the Remote 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 59 to 60.

1 Turn on the unit.

Press **POWER**.

2 Select the VCR deck.

On the unit

Press **VCR/DVD** repeatedly so that the VHS indicator lights up on the front display panel.

On the Remote

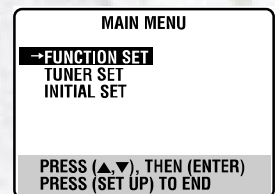
Press **VCR** so that the VHS indicator lights up on the front display panel.

3 Access the Main Menu screen.

Press **SET UP**.

4 Access the Function Set screen.

Press Δ / ∇ to move the highlight bar (arrow) to "FUNCTION SET," then press **ENTER** or \triangleright .



5 Select the mode.

Press Δ / ∇ to move the highlight bar (arrow) to the item you want to change.

FUNCTION	
PICTURE CONTROL	NORM
SUPERIMPOSE	ON
AUTO SP-EP TIMER	OFF
VIDEO STABILIZER	OFF
BLUE BACK	ON
2ND AUDIO RECORD	OFF
NEXT PAGE	
SELECT WITH (Δ , ∇) \rightarrow (ENTER)	
PRESS (SET UP) TO END	

PREVIOUS PAGE	
AUDIO MONITOR	HI-FI
AUTO POWER OFF	OFF
SELECT WITH (Δ , ∇) \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.

<p>■ PICTURE CONTROL NORM EDIT SOFT SHARP</p>	<p>This feature helps you to adjust the playback picture quality according to your preference. Normally select "NORM."</p> <p>NORM: Picture quality is adjusted automatically.</p> <p>EDIT: Minimizes picture degradation during editing (recording and playback).</p> <p>SOFT: Reduces image coarseness when viewing overplayed tapes containing a lot of noise.</p> <p>SHARP Clearer, sharper-edged picture when viewing images with lots of flat, same-colored surfaces such as cartoons.</p> <p>NOTES:</p> <ul style="list-style-type: none"> ● When you select "EDIT," "SOFT" or "SHARP," the selected mode will not change until you select another mode. ● When you select "EDIT" to dub tapes, be sure to select "NORM" after you finish dubbing the tapes. 				
<p>■ SUPERIMPOSE ON OFF</p>	<p>When this function is set to "ON," various operational indicators appear on the TV screen. Messages appear in the selected language. (pg. 18)</p> <p>NOTES:</p> <ul style="list-style-type: none"> ● When you use this unit as the source player for editing, be sure to set "SUPERIMPOSE" to "OFF" before starting. ● During playback, the operation mode indicators may be disturbed depending on the type of tape being used. 				
<p>■ AUTO SP→EP TIMER ON OFF</p>	<p>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.</p> <p>For Example: Recording a program of 140 minutes in length onto a 120-minute tape</p> <table border="1"> <tr> <td style="text-align: center;">Approximately 110 minutes</td> <td style="text-align: center;">Approximately 30 minutes</td> </tr> <tr> <td style="text-align: center;">SP mode</td> <td style="text-align: center;">EP mode</td> </tr> </table> <p style="text-align: center;">Total 140 minutes</p> <p>Make sure you set this function to "ON," before the timer-recording starts.</p> <p>NOTES:</p> <ul style="list-style-type: none"> ● 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→EP TIMER" to "ON." In this case, make sure the mode is not engaged, then set the tape speed manually during timer programing. ● In order to ensure that the recording fits on the tape, this feature may leave a slight non-recorded section at the end of the tape. ● There may be some noise and sound disturbance at the point on the tape where the unit switches from SP to EP mode. ● The Auto SP→EP Timer feature is not available during ITR (Instant Timer Recording), and the feature will not work properly on the following tapes: T(ST)-30, T(ST)-60, T(ST)-90, and T(ST)-120. 	Approximately 110 minutes	Approximately 30 minutes	SP mode	EP mode
Approximately 110 minutes	Approximately 30 minutes				
SP mode	EP mode				

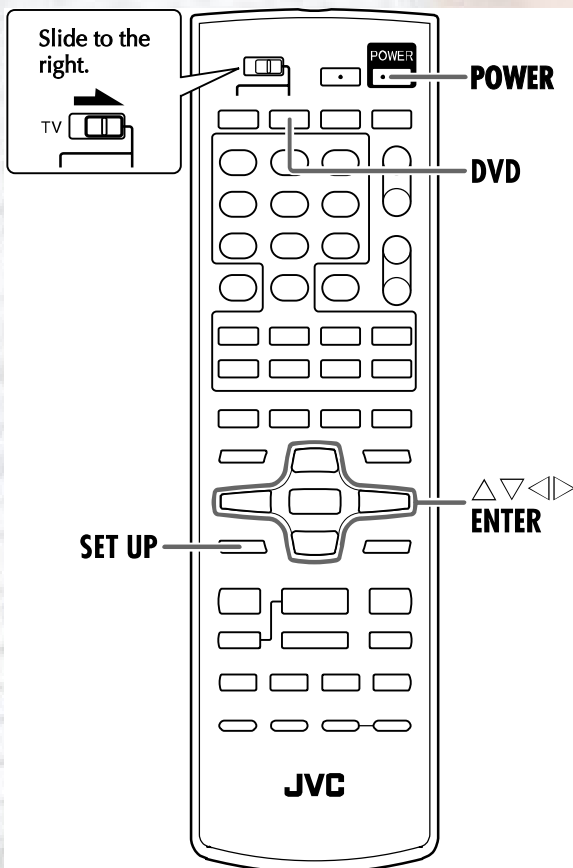
* The default setting is **bold** in the table below.

<p>■ VIDEO STABILIZER ON OFF</p>	<p>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.</p> <p>NOTES:</p> <ul style="list-style-type: none"> • When you finish viewing a tape, be sure to set this function to "OFF." • Regardless of the setting, this function has no effect during recording and during special effects playback. • The on-screen display may jitter vertically when this function is set to "ON." • To watch recordings with close-caption, set this function to "OFF."
<p>■ BLUE BACK ON OFF</p>	<p>When this function is set to "ON," the TV screen becomes all blue when receiving a channel not in use.</p> <p>NOTE: When you want to receive an unstable channel with poor signals, set this function to "OFF."</p>
<p>■ 2ND AUDIO RECORD ON OFF</p>	<ul style="list-style-type: none"> • When this function is set to "ON"; 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. If a non-SAP program is received, the main audio is recorded on both the Hi-Fi and normal tracks. • When this function is set to "OFF," the SAP audio cannot be recorded. <p>NOTES: When the channel is changed on the unit;</p> <ul style="list-style-type: none"> • 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.
<p>■ AUDIO MONITOR HI-FI HI-FI L HI-FI R NORM MIX</p>	<p>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."</p> <p>HI-FI: Normally select this. Hi-Fi sound is played back. HI-FI L: Sound on the left Hi-Fi channel is played back. HI-FI R: Sound on the right Hi-Fi channel is played back. NORM: Sound on the normal track is played back. MIX: Both sounds on the Hi-Fi track and normal track are mixed and played back.</p> <p>NOTES:</p> <ul style="list-style-type: none"> • While playing back a monaural tape, sounds on the normal track will be heard regardless of this setting. • You can also use the A.MONITOR button on the Remote to select the desired monitor sound. (☞ pg. 30)
<p>■ AUTO POWER OFF 3H OFF</p>	<p>When this function is set to "3H," 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.</p>

Mode Set

(DVD deck)

- Turn on the TV and select the VCR channel (or AV mode).
- Slide the TV/VCR/DVD switch on the Remote 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 corresponding pages.

LANGUAGE	MENU LANGUAGE (pg. 20) AUDIO LANGUAGE (pg. 20) SUBTITLE (pg. 20) ON SCREEN LANGUAGE (pg. 19)
PICTURE	MONITOR TYPE (pg. 17, 62) PICTURE SOURCE (pg. 62) SCREEN SAVER (pg. 62)
AUDIO	DIGITAL AUDIO OUTPUT (pg. 62) DOWN MIX (pg. 62) D. RANGE COMPRESSION (pg. 63)
OTHERS	RESUME (pg. 64) ON SCREEN GUIDE (pg. 64)

- 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**.

2 Select the DVD deck.

On the unit

Press **VCR/DVD** repeatedly so that the DVD indicator lights up on the front display panel.

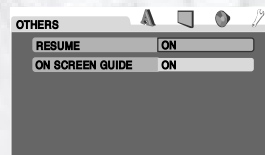
On the Remote

Press **DVD** so that the DVD indicator lights up on the front display panel.

3 Access the DVD Set Up menu screen.

- 1 Press **SET UP**.
- 2 Press **◀▶** to select "OTHERS."

- Each time you press the button, the setup menus change as follows;



LANGUAGE → **PICTURE** → **AUDIO** → **OTHERS**
→ (Back to the beginning)

4 Select the mode.

Press **▲▼** to move the highlight to "RESUME," then press **ENTER**.

5 Select the mode setting.

Press **▲▼** to select "ON," then press **ENTER**.

6 Return to the normal screen.

Press **SET UP**.

Picture Settings

* The default setting is **bold** in the table below.

<p>■ MONITOR TYPE 16:9 4:3 LB 4:3 PS</p>	<p>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)" (☞ pg. 17)</p>
<p>■ PICTURE SOURCE AUTO FILM VIDEO</p>	<p>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). Normally set to "AUTO."</p> <p>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.</p> <p>FILM: Suitable for playing back a film or progressive source disc.</p> <p>VIDEO: Suitable for playing back a video source disc with relatively a few moments.</p> <p>● If the playback picture is unclear or noisy, or the oblique lines of the picture are rough, try to change to other modes.</p>
<p>■ SCREEN SAVER ON OFF</p>	<p>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.</p>

Audio Settings

* The default setting is **bold** in the table below.

<p>■ DIGITAL AUDIO OUTPUT PCM ONLY DOLBY DIGITAL/PCM STREAM/PCM</p>	<p>Set to the appropriate mode according to the type of the device connected to DIGITAL AUDIO OUT connector on the rear of unit. Set this item correctly according to the logo on the device. It is not necessary to set this mode when you connect no device to DIGITAL AUDIO OUT connector.</p> <p>PCM ONLY: Select this when connecting to a device bearing neither Dolby Digital nor DTS logo, or a digital recorder.</p> <p>DOLBY DIGITAL/PCM: Select this when connecting an amplifier or a decoder bearing Dolby Digital (without DTS) logo.</p> <p>STREAM/PCM: Select this when connecting an amplifier or a decoder bearing both Dolby Digital and DTS logos.</p>
<p>■ DOWN MIX DOLBY SURROUND STEREO</p>	<p>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 analog audio output signal from the AUDIO OUTPUT connectors (DVD) when playing back a DVD VIDEO disc recorded with surround multichannel audio.</p> <p>DOLBY SURROUND: Select this when you enjoy multichannel surround audio by connecting the unit's analog AUDIO OUTPUT connector (DVD) to a surround decoder.</p> <p>STEREO: Select this when you enjoy conventional 2-channel stereo audio by connecting the unit's analog 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.</p>

<p>■ D. RANGE COMPRESSION AUTO ON</p>	<p>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.</p> <p>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.</p> <p>AUTO: Audio is played back with channels other than Dolby Digital channel 1 or 2 compressed.</p> <p>ON: Audio is played back with all channel compressed.</p>
--	---

Playback discs	Output		
	STREAM/PCM	DOLBY DIGITAL/PCM	PCM ONLY
DVD VIDEO with 48 kHz, 16/20/24 bit linear PCM	48 kHz, 16 bit linear PCM		
DVD VIDEO with DTS	DTS bitstream	44.1 kHz, 16 bit stereo linear PCM	
DVD VIDEO with Dolby Digital	Dolby Digital bitstream		48 kHz, 16 bit stereo linear PCM
Audio CD/Video CD	44.1 kHz, 16 bit stereo linear PCM		
Audio CD with DTS	DTS bitstream	44.1 kHz, 16 bit stereo 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.

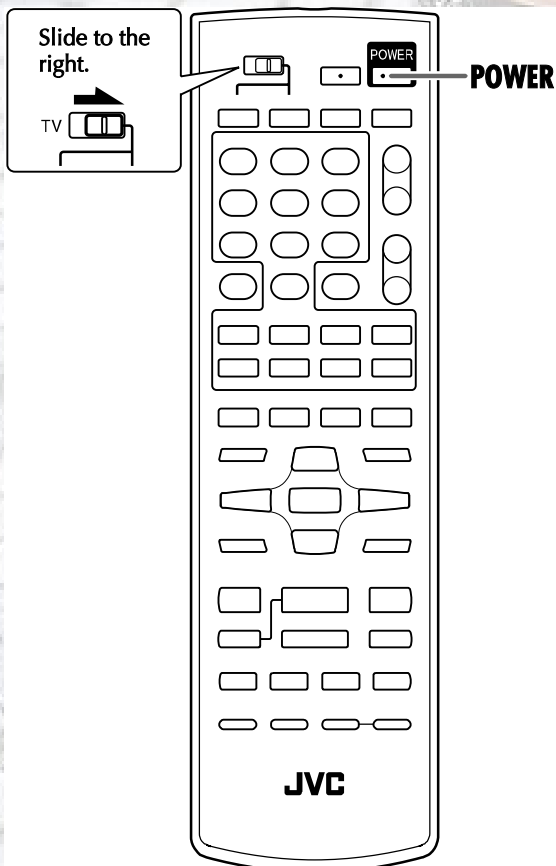
Others Settings

* The default setting is **bold** in the table below.

<p>■ RESUME ON OFF</p>	<p>When this function is set to "ON," you can use the resume function. (pg. 40)</p> <p>ON: The unit resumes playback from the position where playback has been stopped.</p> <p>OFF: This function is deactivated.</p> <p>NOTE: This function is not available for Audio CDs.</p>
<p>■ ON SCREEN GUIDE ON OFF</p>	<p>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.</p>

Child Lock

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



You can disable the unit's operation.

1 Set the Child Lock.

Press and hold **POWER** 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.

CL

- To release the child lock, press and hold **POWER** 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 is activated.

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 run. The counter display blinks on the front display panel.	● The unit is in the Record Pause mode.	Press ► PLAY to resume recording.
2. The tape will not rewind or fast-forward.	● The tape is already fully rewound or 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 VHS indicator lights up on the front display panel. On the Remote Press VCR so that the VHS indicator lights up on the front display panel.
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. — the unit's VCR channel has not been correctly set. ● If you are using the AV or Component Video* connection, the TV receiver is not set to the AV mode. * (DVD deck only)	If you are using the RF connection, — set the TV receiver to the VCR channel. — perform "Set the VCR channel." (☞ pg. 13). If you are using the AV or Component Video* connection, set the TV to its AV mode. * (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. (☞ pg. 30)
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 Hi-Fi soundtrack.	● The automatic tracking mode is engaged.	Try manual tracking. (☞ pg. 30)

Playback (DVD deck)

SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION
1. The button do not work.	<ul style="list-style-type: none"> The operation is prohibited on the placed disc. 	—
2. The DVD deck can not be operated.	<ul style="list-style-type: none"> The DVD deck is not selected. 	<p>On the unit Press VCR/DVD repeatedly so that the DVD indicator lights up on the front display panel.</p> <p>On the Remote Press DVD so that the DVD indicator lights up on the front display panel.</p>
3. "⓪" appears on the TV screen.	<ul style="list-style-type: none"> The operation is prohibited on the placed disc. 	—
4. "REGION CODE ERROR!" appears on the TV screen.	<ul style="list-style-type: none"> The disc's region number does not match that of the unit. 	Use the discs whose region number includes "ALL" or "1." (☞ pg. 7)
5. The disc cannot be played back.	<ul style="list-style-type: none"> The disc's region number does not match that of the unit. This type of the disc cannot be played back. The disc is not placed properly. 	<p>Use the discs whose region number includes "ALL" or "1." (☞ pg. 7)</p> <p>See "Unplayable Discs" (☞ pg. 7).</p> <p>Remove the disc, then place the disc properly in the disc tray. (☞ pg. 8, "Placing a Disc")</p>
6. The language is not played back as you set.	<ul style="list-style-type: none"> The disc does not contain the language you set. 	—
7. Changing audio/subtitle language is not possible.	<ul style="list-style-type: none"> The disc does not contain the audio/subtitle in the multiple languages. 	With some discs, the language should be set on the top menu. (☞ pg. 41)
8. The subtitles do not appears on the TV screen.	<ul style="list-style-type: none"> The disc does not contain the subtitles. The subtitle display is set to off. A-B Repeat Playback is in progress. (☞ pg. 43) 	<p>—</p> <p>Set the subtitles display to on. (☞ pg. 44)</p> <p>The subtitles recorded around A-B point may not appear.</p>
9. Angle cannot be changed.	<ul style="list-style-type: none"> The scene is not recorded from the multiple angles. 	—

JPEG Files Playback (DVD deck)

SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION
1. A disc cannot be played.	<ul style="list-style-type: none"> • No JPEG files are recorded to the disc. • Files do not have the correct file extension in their file names. • Files are not recorded in a format compliant with ISO 9660. • The different types of files are recorded to the disc. 	<p>Replace the disc.</p> <p>Add correct file extension (.jpg, .jpeg, .JPG, .JPEG, or any uppercase and lowercase combination) to their file names.</p> <p>Replace the disc. (Record files using a compliant application.)</p> <p>The disc which contains the different types of files may not be played because of its disc characteristics or recording conditions.</p>
2. The control display appears on the TV screen, but no operation can be performed.	<ul style="list-style-type: none"> • No JPEG files are recorded to the disc, or the disc is an unplayable disc (such as CD-ROM). 	Replace the disc. (▶ pg. 8)

RECORDING (VCR deck)

SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION
1. Recording cannot be started.	<ul style="list-style-type: none"> • There is no cassette loaded, or the cassette loaded has had its record safety tab removed. 	Insert a cassette, or using adhesive tape, cover the hole where the tab was removed.
2. TV broadcasts cannot be recorded.	<ul style="list-style-type: none"> • "F-1" has been selected as the input mode. 	Set to the desired channel.
3. Tape-to-tape editing is not possible.	<ul style="list-style-type: none"> • The source (another video recorder, camcorder) has not been properly connected. • All necessary power switches have not been turned on. • The input mode is not correct. 	<p>Confirm that the source is properly connected.</p> <p>Confirm that all units' power switches are turned on.</p> <p>Set the input mode to "F-1."</p>
4. Camcorder recording is not possible.	<ul style="list-style-type: none"> • The camcorder has not been properly connected. • The input mode is not correct. 	<p>Confirm that the camcorder is properly connected.</p> <p>Set the input mode to "F-1."</p>
5. "○" and "▷" on the front display panel won't stop blinking.	<ul style="list-style-type: none"> • The end of the tape was reached during 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.

TIMER RECORDING (VCR deck)

SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION
1. Timer recording won't work.	<ul style="list-style-type: none"> • The clock and/or the timer have been set incorrectly. • The timer is not engaged. 	<p>Re-perform the clock and/or timer settings.</p> <p>Press TIMER and confirm that "⓪" is displayed on the front display panel.</p>
2. Timer programing is not possible.	<ul style="list-style-type: none"> • Timer recording is in progress. 	<p>Timer programing can't be performed while a timer recording is in progress. Wait until it finishes.</p>
3. "⓪" on the front display panel won't stop blinking.	<ul style="list-style-type: none"> • The timer is engaged but there's no cassette loaded. • The loaded cassette has had its record safety tab removed. 	<p>Load a cassette with the record safety tab intact.</p> <p>Remove the cassette and cover the hole with adhesive tape, or insert a cassette with the record safety tab intact.</p>
4. "⓪", "○" and "▷" on the front display panel won't stop blinking.	<ul style="list-style-type: none"> • The end of the tape was reached during timer recording. 	<p>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.</p>
5. "⓪" blinks for 10 seconds and the Timer mode is disengaged.	<ul style="list-style-type: none"> • TIMER has been pressed when there are no programs in memory, or the timer record information has been programmed incorrectly. 	<p>Check the programed data and re-program as necessary, then press TIMER again.</p>
6. "○" and "▷" on the front display panel won't stop blinking.	<ul style="list-style-type: none"> • The end of the tape was reached during Instant Timer Recording. 	<p>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.</p>
7. "ⓧ", "○" and "▷" on the front display panel won't stop blinking.	<ul style="list-style-type: none"> • The Satellite Auto Recording mode is engaged but there is no cassette loaded. • The loaded cassette has had its record safety tab removed. • The end of the tape was reached during Satellite Auto Recording. 	<p>Load a cassette with the record safety tab intact.</p> <p>Remove the cassette and cover the hole with adhesive tape, or insert a cassette with the record safety tab intact.</p> <p>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.</p>

OTHER PROBLEMS

SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION
1. The image of TV broadcast appears distorted on the TV screen.	<ul style="list-style-type: none"> 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 VHS indicator disappears from the front display panel.
2. Whistling or howling is heard from the TV during camcorder recording.	<ul style="list-style-type: none"> The camcorder's microphone is too close to the TV. The TV's volume is too high. 	Position the camcorder so its microphone is away from the TV. Turn the TV's volume down.
3. When scanning channels, some of them are skipped over.	<ul style="list-style-type: none"> Those channels have been designated to be skipped. 	If you need the skipped channels, restore them. (☞ pg. 25)
4. The channel cannot be changed.	<ul style="list-style-type: none"> Recording is in progress. 	Press II PAUSE to pause the recording, change channels, then press ▶ PLAY to resume recording.
5. Channel settings that were made manually seem to have changed or disappeared.	<ul style="list-style-type: none"> 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.	<ul style="list-style-type: none"> The clock setting data received from the host channel is incorrect. 	Select a different host channel during "Semiauto Clock Set" (☞ pg. 23), or perform "Manual Clock Set" (☞ pg. 23).

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 **■ STOP**, then press **▲ OPEN/CLOSE** on the unit. "LOCK" appears on the front display panel and the disc tray is locked.

To unlock tray

While the unit is turned off, press and hold **■ STOP**, then press **▲ OPEN/CLOSE** 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 Record-Pause 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 "○" and "▷" on the front display panel won't stop blinking.

TIMER RECORDING

Q. "○" and "⊖" 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.

SPECIFICATIONS**GENERAL**

Power requirement : AC 120 V \sim , 60 Hz
 Power consumption
 Power on : 25 W
 Power off : 2.0 W
 Temperature
 Operating : 5°C to 40°C (41°F to 104°F)
 Storage : -20°C to 60°C (-4°F to 140°F)
 Operating position : Horizontal only
 Dimensions (WxHxD)
 : 435 mm x 93 mm x 272 mm
 (17-³/₁₆" x 3-¹¹/₁₆" x 10-³/₄")
 Weight : 4.1 kg (9.1 lbs)
 Format : VHS NTSC standard
 Maximum recording time
 (SP) : 210 min. with T-210 video cassette
 (EP) : 630 min. with T-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 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 cm, 8 cm)
 CD (12 cm, 8 cm)
 Audio characteristics
 DVD : 4 Hz – 22 KHz
 Frequency response
 CD : 4 Hz – 20 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 Vp-p/75 ohm
 Component-P_B/P_R
 : (RCA) 0.7 Vp-p/75 ohm
 Audio : (RCA) 2 Vrms, 1 Kohm
 Digital Audio : (COAXIAL) 0.5 Vp-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

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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LIMITED WARRANTY

USA ONLY

ONLY FOR PRODUCT PURCHASED IN U.S.A.

CONSUMER VIDEO 1-90

JVC COMPANY OF AMERICA (JVC) warrants this product and all parts thereof, except as set forth below ONLY TO THE ORIGINAL RETAIL PURCHASER to be FREE FROM DEFECTIVE MATERIALS AND WORKMANSHIP from the date of original purchase for the period shown below. ("The Warranty Period")

Table with 2 columns: PARTS (1 YR), LABOR (90 DAYS)

THIS LIMITED WARRANTY IS VALID ONLY IN THE FIFTY (50) UNITED STATES, THE DISTRICT OF COLUMBIA AND IN THE COMMONWEALTH OF PUERTO RICO.

WHAT WE WILL DO:

If this product is found to be defective within the warranty period, JVC will repair or replace defective parts with new or rebuilt equivalents 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 may be brought to a JVC authorized service center on a carry-in basis. Color televisions with a screen size of 27" or greater qualify for in-home service. In such cases, a technician will come to your home and either repair the TV there or remove and return it if it cannot be repaired in your home.

WHAT YOU MUST DO FOR WARRANTY SERVICE:

Please do not return your product to the retailer

Instead, return your product to the JVC authorized service center nearest you. If shipping the product to the service center, please be sure to package it carefully, preferably in the original packaging, and include a brief description of the problem(s). Please call 1-800-252-5722 to locate the nearest JVC authorized service center. Service locations can also be obtained from our website http://www.jvc.com. If your product qualifies for in-home service, the service representative will require clear access to the product.

If you have any questions concerning your JVC Product, please contact our Customer Relations Department at 800-252-5722

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, installation and removal from cabinets or mounting systems.
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. User Removal Memory Devices/Video Pick-up Tubes/CCD Image Sensors are covered for 90days from the date of purchase;
7. Accessories;
8. Batteries (except that Rechargeable Batteries are covered for 90 days from the date of purchase);
9. Products used for commercial purposes, including, but not limited to rental.
10. Loss of data resultant from malfunction of hard drive or other data storage device.

There are no 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 ANY LOSS OF USE OF THE PRODUCT, INCONVIENCE, 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.

JVC COMPANY OF AMERICA
DIVISION OF JVC AMERICAS CORP.

1700 Valley Road
Wayne, NJ 07470

http://www.jvc.com

REFURBISHED PRODUCTS CARRY A SEPARATE WARRANTY, THIS WARRANTY DOES NOT APPLY. FOR DETAIL OF REFURBISHED PRODUCT WARRANTY, PLEASE REFER TO THE REFURBISHED PRODUCT WARRANTY INFORMATION PACKAGED WITH EACH REFURBISHED PRODUCT.

For customer use:

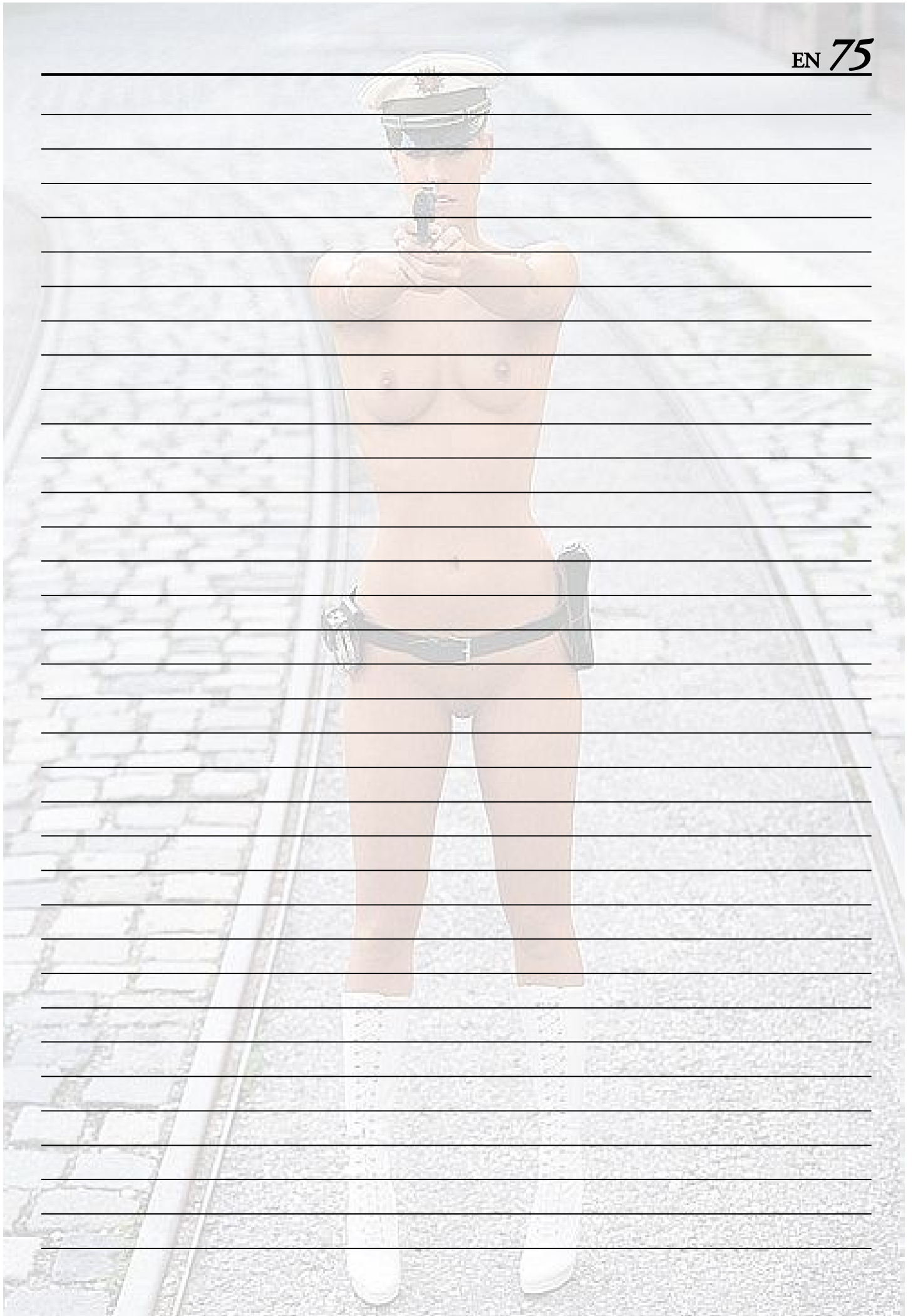
Enter below the Model No. and Serial No. which is located either on the rear, bottom or side of the cabinet. Retain this information for future reference.

Model No. :

Serial No. :

Purchase date :

Name of dealer :





TO OUR VALUED CUSTOMER ———

THANK YOU FOR PURCHASING THIS JVC PRODUCT.
WE WANT TO HELP YOU ACHIEVE A PERFECT EXPERIENCE.

**NEED HELP ON HOW TO HOOK UP?
NEED ASSISTANCE ON HOW TO OPERATE?
NEED TO LOCATE A JVC SERVICE CENTER?
LIKE TO PURCHASE ACCESSORIES?**

JVC[®] IS HERE TO HELP!
TOLL FREE: 1(800)252-5722
<http://www.jvc.com>

Remember to retain your Bill of Sale for Warranty Service.

————— **Do not attempt to 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.

BT-51005-9
(0904)

JVC

JVC

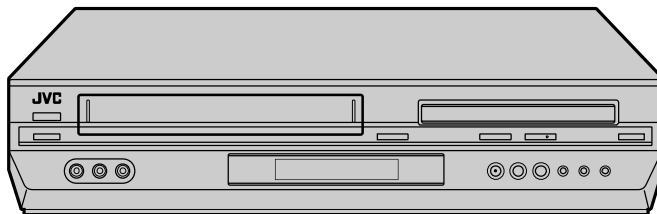
SCHEMATIC DIAGRAMS

DVD PLAYER & VIDEO CASSETTE RECORDER

HR-XVC28BUC, HR-XVC28BUS, HR-XVC29SUC, HR-XVC29SUS



CD-ROM No.SML200503




HR-XVC28BUC, HR-XVC28BUS, HR-XVC29SUC, HR-XVC29SUS [D5PV1]

For disassembling and assembling of MECHANISM ASSEMBLY, refer to the SERVICE MANUAL No.86700(MECHANISM ASSEMBLY).



CHARTS AND DIAGRAMS

NOTES OF SCHEMATIC DIAGRAM

Safety precautions
The Components identified by the symbol  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.

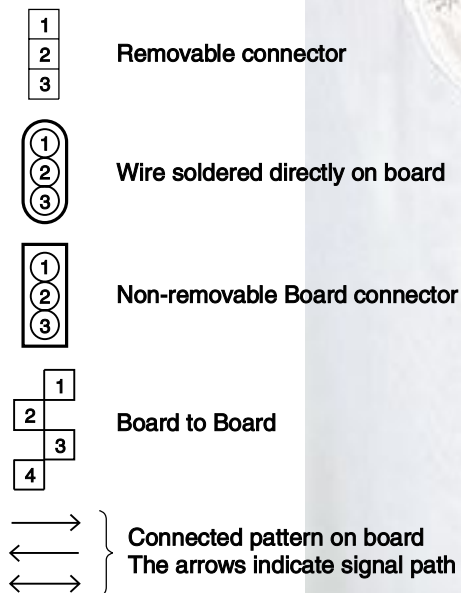
- 1) All resistance values are in ohm. 1/6 W, 1/8 W (refer to parts list).
Chip resistors are 1/16 W.
K: KΩ(1000Ω), M: MΩ (1000KΩ)
- 2) All capacitance values are in μF, (P: PF).
- 3) All inductance values are in μH, (m: mH).
- 4) All diodes are 1SS133, MA165 or 1N4148M (refer to parts list).

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.
 AUX or AUX(L) : Active at low.

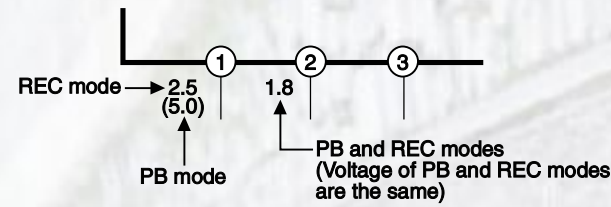
3. Interpreting Connector indications



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.

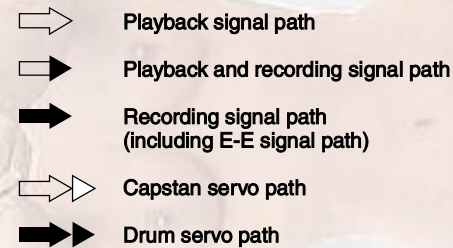


Note: If the voltages are not indicated on the schematic diagram, refer to the voltage charts.

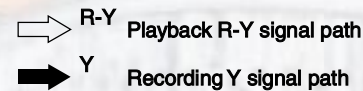
5. Signal path Symbols

The arrows indicate the signal path as follows.

NOTE : The arrow is DVC unique object.

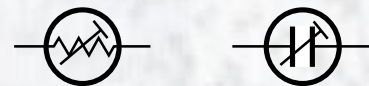


(Example)



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.



CIRCUIT BOARD NOTES

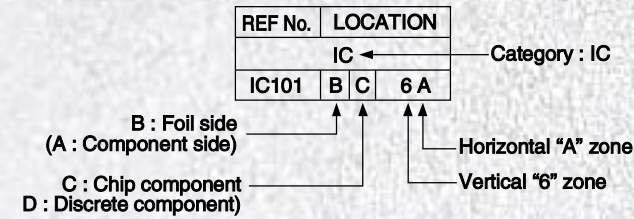
1. Foil and Component sides

- 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.

Parts location are indicated by guide scale on the circuit board.

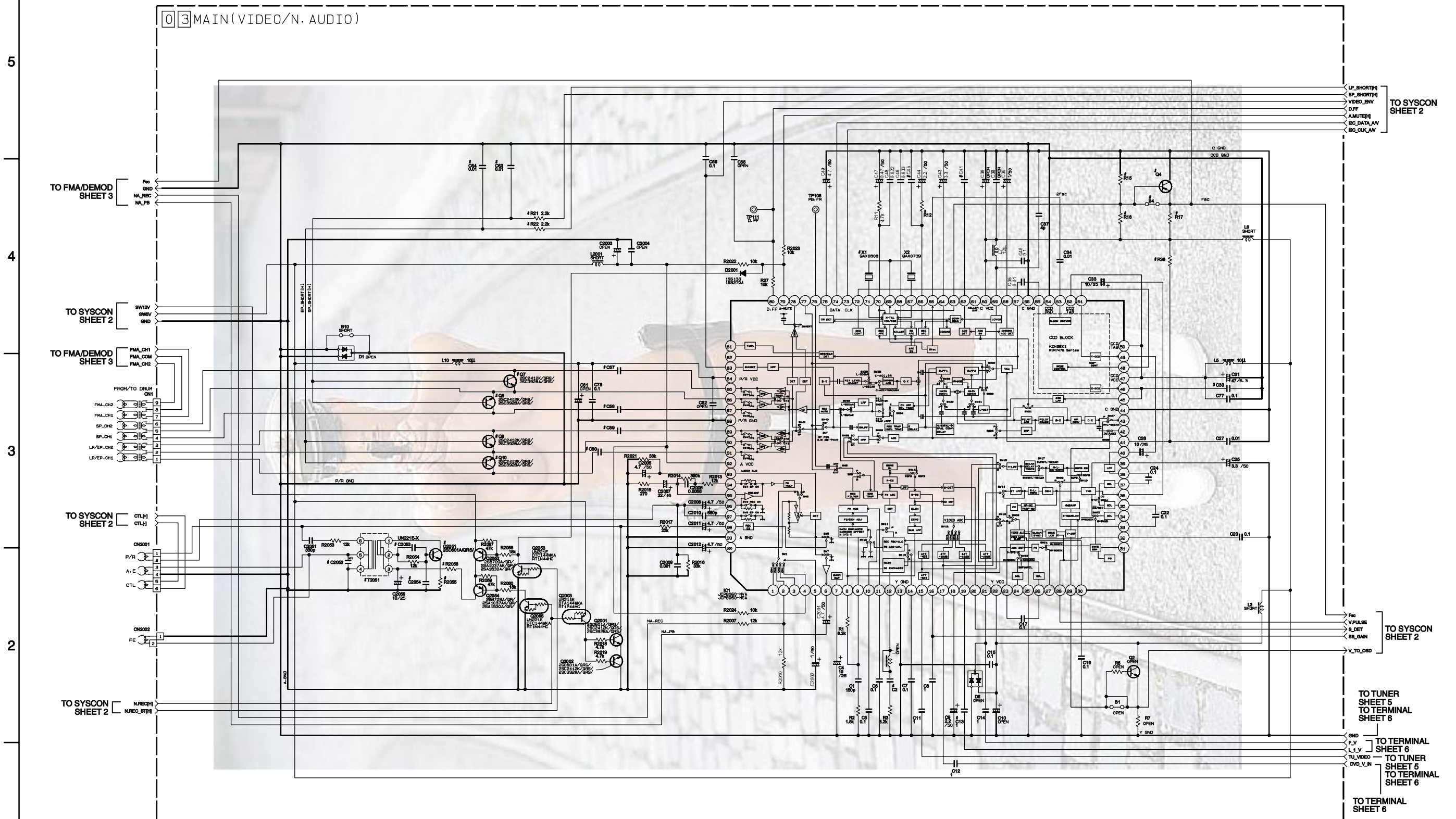
2. Parts location guides

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).

MAIN(VIDEO/N.AUDIO) SCHEMATIC DIAGRAM



DIFFERENCE TABLE

	IC1	X1	Q4	Q4	R12	R15	R15	R17	R38	C2	C30	C41	C45
NTSC	X	X	O	X	X	X	X	X	X	330	3300	O	O
PAL-N	LSA	GAX0808	X	O	080	O	6.8K	470	2500	O	0.22	O	0.033

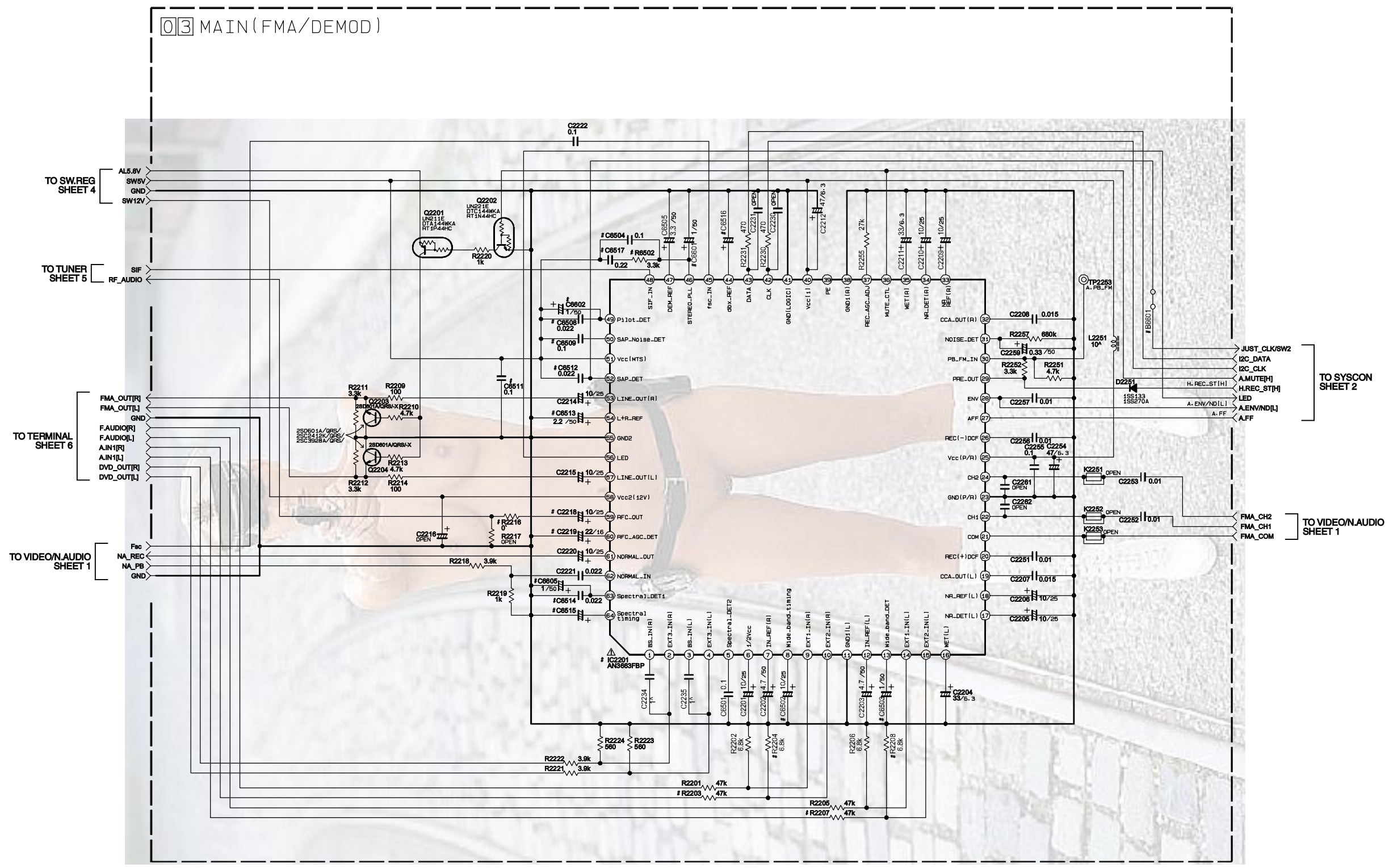
INPUT	C13	HEAD TYPE	Q7	Q8	Q9	Q10	R21	R22	C87	C89	C95	C90	C93	C94
WITH L1 Y2H	O	NTSC MODELS	W/D SEP	X	X	X	X	X	O	O	O	O	O	O
W/O L1 Y2H	X	PAL-N MODELS	WITH SEP	O	O	O	O	O	X	O	O	O	O	O

		AUDIO									
DOH	Q201	T201	R202	R206	C202	C203	C204				
LS	2SC2414K/GR/2SC2414K/GR/2SC2414K/GR/2SC2414K/GR/2SC2414K/GR/2SC2414K/GR	Q2R1197-001	Q2R1279-001	4.7	47	O	0.047	O	0.0088		
LN	2SC2414K/GR/2SC2414K/GR/2SC2414K/GR/2SC2414K/GR/2SC2414K/GR/2SC2414K/GR	Q2R1197-001	Q2R1279-001	3.3	82	O	0.082	O	0.0047	O	0.002
PAL-N	2SC2414K/GR/2SC2414K/GR/2SC2414K/GR/2SC2414K/GR/2SC2414K/GR/2SC2414K/GR	Q2R1197-001	Q2R1279-001	3.3	82	O	0.082	O	0.0047	O	0.002

NOTES-UNLESS OTHERWISE SPECIFIED.

ALL RESISTANCE VALUES ARE IN OHMS.
 ALL INDUCTANCE VALUES ARE IN H.
 ALL CAPACITANCE VALUES ARE IN P.F.
 E: ELECTROLYTIC
 G: CERAMIC
 M: MYLAR
 N: NON POLAR

■ MAIN(FMA/DEMOD) SCHEMATIC DIAGRAM



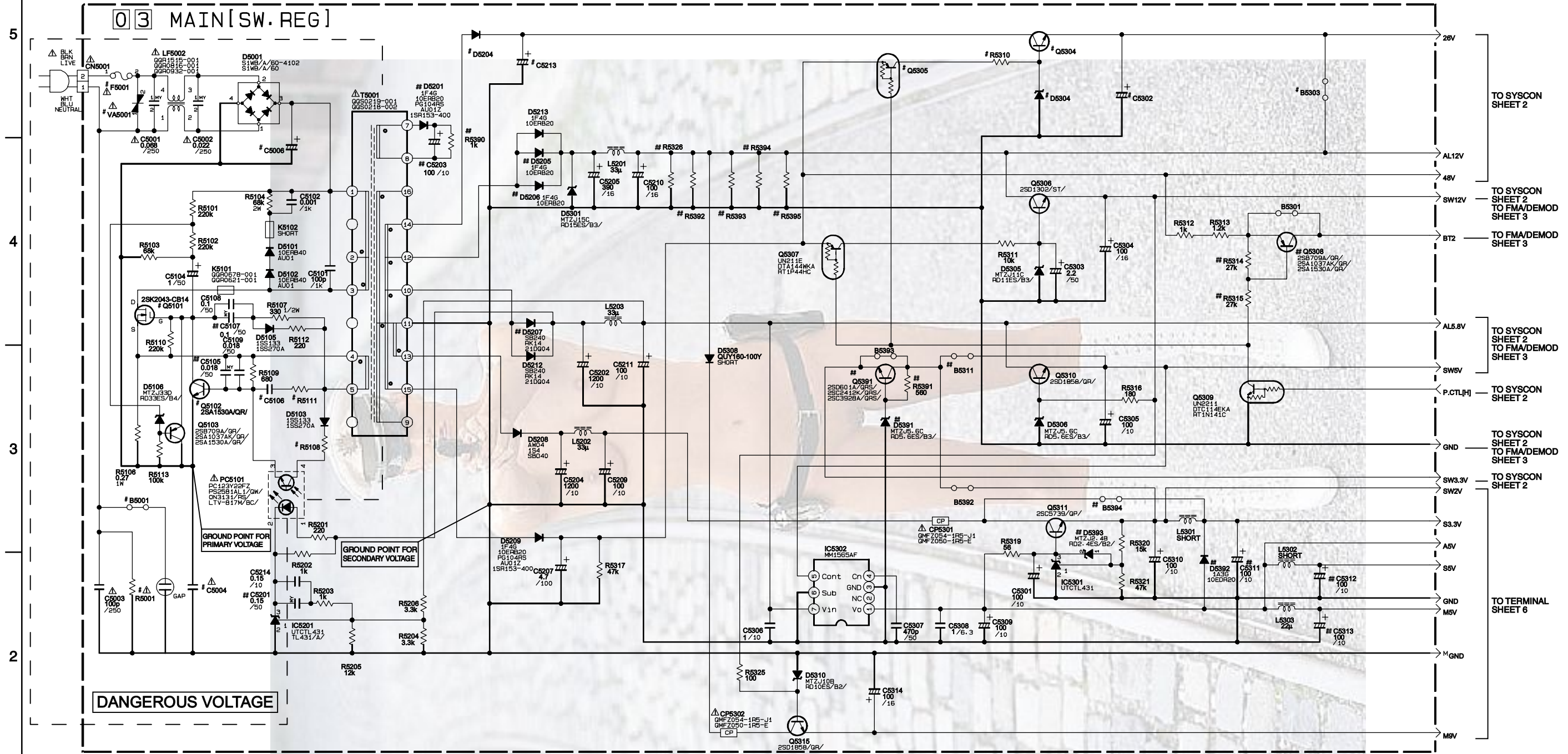
DIFFERENCE TABLE

JP / OTHERS	IC2201	R6502 C6502 - C6504 C6508 - C6509 C6511 - C6514 C6517	C6515	C6516	B6601 C6601 C6602 C6605	RF. OUT	R2216 C2218, C2219	L-1	R2203 R2207	R2204 R2208
JP	AN3672NFBP	X	1/50	10/25	○	○	○	○	47k	6.8k
OTHERS	AN3663FBP	○	3.3/50	4.7/25	X	X	X	X	X	X

NOTES: UNLESS OTHERWISE SPECIFIED.
 ALL RESISTANCE VALUES ARE IN OHMS.
 ALL INDUCTANCE VALUES ARE IN H.
 ALL CAPACITANCE VALUES ARE IN μF.

- ⊕ — ELECTROLYTIC
- — CERAMIC
- — MYLER
- — NON POLAR

MAIN(SW.REG) SCHEMATIC DIAGRAM



DANGEROUS VOLTAGE

MARK ELEMENTS ARE NOT MOUNTED

DIFFERENCE TABLE 1

	F5001	VA5001	Q5101	Q5105	C5004	C5006	R5001	B5001	C5106	R5108	R5111	D5204	D5304	Q5304	Q5305	C5302	C5213	R5310	B5303	
UB				29C3676-JVC								NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	SHORT
JP	1.25A/250V	GAF0055-431Z GAF0023-431Z GAF0024-431Z GAF0039-431Z	29K2043		0.0047 /250	150/200	4.7N 1/2W	SHORT	B20P/50	1.5k	100	1F46 10ERB20 PG104RS AU12	MTZJ07D RD27ES/B4/	29D039A/EE/ 29C5739/GP/	UNP11E DTA144MKA RT1P44HC	47/35	120/35	4.7k	NONE	
UJ /UM	T2AL/250V	NONE	29K2632	29D2144S/UW/	0.0022 /250	B2/400	NONE	NONE	220P/50	2.0k	330	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	SHORT

NOTES-UNLESS OTHERWISE SPECIFIED.
ALL RESISTANCE VALUES ARE IN OHMS.
ALL INDUCTANCE VALUES ARE IN H.
ALL CAPACITANCE VALUES ARE IN μF.

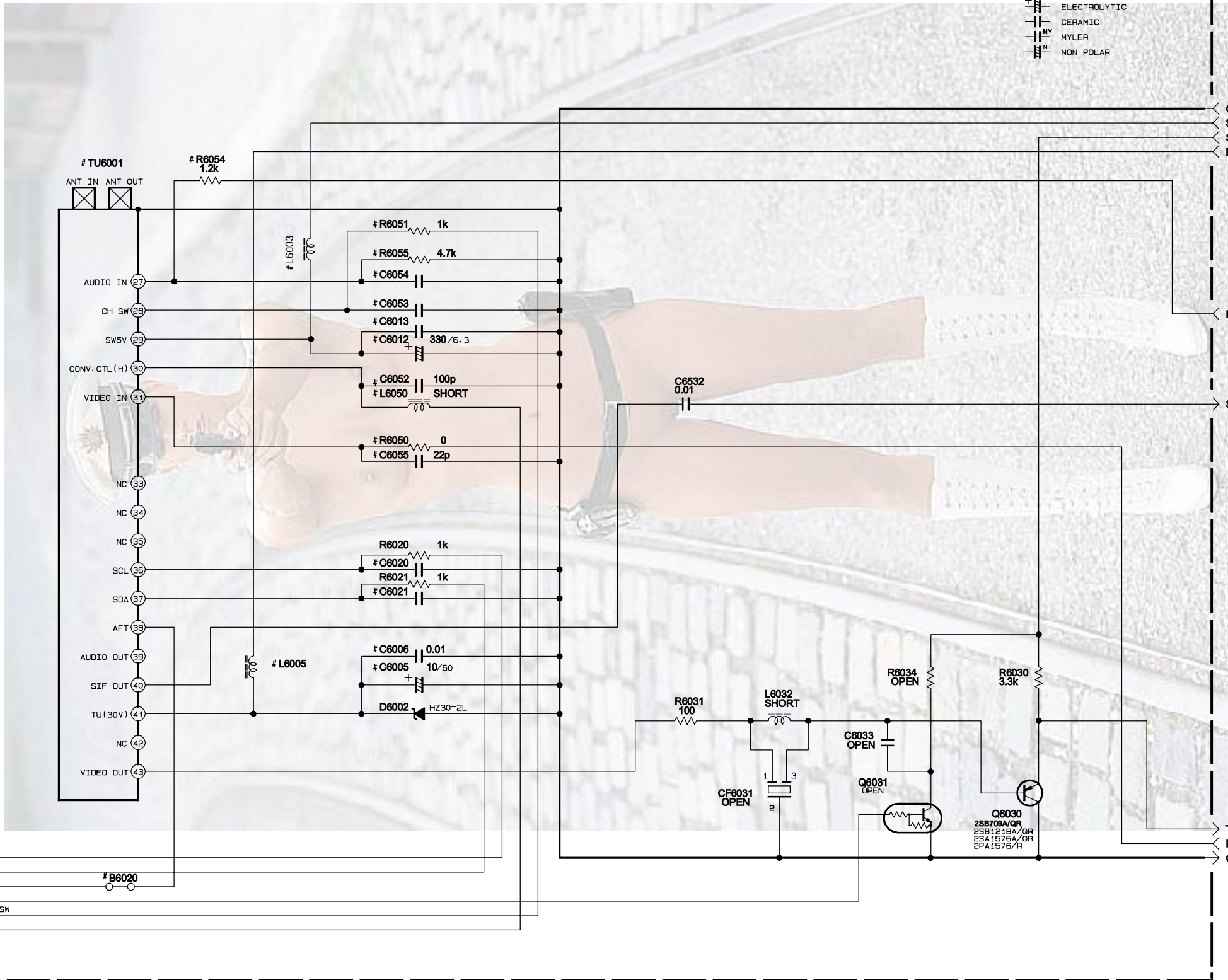
ELECTROLYTIC
 CERAMIC
 MYLER
 NON POLAR

MAIN(TUNER) SCHEMATIC DIAGRAM

03 MAIN(TUNER)

NOTES: UNLESS OTHERWISE SPECIFIED.
 ALL RESISTANCE VALUES ARE IN OHMS.
 ALL INDUCTANCE VALUES ARE IN H.
 ALL CAPACITANCE VALUES ARE IN μ F.

- ELECTROLYTIC
- CERAMIC
- MYLER
- NON POLAR



GND
 SW5V
 SW12V
 BT2
 TO SYSCON SHEET 2

RF_AUDIO
 TO FMA DEMOD SHEET 3

SIF

DIFFERENCE TABLE

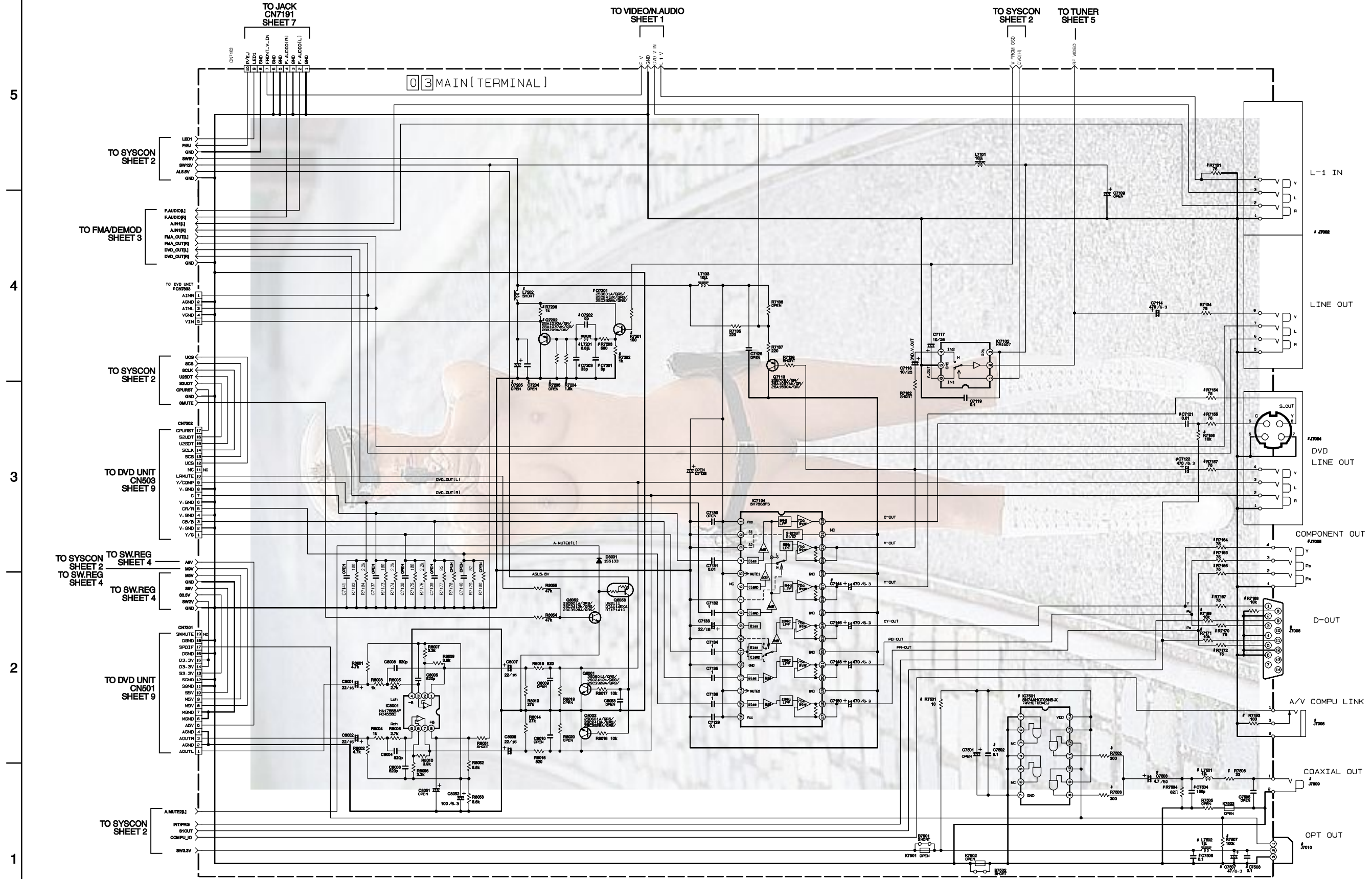
		US/UC		JAPAN
RF OUT		O	X	X
TU UNIT	GND	LG	LG	SANYO
	SW5V	GAU0336	GAU0336	GAU0335
AUDIO IN	R6054	10p	X	X
	BT2	O	X	X
CH SW	R6055	O	X	X
	R6051	O	X	X
(SW5V)	C6053	12p	X	X
	L6003	SHORT	SHORT	SHORT
	C6013	1000p	1000p	X
CONV. CTL	C6012	X	X	X
	C6052	X	X	X
VIDEO IN	L6050	SHORT	X	X
	R6050	O	X	X
I2C-BUS	C6055	X	X	X
	R6020	X	X	X
TU(30V)	C6021	150p	150p	X
	L6005	SHORT	SHORT	SHORT
AFC	C6006	X	X	X
	C6005	X	X	X
	R6020	O	O	X

SIF

TU_VIDEO TO VIDEO/AUDIO SHEET 1
 RF_VIDEO TO TERMINAL SHEET 6
 GND TO VIDEO/AUDIO SHEET 1

TO SYSCON SHEET 2
 I2C_CLK
 I2C_DATA
 AFC/BS_ANT
 TU_V_MUTE[H]
 JUST_CLK/SW2
 CONV.CTL[H]

MAIN(TERMINAL) SCHEMATIC DIAGRAM



DIFFERENCE TABLE

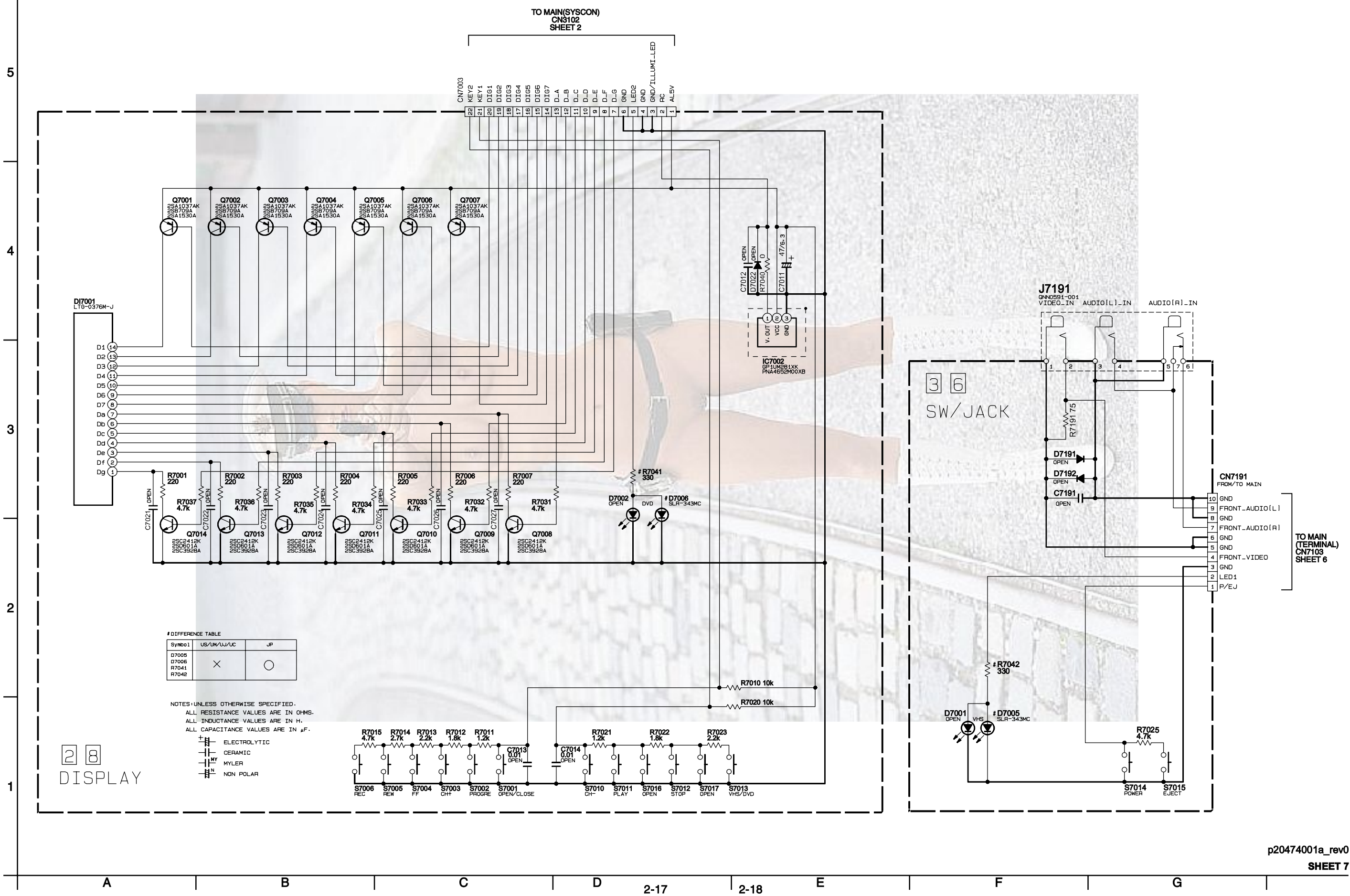
WITH REMOTE PAUSE	○
W/O REMOTE PAUSE	×

OPT OUT	J7010	J7009	IC7001
COAXIAL OUT	L7802	R7801 - R7804	R7808 - R7809
	C7802 - C7808	C7803 - C7804	L7801
	R7807		
○	○	○	○
○	○	○	○

R7191	○
WITH V 2N	○
WITH V 3N	×

DVD OUT	D1702	V7001
	R7100	R7101
	R7102	R7103
	R7104	R7105
	R7106	R7107
	R7108	R7109
	R7110	R7111
	R7112	R7113
	R7114	R7115
	R7116	R7117
	R7118	R7119
	R7120	R7121
	R7122	R7123
	R7124	R7125
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■ DISPLAY AND SWITCH/JACK SCHEMATIC DIAGRAM



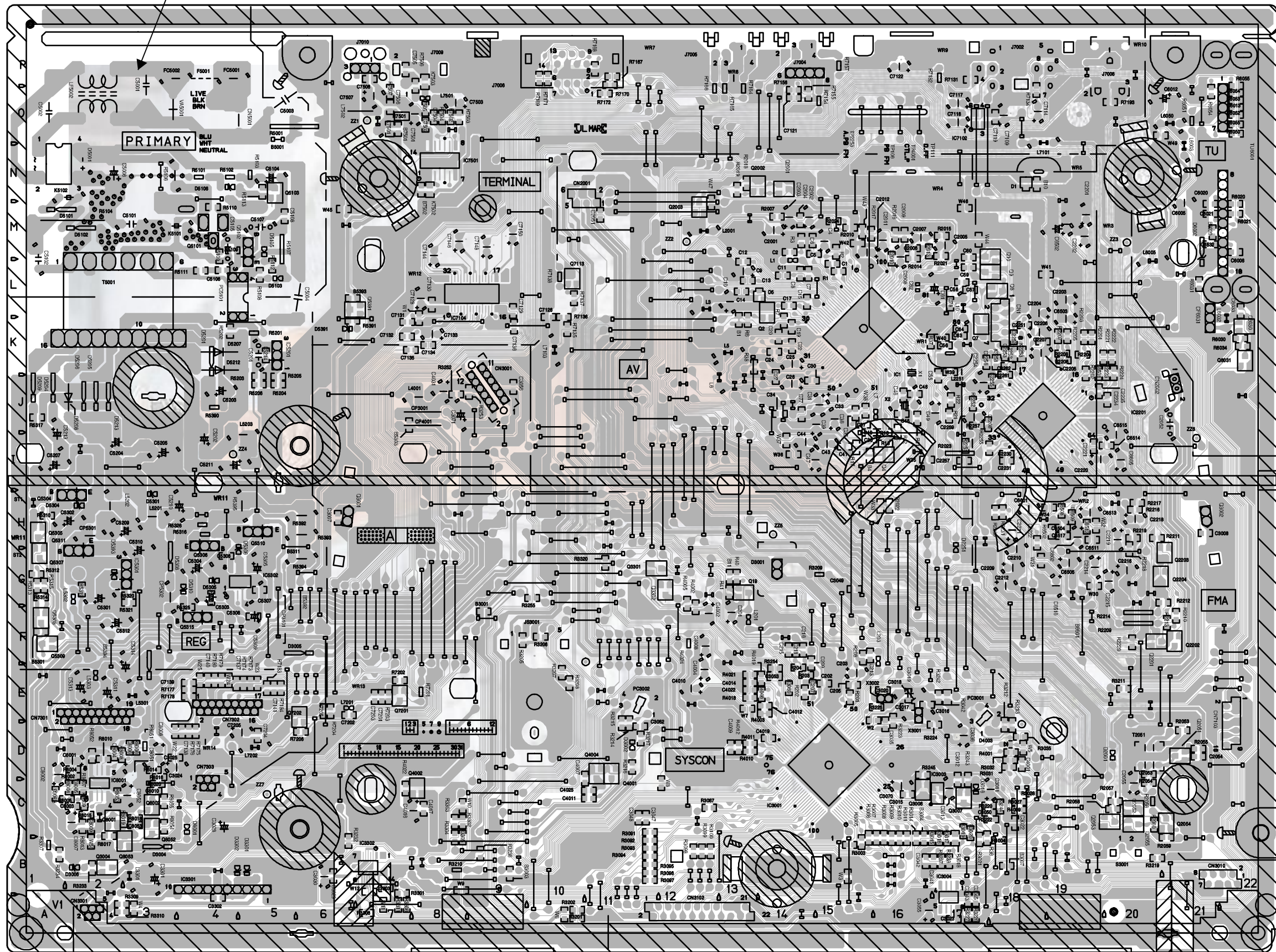
■ MAIN CIRCUIT BOARD

<03>MAIN
LPB10280-001B

DANGEROUS VOLTAGE



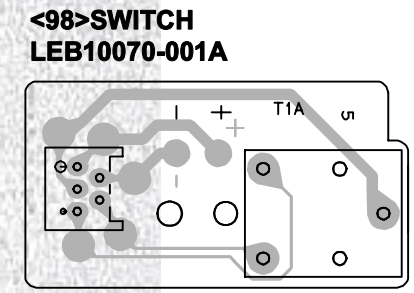
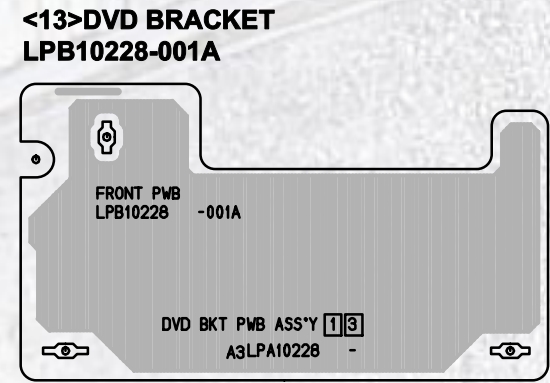
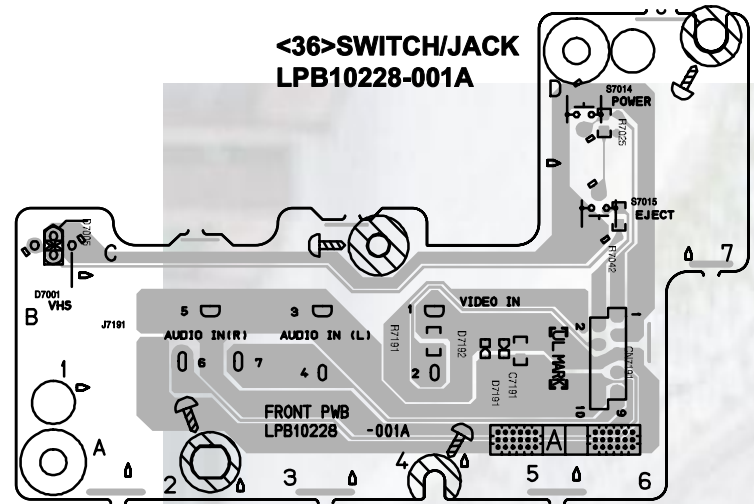
CAUTION :
FOR CONTINUED PROTECTION AGAINST FIRE HAZARD, REPLACE ONLY WITH SAME TYPE AND RATED FUSE(S).
ATTENTION :
REPLACER PAR DES FUSIBLE DE MEME TYPE.



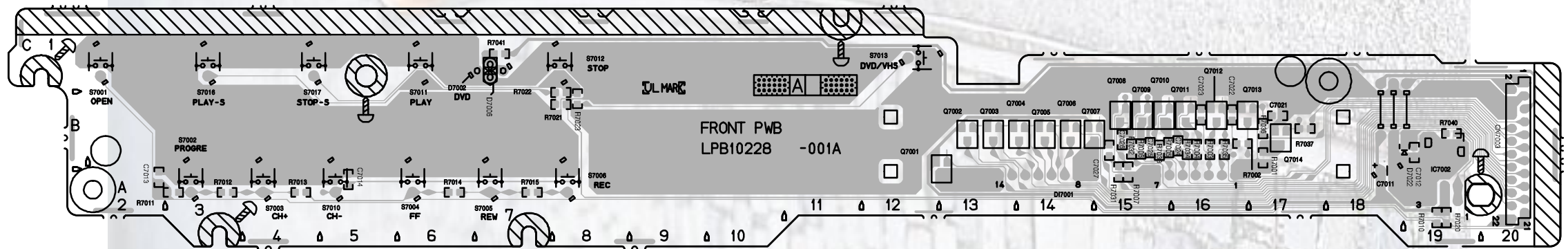
COMPONENT PARTS LOCATION GUIDE <MAIN> LPB10280-001B

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CAPACITOR	C3011	A D 18C	C6801	A D 18H	IC2201	B C 18J	R202	B C 14E	R3238	B C 17B	R7203	B C 7E	
C1	B C 15L	IC3012	A D 17C	C6805	A D 18H	IC3001	B C 18J	R203	B C 14E	R3242	B C 17E	R7204	B C 6E
C2	B C 14M	C3013	A D 17C	C6805	A D 20I	IC3003	B C 17C	R204	B C 14E	R3243	B C 17C	R7205	B C 6E
C4	A D 15M	C3015	B C 16C	C7109	A D 18C	IC3004	B C 17A	R208	B C 15F	R3244	B C 18C	R7206	B C 6D
C5	B C 14M	C3016	B C 16E	C7114	A D 18C	IC3301	A D 5B	R2007	B C 14M	R3245	B C 16D	R7501	B C 7C
C6	B C 14M	C3017	B C 16E	C7117	A D 17C	IC3302	B C 7B	R2010	B C 15M	R3252	B C 8J	R7502	B C 8C
C7	B C 14L	C3018	A D 16E	C7118	A D 17C	IC5201	A D 5K	R2013	B C 16M	R3253	B C 8J	R7503	B C 8C
C8	B C 14L	C3019	B C 16E	C7119	B C 18C	IC5301	A D 3G	R2014	B C 16M	R3254	B C 14E	R7504	B C 8C
C9	A D 13L	C3020	B C 16E	C7121	B C 14C	IC5302	B C 5G	R2015	B C 17M	R3255	B C 10G	R7505	B C 8C
C10	A D 13L	C3022	B C 18C	C7122	A D 16P	IC7102	B C 17C	R2016	B C 16M	R3301	B C 7B	R7506	B C 8P
C11	B C 14L	C3023	B C 17A	C7126	B C 10K	IC7104	B C 9L	R2017	B C 15M	R3302	B C 8C	R7507	B C 7C
C12	B C 13L	C3024	A D 3D	C7128	A D 8L	IC7501	B C 8N	R2018	B C 8N	R3303	B C 8C	R8001	B C 2C
C13	B C 13L	C3025	B C 3D	C7129	B C 9L	IC8001	B C 2C	R2019	B C 13N	R3304	B C 8B	R8002	B C 2D
C14	B C 13L	C3026	A D 4C	C7130	B C 8L			R2021	B C 17M	R3305	B C 8B	R8003	B C 1C
C15	B C 14L	C3029	B C 8B	C7131	B C 7K	COIL		R2022	B C 16H	R3306	B C 7A	R8004	B C 2D
C17	B C 14L	C3030	A D 6B	C7132	B C 7K	L1	A D 14L	R2023	A D 17I	R3307	A D 1E	R8005	B C 2C
C19	B C 14K	C3035	B C 6D	C7133	A D 8K	L3	A D 13L	R2024	B C 15M	R3308	B C 7A	R8006	B C 3D
C20	B C 14K	C3036	A D 17D	C7134	B C 8K	L5	A D 13K	R2053	B C 21D	R3309	B C 2A	R8007	B C 2C
C22	B C 14K	C3041	B C 17B	C7135	B C 7K	L6	A D 13J	R2054	B C 20C	R3310	B C 2A	R8008	B C 2D
C24	B C 14K	C3042	B C 16B	C7136	B C 9K	L7	A D 16J	R2055	B C 21D	R3311	B C 7A	R8009	B C 2C
C25	A D 14K	C3043	B C 17A	C7137	B C 4E	L10	A D 17K	R2056	A D 20C	R3320	B C 11G	R8010	B C 2D
C26	A D 14J	C3045	B C 17A	C7138	B C 4D	L201	A D 13F	R2057	B C 20C	R4001	B C 18D	R8013	B C 2C
C27	B C 14J	C3047	B C 12C	C7139	B C 4E	L203	A D 16E	R2058	B C 20C	R4002	B C 12F	R8014	B C 3D
C30	B C 14J	C3048	B C 11C	C7140	B C 4E	L2001	A D 12M	R2059	B C 21B	R4003	B C 14E	R8015	B C 2C
C31	A D 15J	C3049	B C 15G	C7141	B C 5E	L2251	A D 17J	R2060	B C 20C	R4004	B C 18B	R8016	B C 3D
C33	A D 15J	C3050	B C 18C	C7144	A D 8L	L3301	A D 3B	R2201	B C 19K	R4005	B C 12G	R8017	B C 2C
C34	B C 14J	C3052	B C 11D	C7146	A D 8M	L4001	A D 7J	R2202	B C 19K	R4009	B C 19C	R8018	B C 3C
C35	B C 15J	C3053	B C 14E	C7148	A D 9M	L5201	A D 3H	R2203	B C 19K	R4010	B C 13D	R8019	B C 3C
C36	A D 15J	C3055	A D 16A	C7150	A D 9M	L5202	A D 2H	R2204	B C 19K	R4011	B C 13D	R8020	B C 3C
C37	B C 15J	C3056	B C 8J	C7201	B C 7E	L5203	A D 4I	R2205	B C 19K	R4012	B C 13D	R8051	A D 3D
C38	B C 15J	C3070	A D 16C	C7202	A D 6E	L5301	A D 3E	R2206	B C 19K	R4018	B C 13E	R8052	B C 2D
C39	A D 15J	C3071	A D 8J	C7203	B C 7E	L5302	A D 2G	R2207	B C 19K	R4019	B C 14E	R8053	B C 2C
C40	B C 15J	C3301	A D 3B	C7204	B C 5D	L5303	A D 2E	R2208	B C 19K	R4021	B C 13E	R8054	B C 3C
C41	B C 15J	C3302	B C 4A	C7205	A D 4D	L6003	A D 21C	R2209	A D 20F	R4022	B C 7C	R8055	B C 3C
C43	A D 15J	C3303	B C 7B	C7501	A D 8C	L6005	A D 21L	R2210	B C 21F	R4024	A D 12F		
C44	A D 14I	C4001	B C 18D	C7502	B C 8C	L6032	A D 22L	R2211	B C 20H	R5001	A D 5C	OTHER	
C45	B C 16J	C4002	A D 13F	C7503	A D 8C	L6050	A D 21D	R2212	B C 21G	R5101	A D 4N	CF8031	A D 21L
C46	B C 16J	C4004	A D 13E	C7504	B C 8C	L7101	A D 19D	R2213	B C 21F	R5102	A D 4N	CP3001	A D 7J
C47	A D 15I	C4006	B C 14E	C7505	B C 7P	L7103	A D 10K	R2214	A D 20F	R5103	A D 5N	CP3101	A D 5G
C48	B C 16J	C4007	B C 11D	C7506	B C 7C	L7201	A D 6E	R2216	B C 20H	R5104	A D 2M	CP4001	A D 7J
C49	A D 17J	C4008	A D 13F	C7507	A D 7C	L7202	A D 5D	R2217	B C 20H	R5106	A D 3N	CP5301	A D 2H
C55	B C 17J	C4009	B C 13D	C7508	B C 7P	L7501	A D 8C	R2218	B C 20G	R5107	A D 5M	CP5302	A D 3F
C56	B C 17K	C4010	A D 12E	C8001	A D 2D	L7502	A D 7C	R2219	B C 20H	R5108	B C 5L	PC5001	A D 5P
C57	B C 17L	C4011	B C 11C	C8002	A D 1C			R2220	B C 20F	R5109	B C 4M	PC5002	A D 3P
C58	B C 17L	C4012	B C 14E	C8003	B C 2C	Q2	B C 14L	R2221	B C 19K	R5110	B C 4M	J7002	A D 18P
C59	B C 17L	C4014	B C 13E	C8004	B C 2D	Q4	B C 16I	R2222	B C 20K	R5111	B C 4L	J7004	A D 14P
C60	B C 17M	C4016	A D 8C	C8005	B C 2C	Q4	B C 16I	R2223	B C 20K	R5112	B C 5L	J7005	A D 13P
C61	A D 17L	C4017	B C 8C	C8006	B C 3D	Q7	B C 17K	R2224	B C 20K	R5113	B C 5N	J7006	A D 10P
C62	A D 16L	C4019	B C 14D	C8007	A D 2C	Q8	B C 18L	R2230	B C 18H	R5201	A D 5K	J7008	A D 20P
C63	B C 17K	C4022	B C 13E	C8008	A D 3D	Q9	B C 18L	R2231	B C 18H	R5202	B C 4K	J7009	A D 8P
C64	B C 17K	C4025	B C 11C	C8009	B C 2C	Q10	B C 18M	R2251	B C 17I	R5203	B C 5J	J7010	A D 7P
C77	B C 14J	C4031	A D 8J	C8010	B C 3C	Q19	B C 13G	R2252	B C 17J	R5204	B C 5J	JS3001	A D 10F
C78	B C 17L	C5001	A D 3P	C8051	A D 3D	Q2001	B C 14N	R2255	B C 18I	R5205	B C 5J	K2251	B C 18K
C201	A D 13F	C5002	A D 1C	C8052	A D 3C	Q2002	B C 14N	R2257	B C 17J	R5206	B C 5J	K2252	B C 18K
C202	B C 15E	C5003	A D 6C	C8053	B C 3C	Q2003	B C 12M	R3003	B C 15B	R5310	B C 1H	K2253	B C 18K
C203	A D 15E	C5004	A D 6L			Q2051	B C 21D	R3005	B C 15B	R5311	B C 4G	K5101	A D 4M
C205	B C 15E	C5006	A D 2N	CONNECTOR		Q2052	B C 20C	R3006	B C 15B	R5312	B C 1G	K5102	A D 2N
C207	B C 14E	C5101	A D 2M	CN1	A D 18K	Q2053	B C 20C	R3007	B C 15B	R5313	B C 1G	K5101	B C 7C
C209	B C 14F	C5102	A D 1L	CN2001	A D 11M	Q2054	B C 21C	R3008	B C 15B	R5314	B C 1G	K7502	B C 8N
C211	B C 14F	C5104	A D 21E	CN2002	A D 21J	Q2055	B C 20C	R3009	B C 15B	R5315	B C 1G	K7503	B C 8P
C213	B C 15F	C5105	A D 4M	CN3001	A D 6J	Q2201	B C 20F	R3010	B C 16B	R5316	A D 4H	LF5002	A D 2C
C215	B C 14F	C5106	B C 4L	CN3010	A D 22B	Q2202	B C 21F	R3011	B C 16B	R5317	B C 1J	PC085	B C 18C
C216	B C 14F	C5107	A D 5M	CN3102	A D 12A	Q2203	B C 21G	R3014	B C 16B	R5319	B C 2G	PC086	A D 4C
C2001	A D 14M	C5108	B C 5M	CN3301	A D 2A	Q2204	B C 20G	R3015	B C 17B	R5320	B C 3G	PC085	A D 4C
C2002	A D 14M	C5109	B C 4M	CN5001	A D 5C	Q3001	A D 7H	R3016	B C 17B	R5321	B C 3G	PC2242	B C 1A
C2003	A D 14M	C5201	A D 5K	CN7103	A D 22E	Q3002	A D 21H	R3017	B C 17B	R5325	B C 4F	PC02505	B C 22N
C2004	B C 14M	C5202	A D 4I	CN7301	A D 1E	Q3004	B C 2B	R3018	B C 17B	R5326	A D 4H	PC3001	A D 17E
C2005	A D 17M	C5203	A D 4J	CN7302	A D 4E	Q3006	B C 16C	R3019	B C 17C	R5390	A D 4J	PC3002	A D 11E
C2006	B C 16M	C5204	A D 2I	CN7303	A D 4C	Q3007	B C 17C	R3020	B C 17C	R5391	B C 6K	PC5101	A D 5L
C2007	A D 16M	C5205	A D 3I			Q3301	B C 12G	R3021	B C 17B	R5392	A D 5H	S3001	A D 20B
C2008	A D 16L	C5207	A D 1I	DIODE		Q3302	B C 12G	R3027	B C 18C	R5398	A D 5H	T2051	A D 20D
C2009	B C 16M	C5209	A D 2H	D1	B C 16N	Q4001	B C 11D	R3028	B C 18C	R5394	A D 5G	T5001	A D 2L
C2010	B C 16M	C5210	A D 3H	D2	B C 14L	Q4002	B C 11C	R3032	B C 18D	R5395	A D 5H	TP106	A D 18C
C2011	B C 14F	C5211	A D 2D	D2001	A D 20D	Q4004	B C 11D	R3032	B C 18D	R5396	B C 22M	TP111	A D 18C
C2012	A D 15M	C5213	A D 1J	D2251	A D 17G	Q5101	A D 4M	R3035	B C 18D	R6021	B C 22M	TP2253	A D 15C
C2051	B C 11M	C5214	B C 5K	D3001	A D 14G	Q5102	A D 5L	R3042	B C 17E	R6030	B C 22K	TP4001	A D 16C
C2052	A D 21J	C5301	A D 2G	D3002	A D 11D	Q5103	B C 5N	R3080	B C 14E	R6031	B C 21L	TU8001	A D 22P
C2053	B C 20D	C5302	A D 1H	D3004	A D 3B	Q5304	A D 2H	R3087	B C 13C	R6034	B C 22K	VA5001	A D 3C
C2054	B C 21D	C5303	A D 4G	D3005	A D 5F	Q5305	B C 1H	R3091	B C 12C	R6050	B C 22D	WR11	A D 4H
C2055	A D 20C	C5304	A D 4G	D3006	A D 2B	Q5306	A D 4H	R3092	B C 12B	R6051	A D 21C	X1	A D 16J
C2201	A D 19M	C5305	A D 5G	D3016	A D 1G	Q5307	B C 1G	R3093	B C 12B	R6054	B C 21C	X2	A D 16J
C2202	A D 19M	C5306	B C 4G	D3301	A D 5B	Q5308	B C 1F	R3094	B C 12B	R6055	B C 22		

■ SWITCH/JACK, DISPLAY, DVD BRACKET AND SWITCH CIRCUIT BOARDS



<28>DISPLAY LPB10228-001A



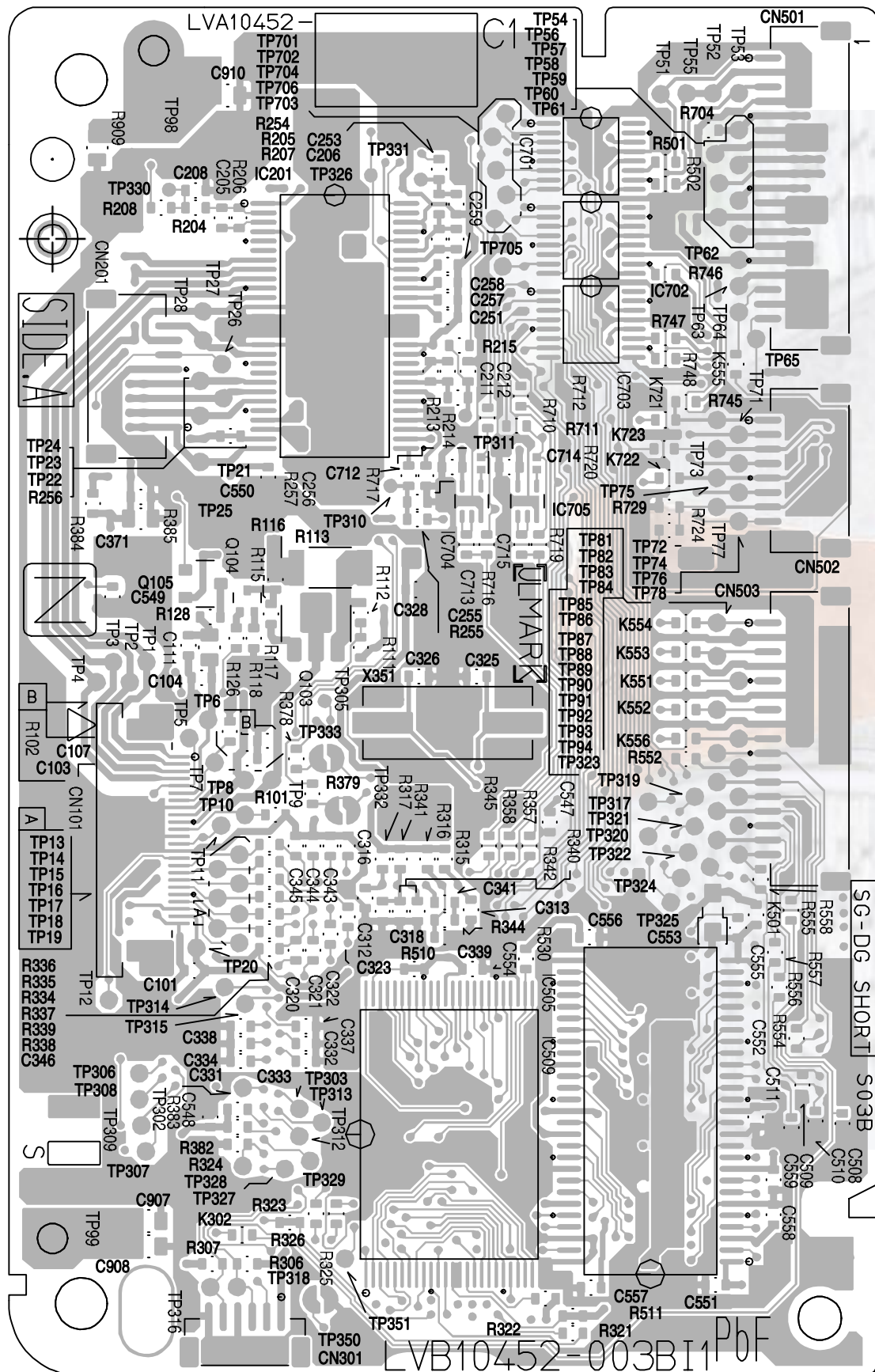
COMPONENT PARTS LOCATION GUIDE <DISPLAY> LPB10228-001A

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CAPACITOR		CONNECTOR		TRANSISTOR									
C7011	A D 18A	CN7003	A D 20C	Q7001	B C 13B	Q7012	B C 16B	R7010	B C 19A	R7033	B C 15B	S7003	A D 4A
C7012	B C 19B			Q7002	B C 13B	Q7013	B C 17B	R7011	B C 3A	R7034	B C 16B	S7004	A D 9A
C7013	B C 2A			Q7003	B C 13B	Q7014	B C 17B	R7012	B C 3A	R7035	B C 16B	S7005	A D 7A
C7014	B C 5A			Q7004	B C 14B			R7013	B C 4A	R7036	B C 17B	S7006	A D 8A
C7021	B C 17B	D7002	A D 7C	Q7005	B C 14B	R7001	B C 17B	R7014	B C 6A	R7037	B C 17B	S7010	A D 5A
C7022	B C 16B	D7006	A D 7C	Q7006	B C 14B	R7002	B C 16B	R7015	B C 7A	R7040	B C 19B	S7011	A D 6C
C7023	B C 16B	D7022	B C 19B	Q7007	B C 15B	R7003	B C 16B	R7020	B C 19A	R7041	B C 7C	S7012	A D 8C
C7024	B C 16B			Q7008	B C 15B	R7004	B C 16B	R7021	B C 8B			S7013	A D 12C
C7025	B C 15B			Q7009	B C 15B	R7005	B C 15B	R7022	B C 8B	OTHER		S7016	A D 3C
C7026	B C 15B	IC7002	A D 19B	Q7010	B C 15B	R7006	B C 15B	R7023	B C 8B	DI7001	A D 15B	S7017	A D 4C
C7027	B C 15B			Q7011	B C 16B	R7007	B C 15A	R7031	B C 15A	S7001	A D 2C		
								R7032	B C 15B	S7002	A D 3A		

■ DVD SERVO CONTROL CIRCUIT BOARD

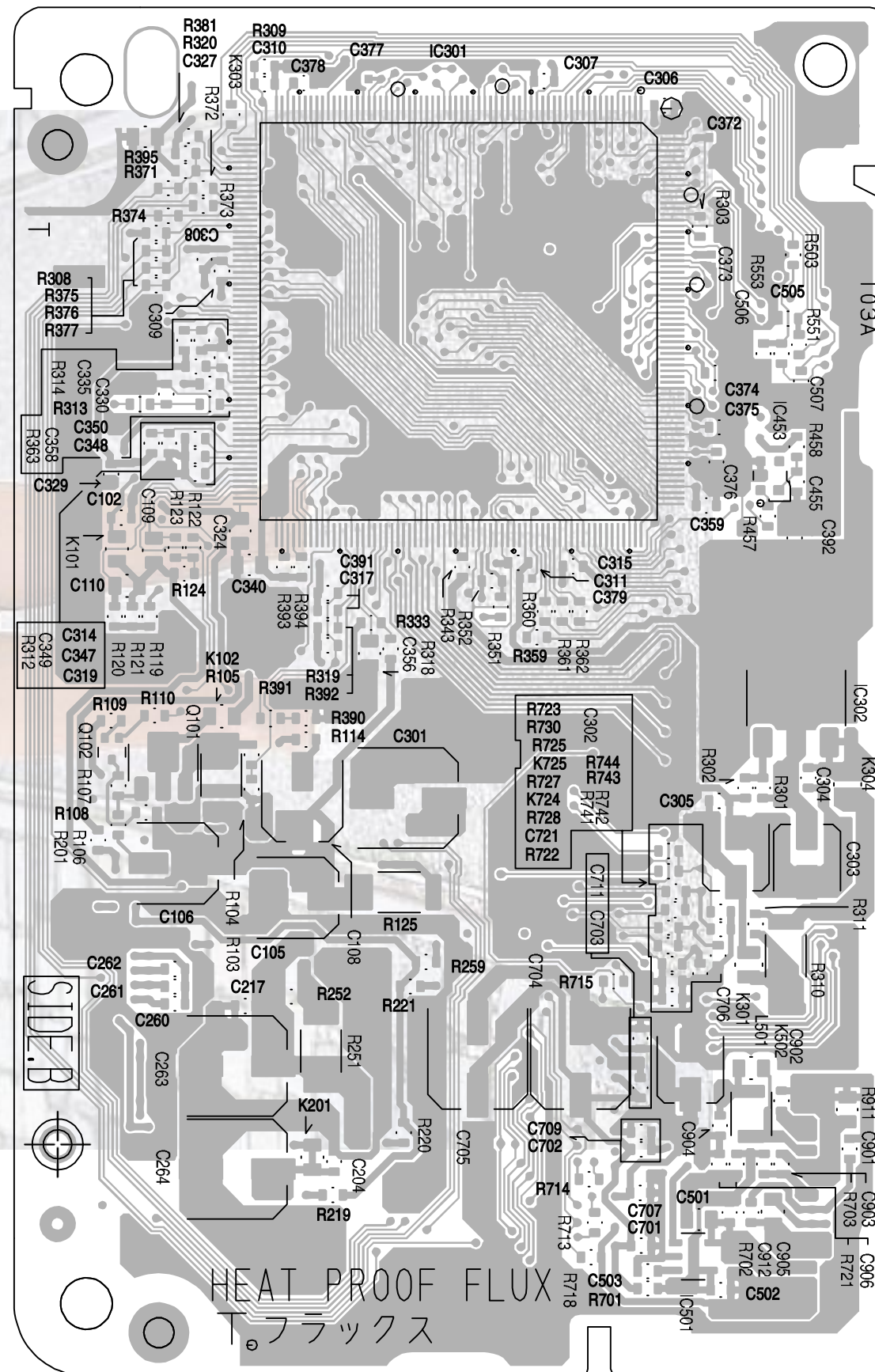
<99> DVD SERVO CONTROL
LVB10452-003B

-COMPONENT SIDE-

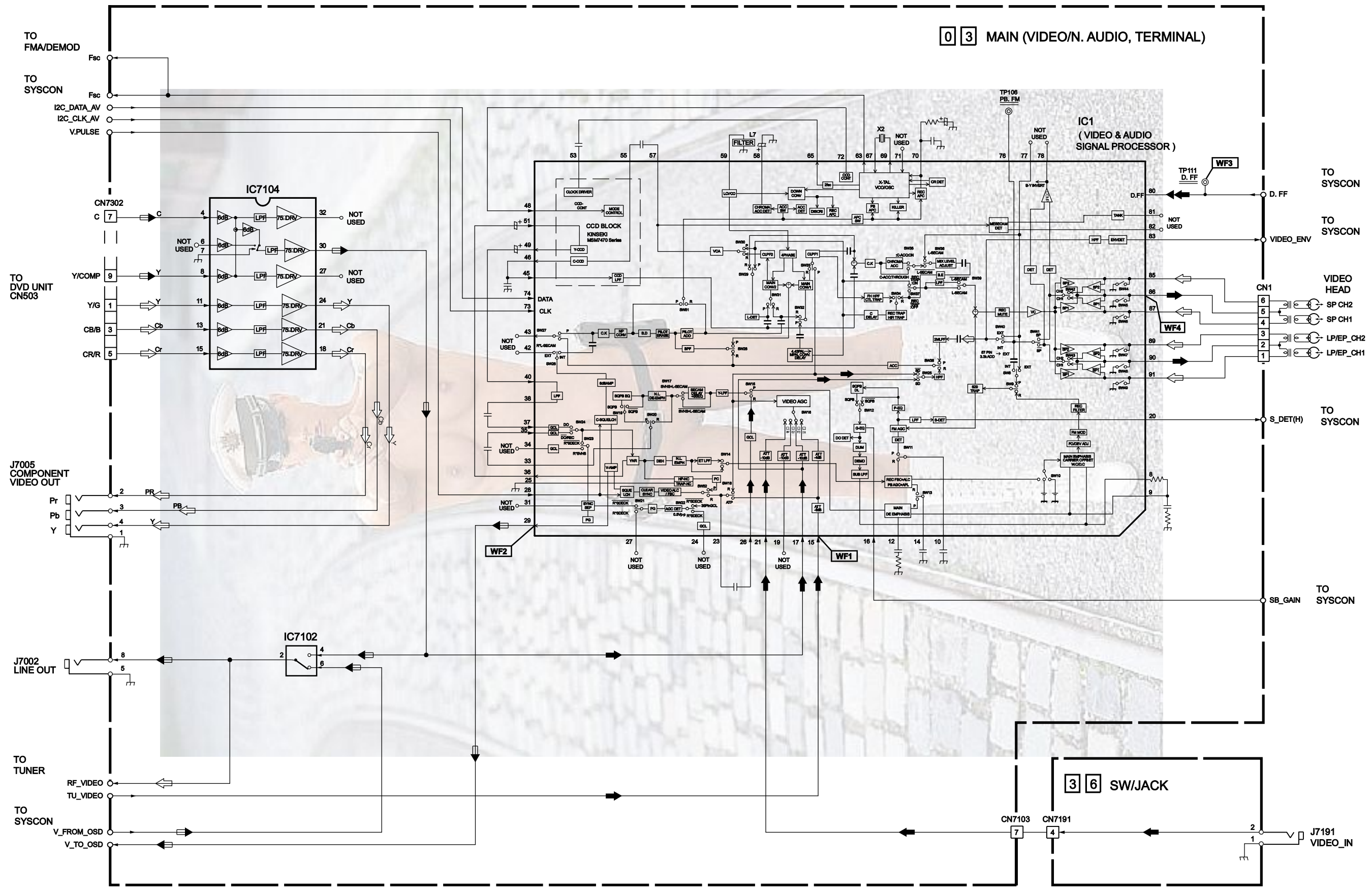


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-FOIL SIDE-



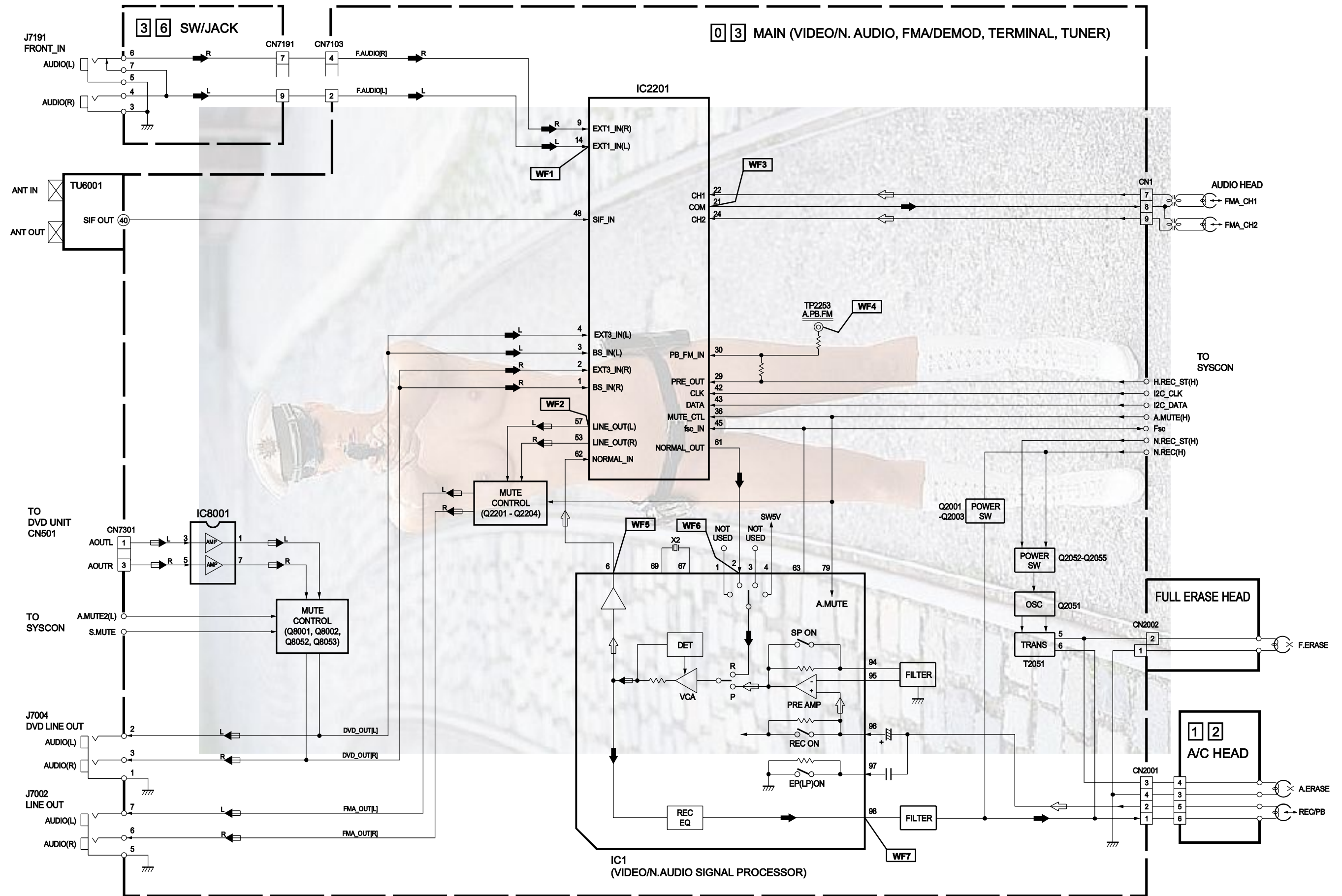
VIDEO BLOCK DIAGRAM



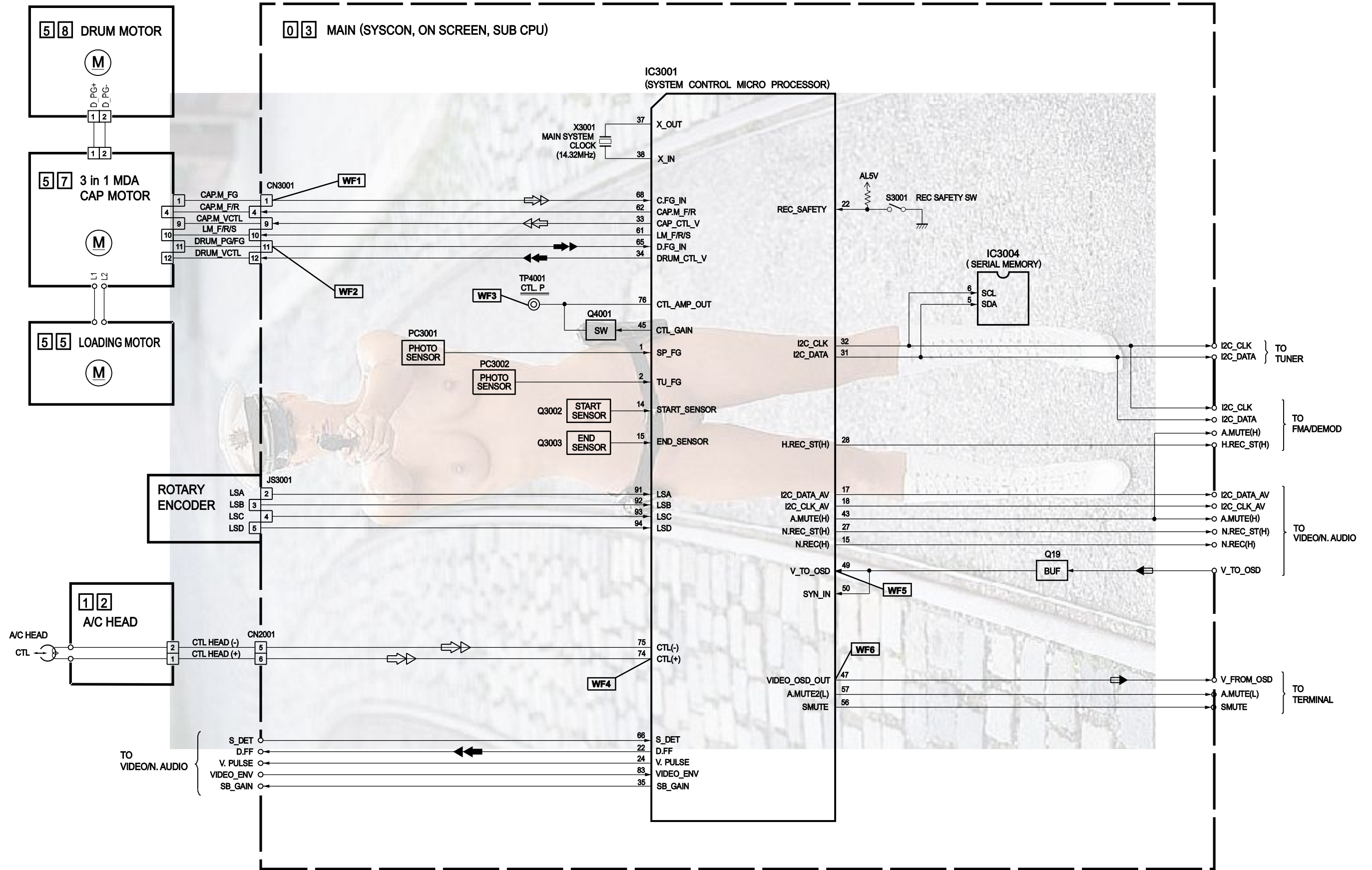
0 3 MAIN (VIDEO/N. AUDIO, TERMINAL)

3 6 SW/JACK

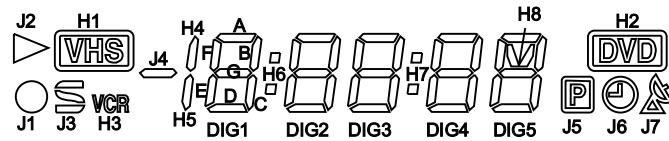
■ AUDIO BLOCK DIAGRAM



■ SYSTEM CONTROL BLOCK DIAGRAM



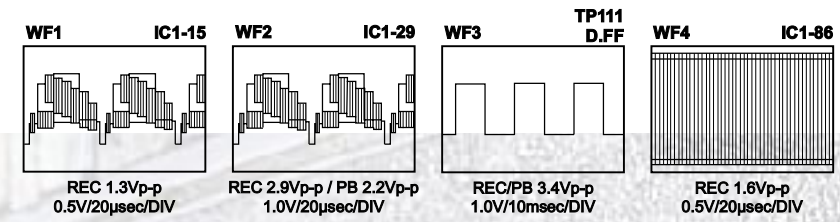
■ FDP GRID ASSIGNMENT AND ANODE CONNECTION



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

■ WAVEFORMS

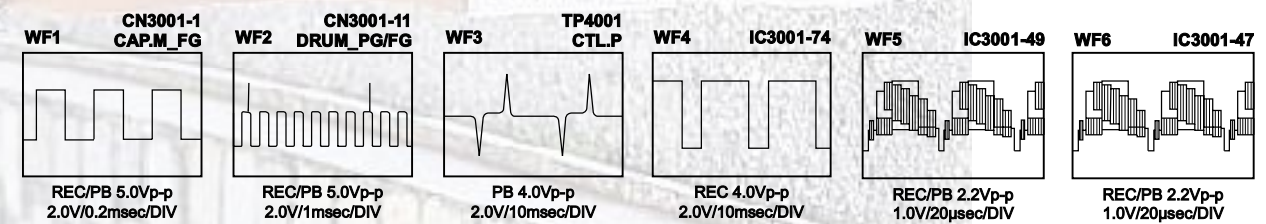
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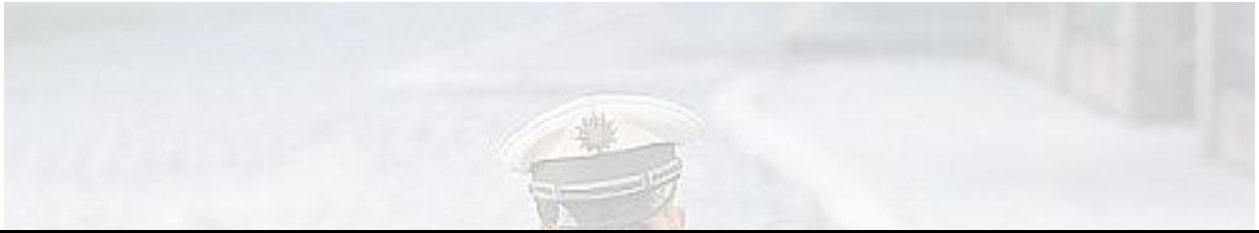
<AUDIO BLOCK DIAGRAM >



<SYSTEM CONTROL BLOCK DIAGRAM >







JVC

Victor Company of Japan, Limited
AV & MULTIMEDIA COMPANY DIGITAL VIDEO STORAGE CATEGORY 12, 3-chome, Moriya-cho, kanagawa-ku, Yokohama, kanagawa-prefecture, 221-8528, Japan

(No.YD052)



PARTS LIST

[HR-XVC28BUC,HR-XVC28BUS,
HR-XVC29SUC,HR-XVC29SUS]

*** SAFETY PRECAUTION**

Parts identified by the \triangle 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.

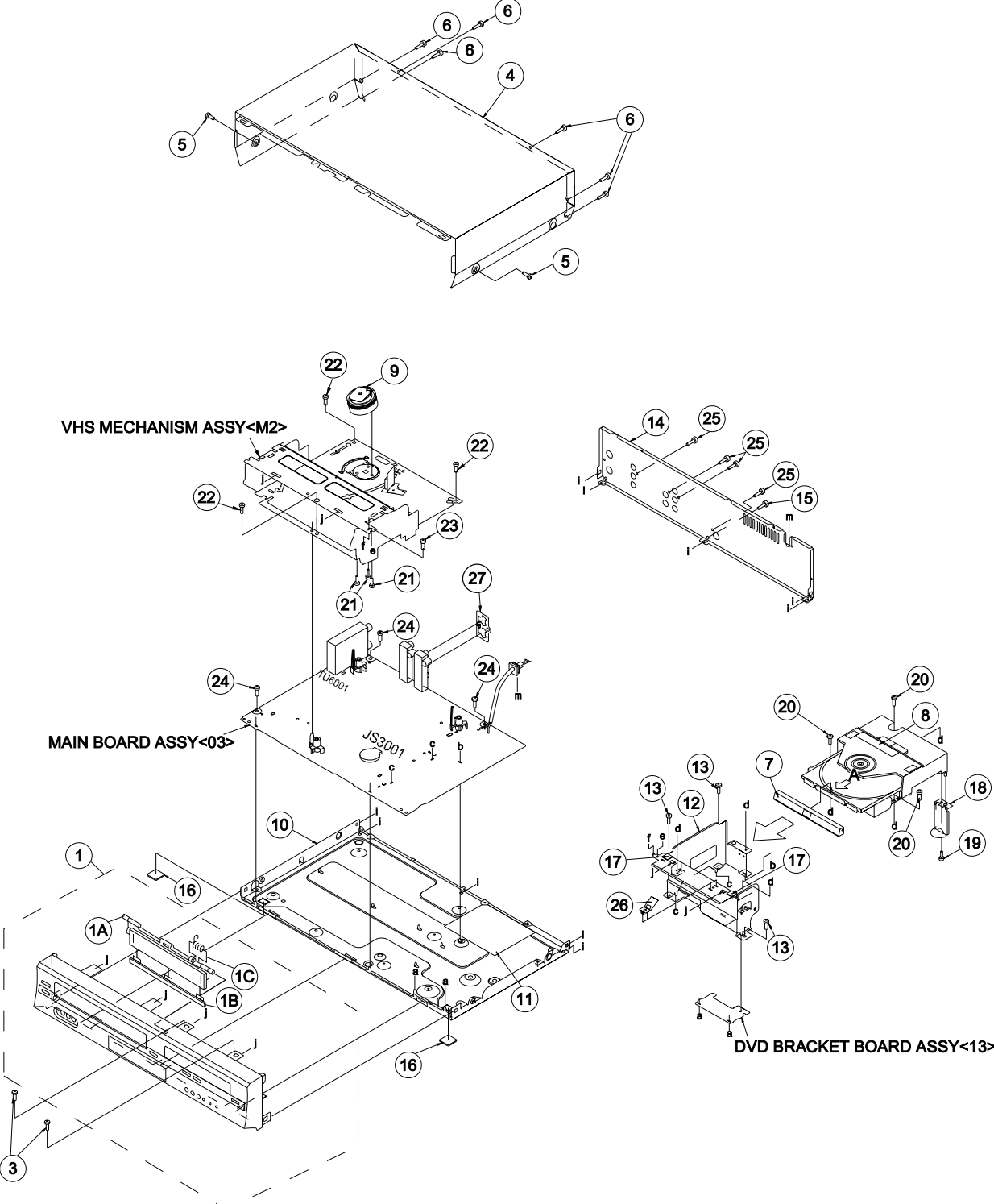
* (x_) in a description column shows the number of the used part.

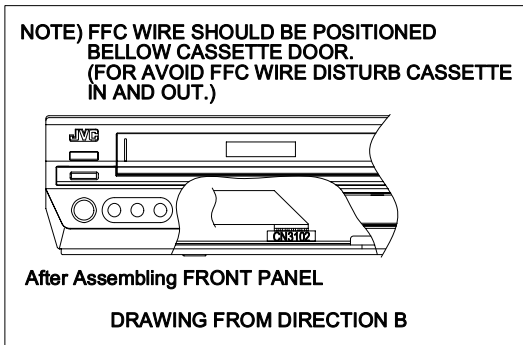
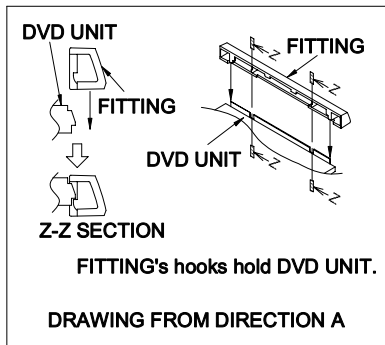
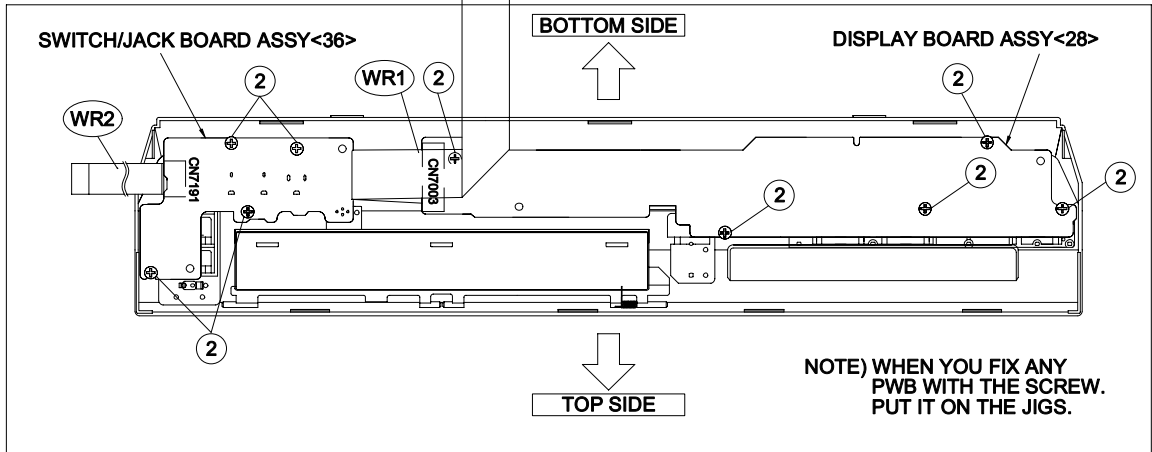
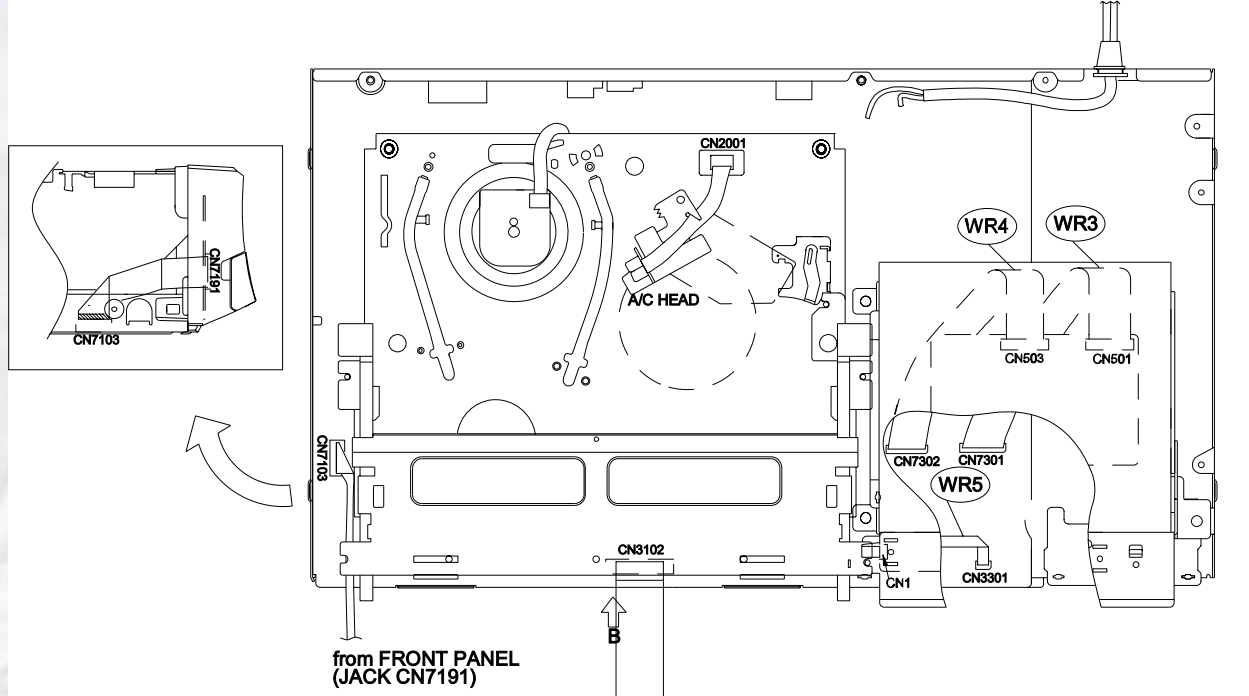
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TRAVERSE mechanism assembly and parts list	8
LOADING mechanism assembly and parts list	10
Packing materials and accessories parts list	20

Exploded view of general assembly and parts list

Block No. M1MM





MODEL	MARK	MODEL	MARK
HR-XVC28BUC	A	HR-XVC29SUC	C
HR-XVC28BUS	B	HR-XVC29SUS	D

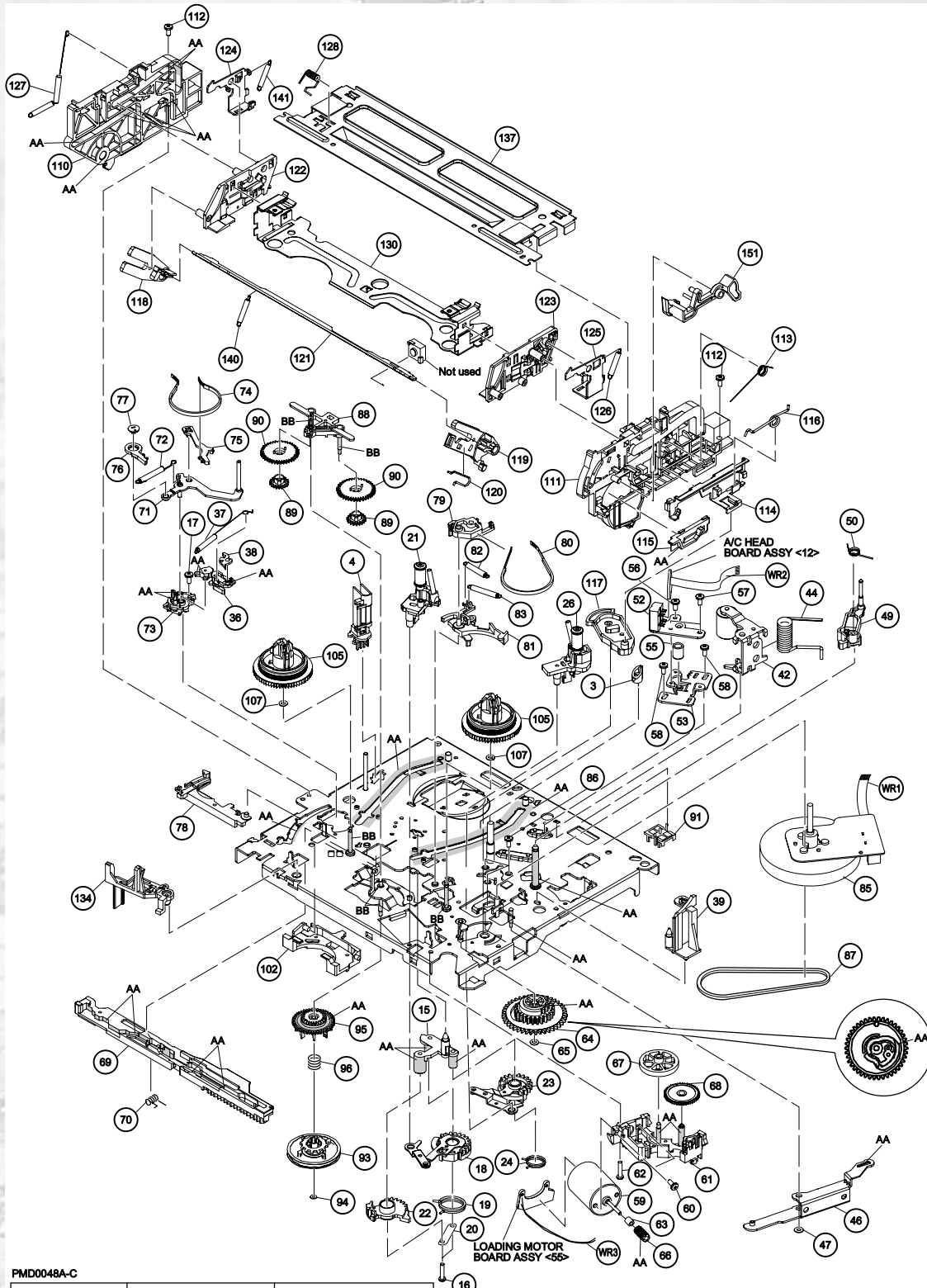
General assembly

Block No. [M][1][M][M]

△ Symbol No.	Part No.	Part Name	Description	Local
△ 1	LP10492-021C	FRONT PANEL ASSY		A,B
△ 1	LP10492-022C	FRONT PANEL ASSY		C,D
1A	LP21188-005B	CASSETTE DOOR		A,B
1A	LP21188-006B	CASSETTE DOOR		C,D
1B	LP31269-007A	ORNAMENT(CASSETTE DOOR)		A,B
1B	LP31269-008A	ORNAMENT(CASSETTE DOOR)		C,D
1C	PQ46448	TORSION SPRING		
2	QYTDSF2608ZA	TAP SCREW	M2.6 x 8mm DISPLAY SWITCH/JACK(x9)	
3	LP31391-001A	SPECIAL SCREW	FRONT PANEL(x2)	
△ 4	LP10488-004C	TOP COVER		A,B
△ 4	LP10488-002C	TOP COVER		C,D
5	QYSBSG3006MA	TAP SCREW	M3 x 6mm TOP SIDE(x2)	A,B
5	QYSBSG3006NA	TAP SCREW	M3 x 6mm TOP SIDE(x2)	C,D
6	QYSBSG3006MA	TAP SCREW	M3 x 6mm TOP REAR(x6)	A,B
6	QYSBSG3006NA	TAP SCREW	M3 x 6mm TOP REAR(x6)	C,D
7	LP21190-004A	FITTING		A,B
7	LP21190-005A	FITTING		C,D
△ 8	LP41077-002A	LABEL(CAUTION)		
9	PDV2531D	DRUM FINAL ASSY		
△ 10	LP10489-001B	BOTTOM CHASSIS		
△ 11	LP30002-0F1A	SPACER		
12	LP21177-001B	BRACKET(DVD)		
13	LP31391-001A	SPECIAL SCREW	BRACKET(DVD)(x3)	
△ 14	LP21178-023A	REAR COVER		
15	QYSBSG3006MA	TAP SCREW	M3 x 6mm REAR COVER	
16	LP31348-001A	FOOT	(x2)	
17	LP30002-0E5A	SPACER	(x2)	
18	LP31392-001A	BRACKET		
19	QYSDSF2608ZA	TAP SCREW	M2.6 x 8mm BRACKET	
20	QYSBSG3010ZA	TAP SCREW	M3 x 10mm DVD UNIT(x3)	
21	QYSPSPD3008ZA	SCREW	M3 x 8mm DRUM(x3)	
22	LP31391-002A	SPECIAL SCREW	MECHANISM(x3)	
23	LP31391-001A	SPECIAL SCREW	HOUSING	
24	LP31391-001A	SPECIAL SCREW	MAIN(x3)	
25	QYTDSF3008MA	TAP SCREW	M3 x 8mm JACK(x4)	
26	PQ46695-1-1	EARTH PLATE		
27	LP31345-001A	EARTH PLATE		
WR1	QUQ112-2212CG-E	FFC WIRE	DISPLAY CN7003-MAIN CN3102	
WR2	QUQ112-1010CG-E	FFC WIRE	SWITCH/JACK CN7191-MAIN CN7103	
WR3	QUQ210-1916CC-E	FFC WIRE	DVD UNIT CN501-MAIN CN7301	
WR4	QUQ210-1716CC-E	FFC WIRE	DVD UNIT CN503-MAIN CN7302	
WR5	QUQ210-0510CC-E	FFC WIRE	DVD UNIT CN1-MAIN CN3301	

VHS mechanism assembly and parts list

Block No. M2MM



PMD0048A-C

Classification	Part No.	Symbol in drawing
Grease	KYODO-SH-JB	AA
Oil	COSMO-HV56	BB

NOTE: The section marked in AA and BB indicate lubrication and greasing areas.

MODEL	MARK	MODEL	MARK
HR-XVC28BUC	A	HR-XVC29SUC	C
HR-XVC28BUS	B	HR-XVC29SUS	D

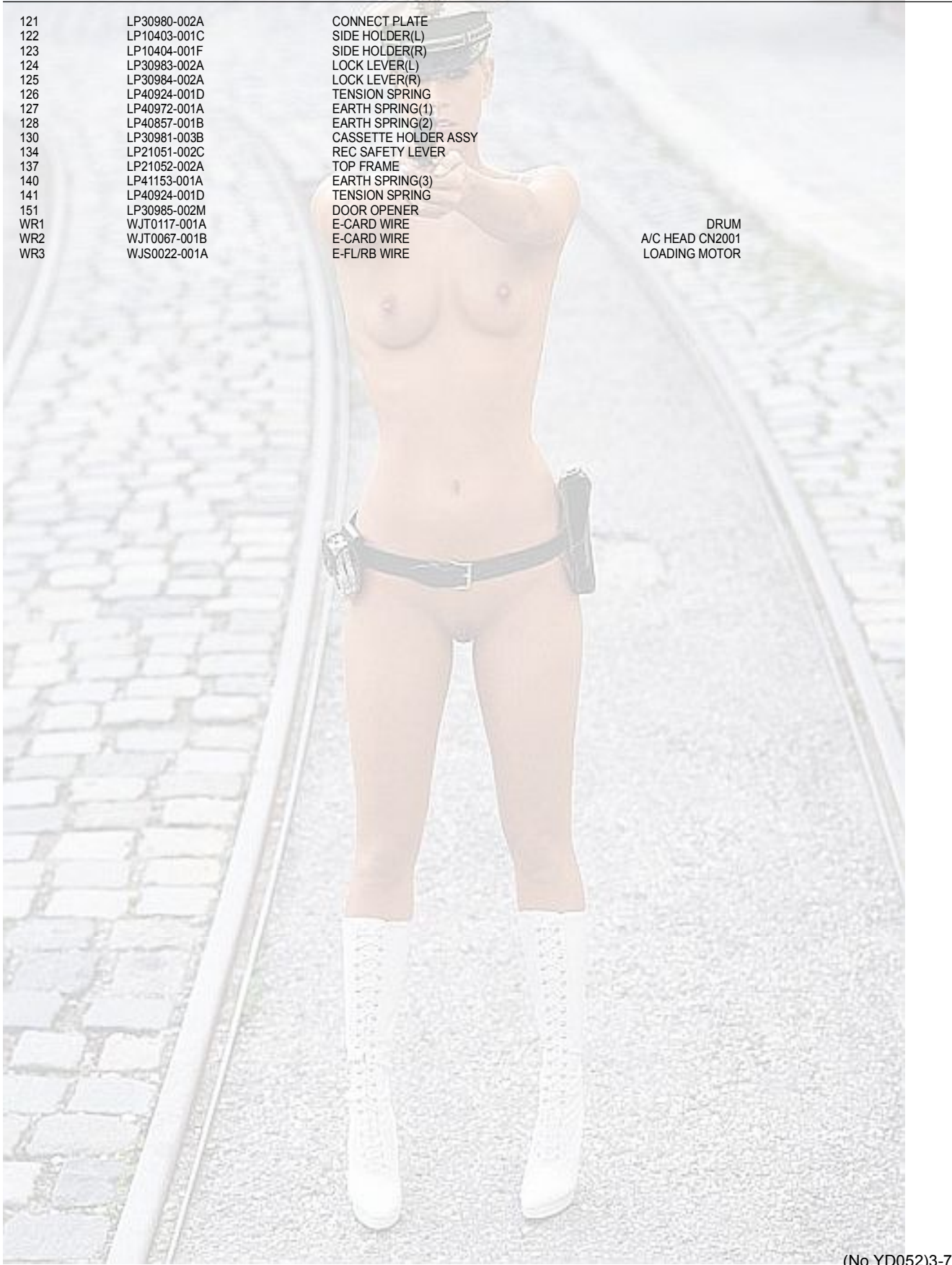
VHS mechanism

Block No. [M][2][M][M]

△ Symbol No.	Part No.	Part Name	Description	Local
3	LP40097-002E	GUIDE POLE CAP		
4	NAH0004-001	FULL ERASE HEAD		
15	LP30958-001B	LOADING GEAR BASE		
16	QYTPST2620ZA	TAP SCREW	M2.6 x 20mm(x2)	
17	QYTDST2606ZA	TAP SCREW	M2.6 x 6mm	
18	LP40798-002A	LOADING GEAR(SUPPLY) ASSY		
19	LP40837-001A	TORSION SPRING(SUPPLY)		
20	LP40903-004A	FIXING PLATE		
21	LP40806-001D	POLE BASE ASSY(SUPPLY)		
22	LP30959-001B	LOADING GEAR		
23	LP40802-002A	LOADING GEAR(TAKE UP) ASSY		
24	LP40838-001A	TORSION SPRING(TAKE UP)		
26	LP40808-001E	POLE BASE ASSY(TAKE UP)		
36	LP21055-001G	TAKE UP LEVER		
37	LP40943-001A	TENSION SPRING		
38	LP40859-001D	T-UP HEAD		
39	LP30961-001C	LID GUIDE		
42	LP40810-003A	PINCH ROLLER ARM ASSY		
44	LP40840-001E	TORSION SPRING		
46	LP30963-002A	PRESS LEVER		
47	PQM30017-24	SLIT WASHER		
49	LP40813-001D	GUIDE ARM ASSY		
50	LP40841-001A	TORSION SPRING		
52	NAH0005-001	AC HEAD		
53	LP30965-003A	HEAD BASE		
55	LP40842-001D	COMPRESSION SPRING		
56	QYTDST2006MA	TAP SCREW	M2 x 6mm	
57	LP41036-002A	A/C ADJ. SCREW	(x2)	
58	QYTDST2606ZA	TAP SCREW	M2.6 x 6mm(x2)	
59	QAR0289-001	LOADING MOTOR		
60	QYTPSP3003ZA	SCREW	M3 x 3mm(x2)	
61	LP21056-002J	MOTOR BRACKET		
62	QYTPST2620ZA	TAP SCREW	M2.6 x 20mm	
63	LP40814-001B	WORM BEARING		
64	LP21044-001E	CONTROL CAM		
65	PQM30017-24	SLIT WASHER		
66	LP40815-001A	WORM GEAR		
67	LP40816-001B	HELICAL GEAR		
68	LP40817-001A	CONNECT GEAR		
69	LP10400-001N	CONTROL PLATE		
70	LP40843-001A	TORSION SPRING		
71	LP40818-002A	TENSION ARM ASSY		
72	LP40844-001F	TENSION SPRING		
73	LP21045-001E	TENSION ARM BASE		
74	LP40821-001A	TENSION BAND ASSY		
75	LP30967-001B	BAND HOLDER-1		
76	LP30968-001C	BAND HOLDER-2		
77	LP40822-002B	ADJUST PIN		
78	LP31000-005E	TENSION ARM LEVER		
79	LP21046-001C	MAIN BRAKE(TAKE UP)		
80	LP40824-001A	BAND BRAKE ASSY		
81	LP30969-002B	BRAKE LEVER		
82	LP30003-033C	TENSION SPRING		
83	LP30003-035C	TENSION SPRING		
△ 85	QAR0322-002	CAPSTAN MOTOR		
86	QYTPSG2606ZA	TAP SCREW	M2.6 x 6mm(x3)	
87	LP30005-010A	BELT	CAPSTAN MOTOR	
88	LP30970-001B	IDLER ARM		
89	LP40828-004A	IDLER GEAR 1	(x2)	
90	LP40829-003A	IDLER GEAR 2	(x2)	
91	LP31014-002A	WIRE HOLDER		
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	LP30976-002B	SIDE PLATE		
115	LP30977-002E	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		

MODEL	MARK	MODEL	MARK
HR-XVC28BUC	A	HR-XVC29SUC	C
HR-XVC28BUS	B	HR-XVC29SUS	D

Symbol No.	Part No.	Part Name	Description	Local
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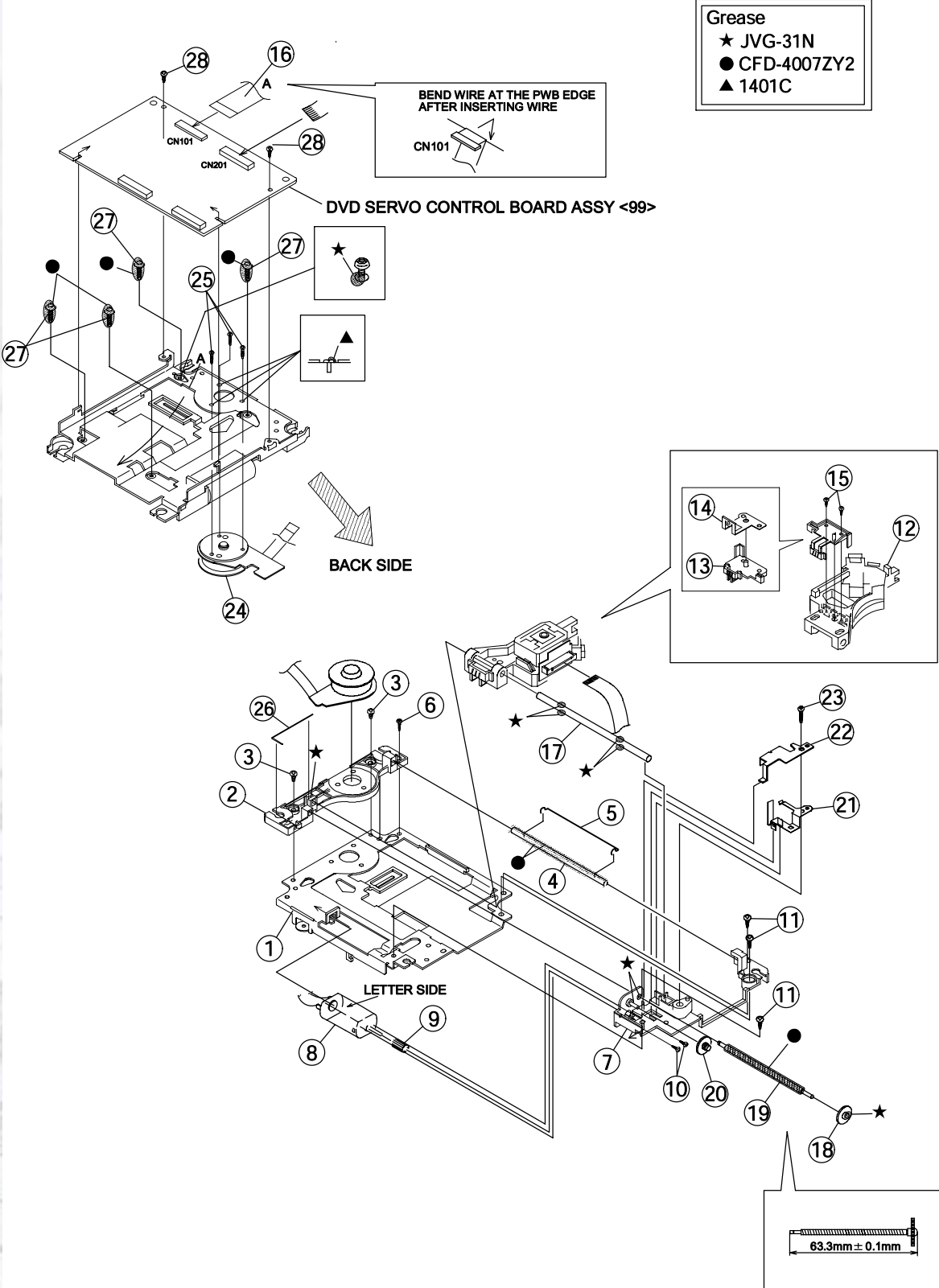
121 LP30980-002A
 122 LP10403-001C
 123 LP10404-001F
 124 LP30983-002A
 125 LP30984-002A
 126 LP40924-001D
 127 LP40972-001A
 128 LP40857-001B
 130 LP30981-003B
 134 LP21051-002C
 137 LP21052-002A
 140 LP41153-001A
 141 LP40924-001D
 151 LP30985-002M
 WR1 WJT0117-001A
 WR2 WJT0067-001B
 WR3 WJS0022-001A

CONNECT PLATE
 SIDE HOLDER(L)
 SIDE HOLDER(R)
 LOCK LEVER(L)
 LOCK LEVER(R)
 TENSION SPRING
 EARTH SPRING(1)
 EARTH SPRING(2)
 CASSETTE HOLDER ASSY
 REC SAFETY LEVER
 TOP FRAME
 EARTH SPRING(3)
 TENSION SPRING
 DOOR OPENER
 E-CARD WIRE
 E-CARD WIRE
 E-FL/RB WIRE

DRUM
 A/C HEAD CN2001
 LOADING MOTOR

DVD Traverse mechanism assembly and parts list

Block No. M3MM



MODEL	MARK	MODEL	MARK
HR-XVC28BUC	A	HR-XVC29SUC	C
HR-XVC28BUS	B	HR-XVC29SUS	D

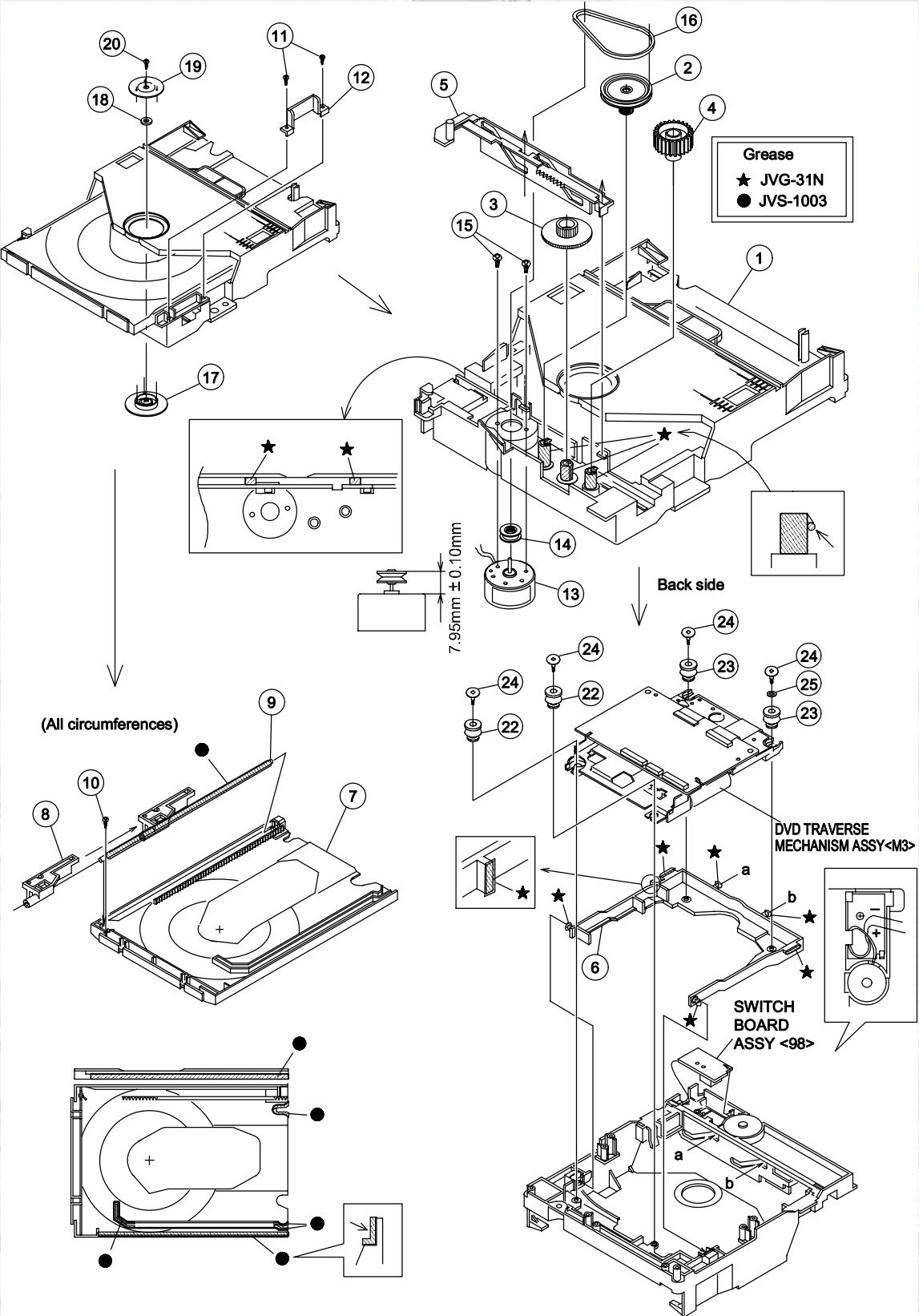
DVD Traverse mechanism

Block No. [M][3][M][M]

△ Symbol No.	Part No.	Part Name	Description	Local
1	LV21814-001A	MECHA BASE		
2	LE20731-002A	SPINDLE BASE		
3	QYSDST2605M	TAP SCREW		M2.6 x 5mm(x2)
4	LE40931-001A	SHAFT		
5	LE40995-001A	BAR SPRING		
6	QYSPSTU2080M	TAP SCREW		M2 x 8mm
7	LE20730-002A	FEED HOLDER		
8	QAR0165-001	FEED MOTOR		
9	LV41510-001A	FEED GEAR T		
10	QYSPSPU2040M	SCREW		M2 x 4mm(x2)
11	QYSDST2605M	TAP SCREW		M2.6 x 5mm(x3)
12	QAL0577-001	PUP		
13	LE20732-001A	SW ACTUATOR		
14	LE31093-001A	LEAD SPRING		
15	QYSPSFU1740Z	TAP SCREW		M1.7 x 4mm(x2)
16	QUQ105-2412AC	FFC WIRE		24pin 12cm
17	LE40931-001A	SHAFT		
18	LE40855-002A	FEED GEAR E		
19	LV41517-003A	LEAD SCREW		
20	LE40930-001A	FEED GEAR M		
21	LE40928-002A	THURUST SPRING		
22	LE40927-002A	PLATE		
23	QYSDST2614Z	TAP SCREW		M2.6 x 14mm
24	QAR0334-001	S.MOTOR		
25	QYSPSPU1760Z	SCREW		M1.7 x 6mm(x3)
26	LE40994-001A	T.SPRING		
27	LE40858-002A	SPECIAL SCREW		(x4)
28	QYSDST2004Z	TAP SCREW		M2 x 4mm(x2)

DVD Loading mechanism assembly and parts list

Block No. M4MM



MODEL	MARK	MODEL	MARK
HR-XVC28BUC	A	HR-XVC29SUC	C
HR-XVC28BUS	B	HR-XVC29SUS	D

DVD Loading mechanism

Block No. [M][4][M][M]

△ Symbol No.	Part No.	Part Name	Description	Local
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1	LE10275-006A	LOADING BASE		
2	LE31043-001A	PULLEY GEAR		
3	LE31042-001A	MIDDLE GEAR		
4	LE31044-001A	IDLE GEAR		
5	LE20665-005A	SLIDE CAM		
6	LE20666-003A	ELEVATOR		
7	LE10276-002A	TRAY		
8	LE31045-001A	BUSHING		
9	LE40898-001A	SHAFT		
10	QYSSF2008Z	TAP SCREW	M2 x 8mm	
11	QYDSF2008Z	TAP SCREW	M2 x 8mm(x2)	
12	LE40937-003A	LEAF SPRING		
13	QAR0197-001	MOTOR		
14	LV42087-002A	MOTOR PULLEY		
15	QYSPSPU1730Z	SCREW	FOR MOTOR(x2)	
16	LE40897-001A	BELT		
17	LE31046-003A	CLAMPER		
18	LV42930-003A	P.C.MAGNET		
19	LE40899-001A	YOKE		
20	LE40906-001A	SPECIAL SCREW		
22	LE40900-003A	INSULATOR	REAR(x2)	
23	LE40900-005A	INSULATOR	FRONT(x2)	
24	LE40901-001A	SPECIAL SCREW	(x4)	
25	QYWF419025	WASHER	9mm/4.1mm x 0.25mm	

MODEL	MARK	MODEL	MARK
HR-XVC28BUC	A	HR-XVC29SUC	C
HR-XVC28BUS	B	HR-XVC29SUS	D

Electrical parts list

Main board

Symbol No.	Part No.	Part Name	Description	Local	Symbol No.	Part No.	Part Name	Description	Local
					Block No. [0][3]				
PW1	LPA10280-01B	MAIN BOARD ASSY			Q5102	2SC3576-JVC-T	TRANSISTOR		
IC1	JCP8060-NVA	IC			Q5103	2SA1530A/QR/-X	TRANSISTOR		
△IC2201	AN3663FBP	IC			Q5103 or	2SB709A/QR/-X	TRANSISTOR		
IC3001	MN101D10GJJ	IC(MCU)	MASK		Q5103 or	2SA1037AK/QR/-X	TRANSISTOR		
IC3004	LPN0956-001B-01	IC(EEPROM)	*(REFER TO BELOW)		Q5306	2SD1302/ST/-T	TRANSISTOR		
IC3301	LB1641	IC			Q5307	UN211E-X	DIGI TRANSISTOR		
IC3302	SN74HCT08APW-X	IC			Q5307 or	DTA144WKA-X	TRANSISTOR		
IC5201	UTCTL431-T	IC			Q5307 or	RT1P44HC-X	DIGI TRANSISTOR		
IC5201 or	TL431A/-T	IC			Q5309	UN2211-X	TRANSISTOR		
IC5301	UTCTL431-T	IC			Q5309 or	DTC114EKA-X	DIGI TRANSISTOR		
IC5302	MM1565AF-X	IC			Q5309 or	RT1N141C-X	DIGI TRANSISTOR		
IC7102	MM1507XN-X	IC			Q5310	2SD1858/QR/-T	TRANSISTOR		
IC7104	BH7868FS-X	IC			Q5311	2SC5739/QP/-	TRANSISTOR		
IC7501	SN74AHC08NS-X	IC			Q5315	2SD1858/QR/-T	TRANSISTOR		
IC7501 or	74VHCT08ASJ-X	IC			Q6030	2SB709A/QR/-X	TRANSISTOR		
IC8001	HA17558AF-X	IC			Q6030 or	2SA1037AK/QR/-X	TRANSISTOR		
IC8001 or	RC4558D-X	IC			Q6030 or	2SA1530A/QR/-X	TRANSISTOR		
Q19	2SD601A/QRS/-X	TRANSISTOR			Q7113	2SA1037AK/QR/-X	TRANSISTOR		
Q19 or	2SC2412K/QRS/-X	TRANSISTOR			Q7113 or	2SB709A/QR/-X	TRANSISTOR		
Q19 or	2SC3928A/QRS/-X	TRANSISTOR			Q7113 or	2SA1530A/QR/-X	TRANSISTOR		
Q2001	2SD601A/QRS/-X	TRANSISTOR			Q8001	2SD601A/QRS/-X	TRANSISTOR		
Q2001 or	2SC2412K/QRS/-X	TRANSISTOR			Q8001 or	2SC2412K/QRS/-X	TRANSISTOR		
Q2001 or	2SC3928A/QRS/-X	TRANSISTOR			Q8001 or	2SC3928A/QRS/-X	TRANSISTOR		
Q2002	2SD601A/QRS/-X	TRANSISTOR			Q8002	2SD601A/QRS/-X	TRANSISTOR		
Q2002 or	2SC2412K/QRS/-X	TRANSISTOR			Q8002 or	2SC2412K/QRS/-X	TRANSISTOR		
Q2002 or	2SC3928A/QRS/-X	TRANSISTOR			Q8002 or	2SC3928A/QRS/-X	TRANSISTOR		
Q2003	UN211E-X	DIGI TRANSISTOR			Q8052	2SD601A/QRS/-X	TRANSISTOR		
Q2003 or	DTA144WKA-X	TRANSISTOR			Q8052 or	2SC2412K/QRS/-X	TRANSISTOR		
Q2003 or	RT1P44HC-X	DIGI TRANSISTOR			Q8052 or	2SC3928A/QRS/-X	TRANSISTOR		
Q2051	2SD601A/QRS/-X	TRANSISTOR			Q8053	UN2111-X	TRANSISTOR		
Q2051 or	2SC2412K/QRS/-X	TRANSISTOR			Q8053 or	DTA114EKA-X	DIGI TRANSISTOR		
Q2051 or	2SC3928A/QRS/-X	TRANSISTOR			Q8053 or	RT1P141C-X	DIGI TRANSISTOR		
Q2052	2SB709A/QR/-X	TRANSISTOR			D2001	1SS133-T2	SI DIODE		
Q2052 or	2SA1037AK/QR/-X	TRANSISTOR			D2001 or	1SS270A-T2	SI DIODE		
Q2052 or	2SA1530A/QR/-X	TRANSISTOR			D2251	1SS133-T2	SI DIODE		
Q2053	UN221E-X	TRANSISTOR			D2251 or	1SS270A-T2	SI DIODE		
Q2053 or	DTC144WKA-X	DIGI TRANSISTOR			D3001	LNB2301L01VI	LED		
Q2053 or	RT1N44HC-X	DIGI TRANSISTOR			D3002	1SS133-T2	SI DIODE		
Q2054	2SB709A/QR/-X	TRANSISTOR			D3002 or	1SS270A-T2	SI DIODE		
Q2054 or	2SA1037AK/QR/-X	TRANSISTOR			D3004	10EDB20-T2	SI DIODE		
Q2054 or	2SA1530A/QR/-X	TRANSISTOR			D3005	10EDB20-T2	SI DIODE		
Q2055	UN221E-X	TRANSISTOR			D3016	MTZJ3.9B-T2	Z DIODE		
Q2055 or	DTC144WKA-X	DIGI TRANSISTOR			D3301	MTZJ5.1B-T2	Z DIODE		
Q2055 or	RT1N44HC-X	DIGI TRANSISTOR			D5001	S1WB/A/60-X	BRIDGE DIODE		
Q2201	UN211E-X	DIGI TRANSISTOR			D5001 or	S1WB/A/60-7102	BRIDGE DIODE		
Q2201 or	DTA144WKA-X	TRANSISTOR			D5101	10ERB40-T2	FR DIODE		
Q2201 or	RT1P44HC-X	DIGI TRANSISTOR			D5101 or	AU01-T2	SI DIODE		
Q2202	UN221E-X	TRANSISTOR			D5102	10ERB40-T2	FR DIODE		
Q2202 or	DTC144WKA-X	DIGI TRANSISTOR			D5102 or	AU01-T2	SI DIODE		
Q2202 or	RT1N44HC-X	DIGI TRANSISTOR			D5103	1SS133-T2	SI DIODE		
Q2203	2SD601A/QRS/-X	TRANSISTOR			D5103 or	1SS270A-T2	SI DIODE		
Q2203 or	2SC2412K/QRS/-X	TRANSISTOR			D5105	1SS133-T2	SI DIODE		
Q2203 or	2SC3928A/QRS/-X	TRANSISTOR			D5105 or	1SS270A-T2	SI DIODE		
Q2204	2SD601A/QRS/-X	TRANSISTOR			D5106	MTZJ33D-T2	Z DIODE		
Q2204 or	2SC2412K/QRS/-X	TRANSISTOR			D5208	AW04-T2	SB DIODE		
Q2204 or	2SC3928A/QRS/-X	TRANSISTOR			D5209	AU01Z-T2	FR DIODE		
Q2204	2SD601A/QRS/-X	TRANSISTOR			D5209 or	10ERB20-T2	FR DIODE		
Q2204 or	2SC2412K/QRS/-X	TRANSISTOR			D5212	RK14-LFB2	SB DIODE		
Q2204 or	2SC3928A/QRS/-X	TRANSISTOR			D5213	AU01Z-T2	FR DIODE		
Q2204	2SD601A/QRS/-X	TRANSISTOR			D5213 or	10ERB20-T2	FR DIODE		
Q2204 or	2SC2412K/QRS/-X	TRANSISTOR			D5301	MTZJ15C-T2	Z DIODE		
Q2204 or	2SC3928A/QRS/-X	TRANSISTOR			D5305	MTZJ11C-T2	Z DIODE		
Q3002	PTZ-NV16A	IC(PHOTO SENSOR)			D5306	MTZJ5.6C-T2	Z DIODE		
Q3006	2SC2412K/QRS/-X	TRANSISTOR			D5310	MTZJ10B-T2	Z DIODE		
Q3006 or	2SD601A/QRS/-X	TRANSISTOR			D6002	HZ30-2L-T2	Z DIODE		
Q3006 or	2SC3928A/QRS/-X	TRANSISTOR			D8001	1SS133-T2	SI DIODE		
Q3007	2SC2412K/QRS/-X	TRANSISTOR			D8001 or	1SS270A-T2	SI DIODE		
Q3007 or	2SD601A/QRS/-X	TRANSISTOR			PC3001	RPI-304J	IC(PHOTO SENSOR)		
Q3007 or	2SC3928A/QRS/-X	TRANSISTOR			PC3002	RPI-304J	IC(PHOTO SENSOR)		
Q4001	UN2211-X	TRANSISTOR			△PC5101	PC123Y22FZ	PHOTO COUPLER		
Q4001 or	DTC114EKA-X	DIGI TRANSISTOR			C1	NDC31HJ-151X	C CAPACITOR	150pF 50V J	
Q4001 or	RT1N141C-X	DIGI TRANSISTOR			C2	NDC31HJ-330X	C CAPACITOR	33pF 50V J	
Q4002	2SD601A/QRS/-X	TRANSISTOR			C4	QEKJ1EM-106Z	E CAPACITOR	10uF 25V M	
Q4002 or	2SC2412K/QRS/-X	TRANSISTOR							
Q4002 or	2SC3928A/QRS/-X	TRANSISTOR							
Q5101	2SK2043-CB14	FET							

*The VCR goes to jig RCU mode after replacing the EEPROM and the VCR does not accept some RCU command.

3-12(No. YD052)

Therefore please set the VCR to the user RCU mode after replacing the EEPROM.

The method of setting the VCR to the user RCU mode is written on the service manual.

MODEL	MARK	MODEL	MARK
HR-XVC28BUC	A	HR-XVC29SUC	C
HR-XVC28BUS	B	HR-XVC29SUS	D

Symbol No.	Part No.	Part Name	Description	Local	Symbol No.	Part No.	Part Name	Description	Local
C5	NCB31CK-104X	C CAPACITOR	0.1uF 16V K		C2220	QEKJ1EM-106Z	E CAPACITOR	10uF 25V M	
C6	NCB31CK-104X	C CAPACITOR	0.1uF 16V K		C2221	NCB31EK-223X	C CAPACITOR	0.022uF 25V K	
C7	NCB31CK-104X	C CAPACITOR	0.1uF 16V K		C2222	NCF31EZ-104X	C CAPACITOR	0.1uF 25V Z	
C8	NCF31AZ-105X	C CAPACITOR	1uF 10V Z		C2234	NCB30JK-105X	C CAPACITOR	1uF 6.3V K	
C9	QEKJ1HM-225Z	E CAPACITOR	2.2uF 50V M		C2235	NCB30JK-105X	C CAPACITOR	1uF 6.3V K	
C11	NCF31AZ-105X	C CAPACITOR	1uF 10V Z		C2251	NCB31EK-103X	C CAPACITOR	0.01uF 25V K	
C12	NCF31AZ-105X	C CAPACITOR	1uF 10V Z		C2252	NCB31EK-103X	C CAPACITOR	0.01uF 25V K	
C14	NCF31AZ-105X	C CAPACITOR	1uF 10V Z		C2253	NCB31EK-103X	C CAPACITOR	0.01uF 25V K	
C15	NCB31CK-104X	C CAPACITOR	0.1uF 16V K		C2254	QEKJ0JM-476Z	E CAPACITOR	47uF 6.3V M	
C17	NCF31EZ-104X	C CAPACITOR	0.1uF 25V Z		C2255	NCF31EZ-104X	C CAPACITOR	0.1uF 25V Z	
C19	NCB31CK-104X	C CAPACITOR	0.1uF 16V K		C2256	NCB31EK-103X	C CAPACITOR	0.01uF 25V K	
C20	NCB31CK-104X	C CAPACITOR	0.1uF 16V K		C2257	NCB31EK-103X	C CAPACITOR	0.01uF 25V K	
C22	NCF31EZ-104X	C CAPACITOR	0.1uF 25V Z		C2259	QEKJ1HM-334Z	E CAPACITOR	0.33uF 50V M	
C24	NCF31EZ-104X	C CAPACITOR	0.1uF 25V Z		C3011	QEKJ1HM-475Z	E CAPACITOR	4.7uF 50V M	
C25	QEKJ1HM-335Z	E CAPACITOR	3.3uF 50V M		C3016	NDC31HJ-180X	C CAPACITOR	18pF 50V J	
C26	QEKJ1EM-106Z	E CAPACITOR	10uF 25V M		C3017	NDC31HJ-270X	C CAPACITOR	27pF 50V J	
C27	NCB31EK-103X	C CAPACITOR	0.01uF 25V K		C3028	QETN0JM-108Z	E CAPACITOR	1000uF 6.3V M	
C30	NCB31HK-331X	C CAPACITOR	330pF 50V K		C3029	NCF31AZ-105X	C CAPACITOR	1uF 10V Z	
C31	QEKJ0JM-476Z	E CAPACITOR	47uF 6.3V M		C3030	QEKJ1HM-475Z	E CAPACITOR	4.7uF 50V M	
C33	QEKJ1EM-106Z	E CAPACITOR	10uF 25V M		C3035	NCB31CK-223X	C CAPACITOR	0.022uF 16V K	
C34	NCB31EK-103X	C CAPACITOR	0.01uF 25V K		C3036	QERF0JM-107Z	E CAPACITOR	100uF 6.3V M	
C35	NCB31EK-103X	C CAPACITOR	0.01uF 25V K		C3047	NCB31EK-103X	C CAPACITOR	0.01uF 25V K	
C36	QEKJ1HM-105Z	E CAPACITOR	1uF 50V M		C3048	NCB31EK-103X	C CAPACITOR	0.01uF 25V K	
C37	NDC31HJ-4R0X	C CAPACITOR	4pF 50V J		C3049	NCB31EK-103X	C CAPACITOR	0.01uF 25V K	
C40	NCF31EZ-104X	C CAPACITOR	0.1uF 25V Z		C3052	NCB31EK-103X	C CAPACITOR	0.01uF 25V K	
C41	NCB31CK-104X	C CAPACITOR	0.1uF 16V K		C3053	NCB31EK-103X	C CAPACITOR	0.01uF 25V K	
C43	QEKJ1HM-335Z	E CAPACITOR	3.3uF 50V M		C3071	QETN1HM-336Z	E CAPACITOR	33uF 50V M	
C44	QEKJ1HM-225Z	E CAPACITOR	2.2uF 50V M		C3301	QETN1CM-107Z	E CAPACITOR	100uF 16V M	
C45	NCB31EK-472X	C CAPACITOR	4700pF 25V K		C3302	NCB31EK-103X	C CAPACITOR	0.01uF 25V K	
C46	NCB31CK-333X	C CAPACITOR	0.033uF 16V K		C3303	NCF31EZ-104X	C CAPACITOR	0.1uF 25V Z	
C47	QEKJ1HM-474Z	E CAPACITOR	0.47uF 50V M		C4001	NCB31CK-104X	C CAPACITOR	0.1uF 16V K	
C48	NCB31EK-223X	C CAPACITOR	0.022uF 25V K		C4002	QERF1HM-105Z	E CAPACITOR	1uF 50V M	
C49	QEKJ1HM-475Z	E CAPACITOR	4.7uF 50V M		C4004	QERF1AM-336Z	E CAPACITOR	33uF 10V M	
C56	NCB31CK-104X	C CAPACITOR	0.1uF 16V K		C4006	NRSA63J-0R0X	MG RESISTOR	0.2 1/16W J	
C57	NCF31EZ-104X	C CAPACITOR	0.1uF 25V Z		C4007	NCB31EK-103X	C CAPACITOR	0.01uF 25V K	
C58	NCF31EZ-104X	C CAPACITOR	0.1uF 25V Z		C4009	NCB31HK-102X	C CAPACITOR	1000pF 50V K	
C59	NCF31EZ-104X	C CAPACITOR	0.1uF 25V Z		C4010	QEKJ0JM-476Z	E CAPACITOR	47uF 6.3V M	
C60	NCF31EZ-104X	C CAPACITOR	0.1uF 25V Z		C4011	NCF31CZ-224X	C CAPACITOR	0.22uF 16V Z	
C77	NCF31EZ-104X	C CAPACITOR	0.1uF 25V Z		C4014	NDC31HJ-101X	C CAPACITOR	100pF 50V J	
C78	NCF31EZ-104X	C CAPACITOR	0.1uF 25V Z		C4019	NCB31EK-103X	C CAPACITOR	0.01uF 25V K	
C201	QERF0JM-476Z	E CAPACITOR	47uF 6.3V M		△C5001	QFZ9073-683	MM CAPACITOR	0.068uF AC250V M	
C202	NCB31CK-104X	C CAPACITOR	0.1uF 16V K		△C5002	QFZ9073-223	MM CAPACITOR	0.022uF AC250V M	
C203	QERF1HM-105Z	E CAPACITOR	1uF 50V M		△C5003	QCZ9071-101	C CAPACITOR	100pF AC400V K	
C205	NDC31HJ-101X	C CAPACITOR	100pF 50V J		△C5004	QCZ9071-472	C CAPACITOR	4700pF AC400V M	
C207	NCF31AZ-105X	C CAPACITOR	1uF 10V Z		C5006	QETM2DM-157	E CAPACITOR	150uF 200V M	
C215	NRSA63J-0R0X	MG RESISTOR	0.2 1/16W J		C5101	QCZ0353-101Z	C CAPACITOR	100pF 1kV K	
C216	NRSA63J-0R0X	MG RESISTOR	0.2 1/16W J		C5102	QCZ0136-102Z	C CAPACITOR	1000pF 1kV K	
C2001	QEKJ1HM-475Z	E CAPACITOR	4.7uF 50V M		C5104	QETN1HM-105Z	E CAPACITOR	1uF 50V 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	0.1uF 50V K	
C2006	NCB31EK-682X	C CAPACITOR	6800pF 25V K		C5109	NCB31HK-183X	C CAPACITOR	0.018uF 50V K	
C2007	QEKJ1CM-226Z	E CAPACITOR	22uF 16V M		C5202	QEZ0564-128	E CAPACITOR	1200uF 10V M	
C2008	QEKJ1HM-475Z	E CAPACITOR	4.7uF 50V M		C5204	QEZ0564-128	E CAPACITOR	1200uF 10V M	
C2009	NCB31HK-102X	C CAPACITOR	1000pF 50V K		C5205	QEZ0655-397Z	E CAPACITOR	390uF 16V M	
C2010	NCB31HK-681X	C CAPACITOR	680pF 50V K		C5207	QETN2AM-475Z	E CAPACITOR	4.7uF 100V M	
C2011	QEKJ1HM-475Z	E CAPACITOR	4.7uF 50V M		C5209	QETN1AM-107Z	E CAPACITOR	100uF 10V M	
C2012	QEKJ1HM-475Z	E CAPACITOR	4.7uF 50V M		C5210	QETN1CM-107Z	E CAPACITOR	100uF 16V M	
C2051	NCB31HK-331X	C CAPACITOR	330pF 50V K		C5211	QETN1AM-107Z	E CAPACITOR	100uF 10V M	
C2052	QFV61HJ-823Z	MF CAPACITOR	0.082uF 50V J		C5214	NCB31AK-154X	C CAPACITOR	0.15uF 10V K	
C2053	NCB31HK-472X	C CAPACITOR	4700pF 50V K		C5301	QETN1AM-107Z	E CAPACITOR	100uF 10V M	
C2054	NCB31EK-223X	C CAPACITOR	0.022uF 25V K		C5303	QETN1HM-225Z	E CAPACITOR	2.2uF 50V M	
C2055	QEKJ1EM-106Z	E CAPACITOR	10uF 25V M		C5304	QETN1CM-107Z	E CAPACITOR	100uF 16V M	
C2201	QEKJ1EM-106Z	E CAPACITOR	10uF 25V M		C5305	QETN1AM-107Z	E CAPACITOR	100uF 10V M	
C2202	QEKJ1HM-475Z	E CAPACITOR	4.7uF 50V M		C5306	NCF31AZ-105X	C CAPACITOR	1uF 10V Z	
C2203	QEKJ1HM-475Z	E CAPACITOR	4.7uF 50V M		C5307	NCB31HK-471X	C CAPACITOR	470pF 50V K	
C2204	QEKJ0JM-336Z	E CAPACITOR	33uF 6.3V M		C5308	NCB30JK-105X	C CAPACITOR	1uF 6.3V K	
C2205	QEKJ1EM-106Z	E CAPACITOR	10uF 25V M		C5309	QETN1AM-107Z	E CAPACITOR	100uF 10V M	
C2206	QEKJ1EM-106Z	E CAPACITOR	10uF 25V M		C5310	QETN1AM-107Z	E CAPACITOR	100uF 10V M	
C2207	NCB31EK-153X	C CAPACITOR	0.015uF 25V K		C5314	QETN1CM-107Z	E CAPACITOR	100uF 16V M	
C2208	NCB31EK-153X	C CAPACITOR	0.015uF 25V K		C6013	NCB31HK-102X	C CAPACITOR	1000pF 50V K	
C2209	QEKJ1EM-106Z	E CAPACITOR	10uF 25V M		C6021	NDC31HJ-151X	C CAPACITOR	150pF 50V J	
C2210	QEKJ1EM-106Z	E CAPACITOR	10uF 25V M		C6053	NDC31HJ-120X	C CAPACITOR	12pF 50V J	
C2211	QEKJ0JM-336Z	E CAPACITOR	33uF 6.3V M		C6054	NDC31HJ-100X	C CAPACITOR	10pF 50V J	
C2212	QEKJ0JM-476Z	E CAPACITOR	47uF 6.3V M		C6501	NCB31CK-104X	C CAPACITOR	0.1uF 16V K	
C2214	QEKJ1EM-106Z	E CAPACITOR	10uF 25V M		C6502	QEKJ1EM-106Z	E CAPACITOR	10uF 25V M	
C2215	QEKJ1EM-106Z	E CAPACITOR	10uF 25V M		C6503	QEKJ1HM-105Z	E CAPACITOR	1uF 50V M	
C2218	QEKJ1EM-106Z	E CAPACITOR	10uF 25V M		C6504	NCF31EZ-104X	C CAPACITOR	0.1uF 25V Z	
C2219	QEKJ1CM-226Z	E CAPACITOR	22uF 16V M		C6505	QEKJ1HM-335Z	E CAPACITOR	3.3uF 50V M	

MODEL	MARK	MODEL	MARK
HR-XVC28BUC	A	HR-XVC29SUC	C
HR-XVC28BUS	B	HR-XVC29SUS	D

△ Symbol No.	Part No.	Part Name	Description	Local	△ Symbol No.	Part No.	Part Name	Description	Local
C6508	NCB31EK-223X	C CAPACITOR	0.022uF 25V K		R2211	NRSA63J-332X	MG RESISTOR	3.3kΩ 1/16W J	
C6509	NCB31CK-104X	C CAPACITOR	0.1uF 16V K		R2212	NRSA63J-332X	MG RESISTOR	3.3kΩ 1/16W J	
C6511	NCF31EZ-104X	C CAPACITOR	0.1uF 25V Z		R2213	NRSA63J-472X	MG RESISTOR	4.7kΩ 1/16W J	
C6512	NCB31EK-223X	C CAPACITOR	0.022uF 25V K		R2214	QRE141J-101Y	C RESISTOR	100Ω 1/16W J	
C6513	QEKJ1HM-225Z	E CAPACITOR	2.2uF 50V M		R2216	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	
C6514	NCB31EK-223X	C CAPACITOR	0.022uF 25V K		R2218	NRSA63J-392X	MG RESISTOR	3.9kΩ 1/16W J	
C6515	QEKJ1HM-335Z	E CAPACITOR	3.3uF 50V M		R2219	NRSA63J-102X	MG RESISTOR	1kΩ 1/16W J	
C6516	QEKJ1EM-475Z	E CAPACITOR	4.7uF 25V M		R2220	NRSA63J-102X	MG RESISTOR	1kΩ 1/16W J	
C6517	NCB31AK-224X	C CAPACITOR	0.22uF 10V K		R2221	NRSA63J-392X	MG RESISTOR	3.9kΩ 1/16W J	
C6532	NCF31AZ-104X	C CAPACITOR	0.1uF 25V Z		R2222	NRSA63J-392X	MG RESISTOR	3.9kΩ 1/16W J	
C7114	QETJ0JM-477Z	E CAPACITOR	470uF 6.3V M		R2223	NRSA63J-561X	MG RESISTOR	560Ω 1/16W J	
C7117	QEKJ1EM-106Z	E CAPACITOR	10uF 25V M		R2224	NRSA63J-561X	MG RESISTOR	560Ω 1/16W J	
C7118	QEKJ1EM-106Z	E CAPACITOR	10uF 25V M		R2230	NRSA63J-471X	MG RESISTOR	470Ω 1/16W J	
C7119	NCF31EZ-104X	C CAPACITOR	0.1uF 25V Z		R2231	NRSA63J-471X	MG RESISTOR	470Ω 1/16W J	
C7129	NCF31EZ-104X	C CAPACITOR	0.1uF 25V Z		R2251	NRSA63J-472X	MG RESISTOR	4.7kΩ 1/16W J	
C7131	NCB31EK-103X	C CAPACITOR	0.01uF 25V K		R2252	NRSA63J-332X	MG RESISTOR	3.3kΩ 1/16W J	
C7132	NCF31AZ-105X	C CAPACITOR	1uF 10V Z		R2255	NRSA63J-273X	MG RESISTOR	27kΩ 1/16W J	
C7133	QEKJ1CM-226Z	E CAPACITOR	22uF 16V M		R2257	NRSA63J-684X	MG RESISTOR	680kΩ 1/16W J	
C7134	NCF31AZ-105X	C CAPACITOR	1uF 10V Z		R3003	NRSA63J-102X	MG RESISTOR	1kΩ 1/16W J	
C7135	NCF31AZ-105X	C CAPACITOR	1uF 10V Z		R3005	NRSA63J-102X	MG RESISTOR	1kΩ 1/16W J	
C7136	NCF31AZ-105X	C CAPACITOR	1uF 10V Z		R3006	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	
C7146	QETJ0JM-477Z	E CAPACITOR	470uF 6.3V M		R3007	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	
C7148	QETJ0JM-477Z	E CAPACITOR	470uF 6.3V M		R3008	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	
C7150	QETJ0JM-477Z	E CAPACITOR	470uF 6.3V M		R3009	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	
C7502	NCF31EZ-104X	C CAPACITOR	0.1uF 25V Z		R3010	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	
C7503	QEKJ1HM-475Z	E CAPACITOR	4.7uF 50V M		R3011	NRSA63J-102X	MG RESISTOR	1kΩ 1/16W J	
C7504	NDC31HJ-151X	C CAPACITOR	150pF 50V J		R3014	NRSA63J-222X	MG RESISTOR	2.2kΩ 1/16W J	
C7506	NCB31CK-104X	C CAPACITOR	0.1uF 16V K		R3015	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	
C7507	QEKJ0JM-107Z	E CAPACITOR	100uF 6.3V M		R3016	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	
C7508	NCB31CK-104X	C CAPACITOR	0.1uF 16V K		R3017	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	
C8001	QEKJ1CM-226Z	E CAPACITOR	22uF 16V M		R3018	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	
C8002	QEKJ1CM-226Z	E CAPACITOR	22uF 16V M		R3021	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	
C8003	NCB31HK-821X	C CAPACITOR	820pF 50V K		R3031	NRSA63J-331X	MG RESISTOR	330Ω 1/16W J	
C8004	NCB31HK-821X	C CAPACITOR	820pF 50V K		R3032	NRSA63J-331X	MG RESISTOR	330Ω 1/16W J	
C8005	NCB31HK-821X	C CAPACITOR	820pF 50V K		R3035	NRSA63J-182X	MG RESISTOR	1.8kΩ 1/16W J	
C8006	NCB31HK-821X	C CAPACITOR	820pF 50V K		R3060	NRSA63J-222X	MG RESISTOR	2.2kΩ 1/16W J	
C8007	QEKJ1CM-226Z	E CAPACITOR	22uF 16V M		R3087	NRSA63J-102X	MG RESISTOR	1kΩ 1/16W J	
C8008	QEKJ1CM-226Z	E CAPACITOR	22uF 16V M		R3091	NRSA63J-472X	MG RESISTOR	4.7kΩ 1/16W J	
C8052	QEKJ0JM-107Z	E CAPACITOR	100uF 6.3V M		R3092	NRSA63J-472X	MG RESISTOR	4.7kΩ 1/16W J	
					R3093	NRSA63J-472X	MG RESISTOR	4.7kΩ 1/16W J	
R1	NRSA63J-622X	MG RESISTOR	6.2kΩ 1/16W J		R3094	NRSA63J-472X	MG RESISTOR	4.7kΩ 1/16W J	
R2	NRSA63J-152X	MG RESISTOR	1.5kΩ 1/16W J		R3095	NRSA63J-102X	MG RESISTOR	1kΩ 1/16W J	
R3	NRSA63J-822X	MG RESISTOR	8.2kΩ 1/16W J		R3096	NRSA63J-102X	MG RESISTOR	1kΩ 1/16W J	
R11	NRSA63J-472X	MG RESISTOR	4.7kΩ 1/16W J		R3097	NRSA63J-102X	MG RESISTOR	1kΩ 1/16W J	
R12	NRSA63J-102X	MG RESISTOR	1kΩ 1/16W J		R3098	NRSA63J-102X	MG RESISTOR	1kΩ 1/16W J	
R36	NRSA63J-472X	MG RESISTOR	4.7kΩ 1/16W J		R3099	NRSA63J-102X	MG RESISTOR	1kΩ 1/16W J	
R37	NRSA63J-103X	MG RESISTOR	10kΩ 1/16W J		R3100	NRSA63J-102X	MG RESISTOR	1kΩ 1/16W J	
R40	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J		R3201	NRSA63J-103X	MG RESISTOR	10kΩ 1/16W J	
R41	NRSA63J-471X	MG RESISTOR	470Ω 1/16W J		R3202	NRSA63J-393X	MG RESISTOR	39kΩ 1/16W J	
R201	NRSA63J-332X	MG RESISTOR	3.3kΩ 1/16W J		R3205	NRSA63J-103X	MG RESISTOR	10kΩ 1/16W J	
R202	NRSA63J-222X	MG RESISTOR	2.2kΩ 1/16W J		R3206	NRSA63J-103X	MG RESISTOR	10kΩ 1/16W J	
R2007	NRSA63J-123X	MG RESISTOR	12kΩ 1/16W J		R3207	NRSA63J-103X	MG RESISTOR	10kΩ 1/16W J	
R2010	NRSA63J-123X	MG RESISTOR	12kΩ 1/16W J		R3208	NRSA63J-103X	MG RESISTOR	10kΩ 1/16W J	
R2013	NRSA63J-123X	MG RESISTOR	12kΩ 1/16W J		R3209	QRE141J-181Y	C RESISTOR	180Ω 1/4W J	
R2014	NRSA63J-394X	MG RESISTOR	390kΩ 1/16W J		R3211	NRSA63J-183X	MG RESISTOR	18kΩ 1/16W J	
R2015	NRSA63J-271X	MG RESISTOR	270Ω 1/16W J		R3212	NRSA63J-121X	MG RESISTOR	120Ω 1/16W J	
R2016	NRSA63J-333X	MG RESISTOR	33kΩ 1/16W J		R3213	NRSA63J-183X	MG RESISTOR	18kΩ 1/16W J	
R2017	NRSA63J-223X	MG RESISTOR	22kΩ 1/16W J		R3214	NRSA63J-121X	MG RESISTOR	120Ω 1/16W J	
R2018	NRSA63J-472X	MG RESISTOR	4.7kΩ 1/16W J		R3215	NRSA63J-183X	MG RESISTOR	18kΩ 1/16W J	
R2019	NRSA63J-472X	MG RESISTOR	4.7kΩ 1/16W J		R3216	NRSA63J-474X	MG RESISTOR	470kΩ 1/16W J	
R2021	NRSA63J-333X	MG RESISTOR	33kΩ 1/16W J		R3217	NRSA63J-334X	MG RESISTOR	330kΩ 1/16W J	
R2022	NRSA63J-103X	MG RESISTOR	10kΩ 1/16W J		R3219	NRSA63J-103X	MG RESISTOR	10kΩ 1/16W J	
R2023	QRE141J-103Y	C RESISTOR	10kΩ 1/4W J		R3220	NRSA63J-562X	MG RESISTOR	5.6kΩ 1/16W J	
R2024	NRSA63J-103X	MG RESISTOR	10kΩ 1/16W J		R3222	NRSA63J-471X	MG RESISTOR	470Ω 1/16W J	
R2053	NRSA63J-123X	MG RESISTOR	12kΩ 1/16W J		R3223	NRSA63J-105X	MG RESISTOR	1MΩ 1/16W J	
R2054	NRSA63J-123X	MG RESISTOR	12kΩ 1/16W J		R3224	NRSA63J-101X	MG RESISTOR	100Ω 1/16W J	
R2055	NRSA63J-3R3X	MG RESISTOR	3.3Ω 1/16W J		R3226	NRSA63J-103X	MG RESISTOR	10kΩ 1/16W J	
R2056	QRE141J-820Y	C RESISTOR	82Ω 1/4W J		R3227	NRSA63J-103X	MG RESISTOR	10kΩ 1/16W J	
R2057	NRSA63J-473X	MG RESISTOR	47kΩ 1/16W J		R3236	NRSA63J-473X	MG RESISTOR	47kΩ 1/16W J	
R2058	NRSA63J-183X	MG RESISTOR	18kΩ 1/16W J		R3237	NRSA63J-472X	MG RESISTOR	4.7kΩ 1/16W J	
R2059	NRSA63J-473X	MG RESISTOR	47kΩ 1/16W J		R3238	NRSA63J-472X	MG RESISTOR	4.7kΩ 1/16W J	
R2060	NRSA63J-183X	MG RESISTOR	18kΩ 1/16W J		R3242	NRSA63J-103X	MG RESISTOR	10kΩ 1/16W J	
R2201	NRSA63J-473X	MG RESISTOR	47kΩ 1/16W J		R3243	NRSA63J-681X	MG RESISTOR	680Ω 1/16W J	
R2202	NRSA63J-682X	MG RESISTOR	6.8kΩ 1/16W J		R3244	NRSA63J-331X	MG RESISTOR	330Ω 1/16W J	
R2205	NRSA63J-473X	MG RESISTOR	47kΩ 1/16W J		R3245	NRSA63J-682X	MG RESISTOR	6.8kΩ 1/16W J	
R2206	NRSA63J-682X	MG RESISTOR	6.8kΩ 1/16W J		R3253	NRSA63J-103X	MG RESISTOR	10kΩ 1/16W J	
R2209	QRE141J-101Y	C RESISTOR	100Ω 1/4W J		R3301	NRSA63J-182X	MG RESISTOR	1.8kΩ 1/16W J	
R2210	NRSA63J-472X	MG RESISTOR	4.7kΩ 1/16W J		R3302	NRSA63J-182X	MG RESISTOR	1.8kΩ 1/16W J	

MODEL	MARK	MODEL	MARK
HR-XVC28BUC	A	HR-XVC29SUC	C
HR-XVC28BUS	B	HR-XVC29SUS	D

Symbol No.	Part No.	Part Name	Description	Local	Symbol No.	Part No.	Part Name	Description	Local
R3303	NRSA63J-182X	MG RESISTOR	1.8kΩ 1/16W J		R8006	NRSA63J-272X	MG RESISTOR	2.7kΩ 1/16W J	
R3304	NRSA63J-102X	MG RESISTOR	1kΩ 1/16W J		R8007	NRSA63J-332X	MG RESISTOR	3.3kΩ 1/16W J	
R3305	NRSA63J-102X	MG RESISTOR	1kΩ 1/16W J		R8008	NRSA63J-332X	MG RESISTOR	3.3kΩ 1/16W J	
R3306	NRSA63J-102X	MG RESISTOR	1kΩ 1/16W J		R8009	NRSA63J-392X	MG RESISTOR	3.9kΩ 1/16W J	
R3307	QRE141J-4R7Y	C RESISTOR	4.7Ω 1/4W J		R8010	NRSA63J-392X	MG RESISTOR	3.9kΩ 1/16W J	
R3308	NRSA63J-472X	MG RESISTOR	4.7kΩ 1/16W J		R8013	NRSA63J-273X	MG RESISTOR	27kΩ 1/16W J	
R3309	NRSA63J-271X	MG RESISTOR	270Ω 1/16W J		R8014	NRSA63J-273X	MG RESISTOR	27kΩ 1/16W J	
R3310	NRSA63J-472X	MG RESISTOR	4.7kΩ 1/16W J		R8015	NRSA63J-821X	MG RESISTOR	820Ω 1/16W J	
R3311	NRSA63J-473X	MG RESISTOR	47kΩ 1/16W J		R8016	NRSA63J-821X	MG RESISTOR	820Ω 1/16W J	
R4001	NRSA63J-222X	MG RESISTOR	2.2kΩ 1/16W J		R8017	NRSA63J-103X	MG RESISTOR	10kΩ 1/16W J	
R4002	NRSA63J-562X	MG RESISTOR	5.6kΩ 1/16W J		R8018	NRSA63J-103X	MG RESISTOR	10kΩ 1/16W J	
R4010	NRSA63J-471X	MG RESISTOR	470Ω 1/16W J		R8052	NRSA63J-562X	MG RESISTOR	5.6kΩ 1/16W J	
R4011	NRSA63J-471X	MG RESISTOR	470Ω 1/16W J		R8053	NRSA63J-562X	MG RESISTOR	5.6kΩ 1/16W J	
R4012	NRSA63J-153X	MG RESISTOR	15kΩ 1/16W J		R8054	NRSA63J-473X	MG RESISTOR	47kΩ 1/16W J	
R4018	NRSA63J-102X	MG RESISTOR	1kΩ 1/16W J		R8055	NRSA63J-473X	MG RESISTOR	47kΩ 1/16W J	
R4019	NRSA63J-102X	MG RESISTOR	1kΩ 1/16W J						
R4022	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J		L5	QQL29BJ-100Z	P COIL	10uH J	
△ R5001	QRZ9046-475Z	C RESISTOR	4.7MΩ 1/2W K		L7	QQL071J-120Y	COIL	12uH J	
R5101	QRE141J-224Y	C RESISTOR	220kΩ 1/4W J		L10	QQL29BJ-100Z	P COIL	10uH J	
R5102	QRE141J-224Y	C RESISTOR	220kΩ 1/4W J		L203	QQL231J-4R7Y	COIL	4.7uH J	
R5103	QRE141J-683Y	C RESISTOR	68kΩ 1/4W J		L2251	QQL29BJ-100Z	P COIL	10uH J	
R5104	QRG02GJ-683	OMF RESISTOR	68kΩ 2W J		L4001	QQL29BJ-100Z	P COIL	10uH J	
R5106	QRT01DJ-R27X	MF RESISTOR	0.27Ω 1W J		L5201	QQR1287-001	CHOKO COIL		
R5107	QRE121J-331Y	C RESISTOR	330Ω 1/2W J		L5202	QQR1287-001	CHOKO COIL		
R5108	NRSA63J-152X	MG RESISTOR	1.5kΩ 1/16W J		L5203	QQR1287-001	CHOKO COIL		
R5109	NRSA63J-681X	MG RESISTOR	680Ω 1/16W J		L5303	QQL231J-220Y	COIL	22uH J	
R5110	NRSA63J-224X	MG RESISTOR	220kΩ 1/16W J		L7101	QQL29BJ-100Z	P COIL	10uH J	
R5111	NRSA63J-101X	MG RESISTOR	100Ω 1/16W J		L7103	QQL29BJ-100Z	P COIL	10uH J	
R5112	NRSA63J-221X	MG RESISTOR	220Ω 1/16W J		L7501	QQL231K-1R0Y	COIL	1uH K	
R5113	NRSA63J-104X	MG RESISTOR	100kΩ 1/16W J		L7502	QQL29BK-1R0Z	P COIL	1uH K	
R5201	QRE141J-221Y	C RESISTOR	220Ω 1/4W J		T2051	QQR1309-001	BIAS COIL		
R5202	NRSA63J-102X	MG RESISTOR	1kΩ 1/16W J		△ T5001	QQS0219-001	SW TRANSF		
R5203	NRSA63J-102X	MG RESISTOR	1kΩ 1/16W J						
R5204	NRSA63J-332X	MG RESISTOR	3.3kΩ 1/16W J		B4	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	
R5205	NRSA63J-123X	MG RESISTOR	12kΩ 1/16W J		B10	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	
R5206	NRSA63J-332X	MG RESISTOR	3.3kΩ 1/16W J		B3003	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	
R5311	NRSA63J-103X	MG RESISTOR	10kΩ 1/16W J		B5301	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	
R5312	NRSA63J-102X	MG RESISTOR	1kΩ 1/16W J		B5303	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	
R5313	NRSA63J-122X	MG RESISTOR	1.2kΩ 1/16W J		B5393	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	
R5316	QRE141J-181Y	C RESISTOR	180Ω 1/4W J		B6020	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	
R5317	NRSA63J-473X	MG RESISTOR	47kΩ 1/16W J		B7501	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	
R5319	NRSA63J-560X	MG RESISTOR	56Ω 1/16W J		B7502	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	
R5320	NRSA63J-153X	MG RESISTOR	15kΩ 1/16W J		△ CD1	QMPD530-172-JD	POWER CORD(US/CA)	1.72m BLACK	
R5321	NRSA63J-473X	MG RESISTOR	47kΩ 1/16W J		CN1	QGF1201C2-09	CONNECTOR	FFC/FPC (1-9)	
R5325	NRSA63J-101X	MG RESISTOR	100Ω 1/16W J		CN2001	QGF1207C1-06	CONNECTOR	FFC/FPC (1-6)	
R6020	NRSA63J-102X	MG RESISTOR	1kΩ 1/16W J		CN2002	QGB2532J1-02	CONNECTOR	B-B (1-2)	
R6021	NRSA63J-102X	MG RESISTOR	1kΩ 1/16W J		CN3001	QGB2032M4-12	CONNECTOR	B-B (1-12)	
R6030	NRSA63J-332X	MG RESISTOR	3.3kΩ 1/16W J		CN3102	QGF1207C1-22	CONNECTOR	FFC/FPC (1-22)	
R6031	NRSA63J-101X	MG RESISTOR	100Ω 1/16W J		CN3301	QGF1016C3-05	CONNECTOR	FFC/FPC (1-5)	
R6050	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J		CN7103	QGF1207C1-10	CONNECTOR	FFC/FPC (1-10)	
R6051	QRE141J-102Y	C RESISTOR	1kΩ 1/4W J		CN7301	QGF1016C3-19	CONNECTOR	FFC/FPC (1-19)	
R6054	NRSA63J-122X	MG RESISTOR	1.2kΩ 1/16W J		CN7302	QGF1016C3-17	CONNECTOR	FFC/FPC (1-17)	
R6055	NRSA63J-472X	MG RESISTOR	4.7kΩ 1/16W J		△ CP3001	QMFZ053-1R5Z-J1	FUSE	1.5A	
R6502	NRSA63J-332X	MG RESISTOR	3.3kΩ 1/16W J		△ CP3101	QMFZ053-1R5Z-J1	FUSE	1.5A	
R7134	NRSA63J-750X	MG RESISTOR	75Ω 1/16W J		△ CP4001	QMFZ053-1R5Z-J1	FUSE	1.5A	
R7135	NRSA63J-221X	MG RESISTOR	220Ω 1/16W J		△ CP5301	QMFZ054-1R5X-J1	FUSE	1.5A	
R7137	NRSA63J-221X	MG RESISTOR	220Ω 1/16W J		△ CP5302	QMFZ054-1R5X-J1	FUSE	1.5A	
R7164	QRE141J-750Y	C RESISTOR	75Ω 1/4W J		△ F5001	QMF51N2-1R25-J5	FUSE	1.25A AC250V	
R7165	QRE141J-750Y	C RESISTOR	75Ω 1/4W J		FC5001	QNG0006-001Z	FUSE CLIP		
R7166	QRE141J-750Y	C RESISTOR	75Ω 1/4W J		FC5002	QNG0006-001Z	FUSE CLIP		
R7173	NRSA63J-181X	MG RESISTOR	180Ω 1/16W J		HS1	LP40090-001A	HEAT SINK	Q5101	
R7174	NRSA63J-222X	MG RESISTOR	2.2kΩ 1/16W J		J7002	QNN0586-001	PIN JACK	AUDIO/VIDEO OUTPUT	
R7175	NRSA63J-181X	MG RESISTOR	180Ω 1/16W J		J7004	QNN0588-001	PIN JACK	DVD OUTPUT	
R7176	NRSA63J-222X	MG RESISTOR	2.2kΩ 1/16W J		J7005	QNN0587-002	PIN JACK	COMPONENT VIDEO OUT	
R7177	NRSA63J-820X	MG RESISTOR	82Ω 1/16W J		J7009	QNN0347-001	SURROUND JACK	COAX OUT	
R7179	NRSA63J-820X	MG RESISTOR	82Ω 1/16W J		JS3001	NSW0238-001	ROTARY ENCODER		
R7183	NRSA63J-181X	MG RESISTOR	180Ω 1/16W J		K5101	QQR0621-001Z	FERRITE BEADS		
R7184	NRSA63J-222X	MG RESISTOR	2.2kΩ 1/16W J		△ LF5002	QQR1515-001	LINE FILTER		
R7501	NRSA02J-100X	MG RESISTOR	10Ω 1/10W J		OT1	LP31158-001A	BOSS(MECHA) 1		
R7502	NRSA63J-301X	MG RESISTOR	300Ω 1/16W J		OT2	LP31185-001A	BOSS(MECHA) 2	(x2)	
R7503	NRSA63J-301X	MG RESISTOR	300Ω 1/16W J		OT3	QYTDST3006ZA	TAP SCREW	M3 x 6mm Q5101	
R7504	NRSA63J-820X	MG RESISTOR	82Ω 1/16W J		S3001	QSW0602-004	PUSH SWITCH	REC.SAFETY	
R7506	NRSA63J-330X	MG RESISTOR	33Ω 1/16W J		SD1	LP31179-001A	SHILD PLATE(PRE/REC)		
R8001	NRSA63J-472X	MG RESISTOR	4.7kΩ 1/16W J		TU6001	QAU0336-003	TUNER		
R8002	NRSA63J-472X	MG RESISTOR	4.7kΩ 1/16W J		△ VA5001	QAF0023-431Z	VARIATOR	430V	
R8003	NRSA63J-102X	MG RESISTOR	1kΩ 1/16W J		W1	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	
R8004	NRSA63J-102X	MG RESISTOR	1kΩ 1/16W J		W2	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	
R8005	NRSA63J-272X	MG RESISTOR	2.7kΩ 1/16W J		W3	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	

MODEL	MARK	MODEL	MARK
HR-XVC28BUC	A	HR-XVC29SUC	C
HR-XVC28BUS	B	HR-XVC29SUS	D

Display board

Block No. [2][8]

Symbol No.	Part No.	Part Name	Description	Local
W4	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	
W5	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	
W6	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	
W7	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	
W8	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	
W9	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	
W10	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	
W11	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	
W12	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	
W23	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	
W25	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	
W30	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	
W31	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	
W32	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	
W33	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	
W34	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	
W36	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	
W37	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	
W38	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	
W39	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	
W40	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	
W41	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	
W42	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	
W43	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	
W45	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	
W47	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	
W49	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	
W50	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	
X2	QAX0739-001	CRYSTAL	3.57MHz	
X3001	QAX0526-001	CRYSTAL	14.31818MHz	

Symbol No.	Part No.	Part Name	Description	Local
PW1	LPA10228-03A1	DISPLAY BOARD ASSY		
IC7002	GP1UM281XKVF	IR DETECT UNIT		
IC7002	or PNA4652M00XB	IR DETECT UNIT		
Q7001	2SA1037AK/QR/-X	TRANSISTOR		
Q7001	or 2SB709A/QR/-X	TRANSISTOR		
Q7001	2SA1530A/QR/-X	TRANSISTOR		
Q7002	2SA1037AK/QR/-X	TRANSISTOR		
Q7002	or 2SB709A/QR/-X	TRANSISTOR		
Q7002	2SA1530A/QR/-X	TRANSISTOR		
Q7003	2SA1037AK/QR/-X	TRANSISTOR		
Q7003	or 2SB709A/QR/-X	TRANSISTOR		
Q7003	2SA1530A/QR/-X	TRANSISTOR		
Q7004	2SA1037AK/QR/-X	TRANSISTOR		
Q7004	or 2SB709A/QR/-X	TRANSISTOR		
Q7004	2SA1530A/QR/-X	TRANSISTOR		
Q7005	2SA1037AK/QR/-X	TRANSISTOR		
Q7005	or 2SB709A/QR/-X	TRANSISTOR		
Q7005	2SA1530A/QR/-X	TRANSISTOR		
Q7006	2SA1037AK/QR/-X	TRANSISTOR		
Q7006	or 2SB709A/QR/-X	TRANSISTOR		
Q7006	2SA1530A/QR/-X	TRANSISTOR		
Q7007	2SA1037AK/QR/-X	TRANSISTOR		
Q7007	or 2SB709A/QR/-X	TRANSISTOR		
Q7007	2SA1530A/QR/-X	TRANSISTOR		
Q7008	2SC2412K/QRS/-X	TRANSISTOR		
Q7008	or 2SD601A/QRS/-X	TRANSISTOR		
Q7008	2SC3928A/QRS/-X	TRANSISTOR		
Q7009	2SC2412K/QRS/-X	TRANSISTOR		
Q7009	or 2SD601A/QRS/-X	TRANSISTOR		
Q7009	2SC3928A/QRS/-X	TRANSISTOR		
Q7010	2SC2412K/QRS/-X	TRANSISTOR		
Q7010	or 2SD601A/QRS/-X	TRANSISTOR		
Q7010	2SC3928A/QRS/-X	TRANSISTOR		
Q7011	2SC2412K/QRS/-X	TRANSISTOR		
Q7011	or 2SD601A/QRS/-X	TRANSISTOR		
Q7011	2SC3928A/QRS/-X	TRANSISTOR		
Q7012	2SC2412K/QRS/-X	TRANSISTOR		
Q7012	or 2SD601A/QRS/-X	TRANSISTOR		
Q7012	2SC3928A/QRS/-X	TRANSISTOR		
Q7013	2SC2412K/QRS/-X	TRANSISTOR		
Q7013	or 2SD601A/QRS/-X	TRANSISTOR		
Q7013	2SC3928A/QRS/-X	TRANSISTOR		
Q7014	2SC2412K/QRS/-X	TRANSISTOR		
Q7014	or 2SD601A/QRS/-X	TRANSISTOR		
Q7014	2SC3928A/QRS/-X	TRANSISTOR		

A/C head board

Block No. [1][2]

Symbol No.	Part No.	Part Name	Description	Local
PW1	LPA10158-01A1	A/C HEAD BOARD ASSY		

DVD bracket board

Block No. [1][3]

Symbol No.	Part No.	Part Name	Description	Local
PW1	LPA10228-03A3	DVD BRACKET BOARD ASSY		

C7011	QEKJ0JM-476Z	E CAPACITOR	47uF 6.3V M
R7001	NRSA63J-221X	MG RESISTOR	220Ω 1/16W J
R7002	NRSA63J-221X	MG RESISTOR	220Ω 1/16W J
R7003	NRSA63J-221X	MG RESISTOR	220Ω 1/16W J
R7004	NRSA63J-221X	MG RESISTOR	220Ω 1/16W J
R7005	NRSA63J-221X	MG RESISTOR	220Ω 1/16W J
R7006	NRSA63J-221X	MG RESISTOR	220Ω 1/16W J
R7007	NRSA63J-221X	MG RESISTOR	220Ω 1/16W J
R7010	NRSA63J-103X	MG RESISTOR	10kΩ 1/16W J
R7011	NRSA63J-122X	MG RESISTOR	1.2kΩ 1/16W J
R7012	NRSA63J-182X	MG RESISTOR	1.8kΩ 1/16W J
R7013	NRSA63J-222X	MG RESISTOR	2.2kΩ 1/16W J
R7014	NRSA63J-272X	MG RESISTOR	2.7kΩ 1/16W J
R7015	NRSA63J-472X	MG RESISTOR	4.7kΩ 1/16W J
R7020	NRSA63J-103X	MG RESISTOR	10kΩ 1/16W J
R7021	NRSA63J-122X	MG RESISTOR	1.2kΩ 1/16W J
R7022	NRSA63J-182X	MG RESISTOR	1.8kΩ 1/16W J
R7023	NRSA63J-222X	MG RESISTOR	2.2kΩ 1/16W J
R7031	NRSA63J-472X	MG RESISTOR	4.7kΩ 1/16W J
R7032	NRSA63J-472X	MG RESISTOR	4.7kΩ 1/16W J
R7033	NRSA63J-472X	MG RESISTOR	4.7kΩ 1/16W J
R7034	NRSA63J-472X	MG RESISTOR	4.7kΩ 1/16W J
R7035	NRSA63J-472X	MG RESISTOR	4.7kΩ 1/16W J
R7036	NRSA63J-472X	MG RESISTOR	4.7kΩ 1/16W J
R7037	NRSA63J-472X	MG RESISTOR	4.7kΩ 1/16W J

MODEL	MARK	MODEL	MARK
HR-XVC28BUC	A	HR-XVC29SUC	C
HR-XVC28BUS	B	HR-XVC29SUS	D

Symbol No.	Part No.	Part Name	Description	Local	Symbol No.	Part No.	Part Name	Description	Local
R7040	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J		Q101	KTA1001/Y/-X	TRANSISTOR		
CN7003	QGF1208F1-22	CONNECTOR	FFC/FPC (1-22)		Q101	or 2SB1424/R/-W	TRANSISTOR		
DI7001	ZDP-17902AEG-21	LED			Q102	2SC4617/R/-X	TRANSISTOR		
S7001	QSW1061-001Z	TACT SWITCH	DVD OPEN/CLOSE		Q103	KTA1001/Y/-X	TRANSISTOR		
S7002	QSW1061-001Z	TACT SWITCH	PROGRESSIVE SCAN		Q103	or 2SB1424/R/-W	TRANSISTOR		
S7003	QSW1061-001Z	TACT SWITCH	CH+		Q104	2SC4617/R/-X	TRANSISTOR		
S7004	QSW1061-001Z	TACT SWITCH	FF		Q105	UN2119-X	TRANSISTOR		
S7005	QSW1061-001Z	TACT SWITCH	REW		C101	NCB31CK-104X	C CAPACITOR	0.1uF 16V K	
S7006	QSW1061-001Z	TACT SWITCH	REC		C102	NCB31CK-104X	C CAPACITOR	0.1uF 16V K	
S7010	QSW1061-001Z	TACT SWITCH	CH-		C103	NCB31CK-104X	C CAPACITOR	0.1uF 16V K	
S7011	QSW1061-001Z	TACT SWITCH	PLAY		C104	NCB31CK-104X	C CAPACITOR	0.1uF 16V K	
S7012	QSW1061-001Z	TACT SWITCH	STOP		C105	NEA70JM-476X	E CAPACITOR	47uF 6.3V M	
S7013	QSW1061-001Z	TACT SWITCH	VCR/DVD		C106	NBE20JM-226X	TA E CAPACITOR	22uF 6.3V M	

Switch/jack board

Block No. [3][6]

Symbol No.	Part No.	Part Name	Description	Local
PW1	LPA10228-03A2	SWITCH/JACK BOARD ASSY		
R7025	NRSA63J-472X	MG RESISTOR	4.7kΩ 1/16W J	
R7191	NRSA63J-750X	MG RESISTOR	75Ω 1/16W J	
CN7191	QGF1201F2-10	CONNECTOR	FFC/FPC (1-10)	
J7191	QNN0673-001	PIN JACK	FRONT VIDEO AUDIO IN	
S7014	QSW1061-001Z	TACT SWITCH	POWER	
S7015	QSW1061-001Z	TACT SWITCH	EJECT	

Loading motor board

Block No. [5][5]

Symbol No.	Part No.	Part Name	Description	Local
PW1	LPA10158-01A2	LOADING MOTOR BOARD ASSY		

Switch board

Block No. [9][8]

Symbol No.	Part No.	Part Name	Description	Local
CN1	QGF1016F3-05	CONNECTOR	FFC/FPC (1-5)	
S1	QSW1007-001	DETECT SWITCH		

DVD servo control board

Block No. [9][9]

Symbol No.	Part No.	Part Name	Description	Local
IC201	LA6502-X	IC		
IC301	MN2DS0003AA-H	IC		
IC302	LM1117MP-ADJ-X	IC		
IC453	S-80827CNNB-W	IC		
IC505	K4S641632H-UC75	IC		
IC505	or K4S641632H-TC75	IC(DIGITAL)		
IC505	or K4S641632F-TC60	IC		
IC505	or K4S641632F-TC75	IC(DIGITAL)		
IC509	SA16M90TF-R0163	IC(FLASH)	(SERVICE)	A,C
IC509	SA16M90TF-R0093	IC(FLASH)	(SERVICE)	B,D
IC701	AK4384VT-X	IC		

C107	NCB31CK-104X	C CAPACITOR	0.1uF 16V K
C108	NEA70JM-476X	E CAPACITOR	47uF 6.3V M
C111	NCB31CK-104X	C CAPACITOR	0.1uF 16V K
C204	NCB31CK-104X	C CAPACITOR	0.1uF 16V K
C205	NCB31HK-271X	C CAPACITOR	270pF 50V K
C206	NDC31HJ-151X	C CAPACITOR	150pF 50V J
C208	NCB31HK-561X	C CAPACITOR	560pF 50V K
C211	NCB31HK-223X	C CAPACITOR	0.022uF 50V K
C212	NCB31CK-103X	C CAPACITOR	0.01uF 16V K
C217	NCB31CK-104X	C CAPACITOR	0.1uF 16V 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	8200pF 50V K
C258	NCB31CK-153X	C CAPACITOR	0.015uF 16V K
C259	NCB31CK-153X	C CAPACITOR	0.015uF 16V K
C260	NCB31EK-223X	C CAPACITOR	0.022uF 25V K
C261	NCB31EK-223X	C CAPACITOR	0.022uF 25V K
C262	NCB31EK-223X	C CAPACITOR	0.022uF 25V K
C264	NEA70JM-227X	E CAPACITOR	220uF 6.3V M
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	1uF 16V K
C305	NCB31CK-104X	C CAPACITOR	0.1uF 16V K
C306	NCB31CK-104X	C CAPACITOR	0.1uF 16V K
C307	NCB31CK-104X	C CAPACITOR	0.1uF 16V K
C308	NCB31CK-104X	C CAPACITOR	0.1uF 16V K
C309	NCB31CK-104X	C CAPACITOR	0.1uF 16V K
C310	NCB31CK-104X	C CAPACITOR	0.1uF 16V K
C311	NCB31CK-104X	C CAPACITOR	0.1uF 16V K
C312	NCB31CK-104X	C CAPACITOR	0.1uF 16V K
C313	NCB31CK-104X	C CAPACITOR	0.1uF 16V K
C314	NCB31CK-104X	C CAPACITOR	0.1uF 16V K
C315	NCB31CK-104X	C CAPACITOR	0.1uF 16V K
C316	NCB31CK-104X	C CAPACITOR	0.1uF 16V K
C317	NCB31CK-104X	C CAPACITOR	0.1uF 16V K
C318	NCB31CK-104X	C CAPACITOR	0.1uF 16V K
C319	NCB31CK-104X	C CAPACITOR	0.1uF 16V K
C320	NCB31CK-104X	C CAPACITOR	0.1uF 16V K
C321	NCB31CK-104X	C CAPACITOR	0.1uF 16V K
C322	NCB31CK-104X	C CAPACITOR	0.1uF 16V K
C323	NCB31CK-104X	C CAPACITOR	0.1uF 16V K
C324	NCB21CK-105X	C CAPACITOR	1uF 16V K
C325	NDC31HJ-180X	C CAPACITOR	18pF 50V J
C326	NDC31HJ-150X	C CAPACITOR	15pF 50V J
C327	NCB31HK-103X	C CAPACITOR	0.01uF 50V K
C330	NCB31CK-104X	C CAPACITOR	0.1uF 16V K
C331	NCB31CK-333X	C CAPACITOR	0.033uF 16V K
C332	NCB31CK-104X	C CAPACITOR	0.1uF 16V K
C333	NCB31CK-104X	C CAPACITOR	0.1uF 16V K
C334	NCB31CK-104X	C CAPACITOR	0.1uF 16V K
C335	NCB31CK-104X	C CAPACITOR	0.1uF 16V K
C337	NCB31CK-183X	C CAPACITOR	0.018uF 16V K
C338	NCB31HK-562X	C CAPACITOR	5600pF 50V 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	0.1uF 16V K
C348	NCB31CK-104X	C CAPACITOR	0.1uF 16V K
C349	NCB31CK-104X	C CAPACITOR	0.1uF 16V K
C350	NCB31CK-104X	C CAPACITOR	0.1uF 16V K
C356	NCB21CK-105X	C CAPACITOR	1uF 16V K

MODEL	MARK	MODEL	MARK
HR-XVC28BUC	A	HR-XVC29SUC	C
HR-XVC28BUS	B	HR-XVC29SUS	D

Symbol No.	Part No.	Part Name	Description	Local	Symbol No.	Part No.	Part Name	Description	Local
C359	NCB31CK-104X	C CAPACITOR	0.1uF 16V K		R307	NRSA63J-102X	MG RESISTOR	1kΩ 1/16W J	
C371	NCB21CK-105X	C CAPACITOR	1uF 16V K		R308	NRSA63J-223X	MG RESISTOR	22kΩ 1/16W J	
C374	NCB31CK-104X	C CAPACITOR	0.1uF 16V K		R309	NRSA63J-104X	MG RESISTOR	100kΩ 1/16W J	
C391	NCB31CK-104X	C CAPACITOR	0.1uF 16V K		R310	NRS125J-R47X	MG RESISTOR	0.47Ω 1/2W J	
C392	NCB31CK-104X	C CAPACITOR	0.1uF 16V K		R312	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	
C455	NCB31CK-103X	C CAPACITOR	0.01uF 16V K		R313	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	
C505	NDC31HJ-330X	C CAPACITOR	33pF 50V J		R314	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	
C506	NDC31HJ-330X	C CAPACITOR	33pF 50V J		R315	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	
C507	NDC31HJ-330X	C CAPACITOR	33pF 50V J		R316	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	
C508	NDC31HJ-330X	C CAPACITOR	33pF 50V J		R317	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	
C509	NDC31HJ-330X	C CAPACITOR	33pF 50V J		R318	NRSA63J-333X	MG RESISTOR	33kΩ 1/16W J	
C510	NDC31HJ-330X	C CAPACITOR	33pF 50V J		R319	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	
C547	NCB31CK-104X	C CAPACITOR	0.1uF 16V K		R320	NRSA63J-103X	MG RESISTOR	10kΩ 1/16W J	
C551	NCB31CK-104X	C CAPACITOR	0.1uF 16V K		R322	NRSA63J-473X	MG RESISTOR	47kΩ 1/16W J	
C552	NCB31CK-104X	C CAPACITOR	0.1uF 16V K		R325	NRSA63J-331X	MG RESISTOR	330Ω 1/16W J	
C553	NBE20JM-226X	TA E CAPACITOR	22uF 6.3V M		R326	NRSA63J-331X	MG RESISTOR	330Ω 1/16W J	
C554	NCB31CK-104X	C CAPACITOR	0.1uF 16V K		R333	NRSA63J-163X	MG RESISTOR	16kΩ 1/16W J	
C555	NCB31CK-104X	C CAPACITOR	0.1uF 16V K		R334	NRSA63J-151X	MG RESISTOR	150Ω 1/16W J	
C556	NCB31CK-104X	C CAPACITOR	0.1uF 16V K		R335	NRSA63J-151X	MG RESISTOR	150Ω 1/16W J	
C557	NCF31AZ-105X	C CAPACITOR	1uF 10V Z		R336	NRSA63J-151X	MG RESISTOR	150Ω 1/16W J	
C558	NCB31CK-104X	C CAPACITOR	0.1uF 16V K		R337	NRSA63J-151X	MG RESISTOR	150Ω 1/16W J	
C559	NCB31CK-104X	C CAPACITOR	0.1uF 16V K		R338	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	
C701	NCB31CK-104X	C CAPACITOR	0.1uF 16V K		R339	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	
C704	NEA70JM-227X	E CAPACITOR	220uF 6.3V M		R340	NRSA63D-303X	MG RESISTOR	30kΩ 1/16W D	
C706	NEA71CM-106X	E CAPACITOR	10uF 16V M		R341	NRSA63D-362X	MG RESISTOR	3.6kΩ 1/16W D	
C707	NCB31CK-104X	C CAPACITOR	0.1uF 16V K		R342	NRSA63D-222X	MG RESISTOR	2.2kΩ 1/16W D	
C721	NCB31HK-102X	C CAPACITOR	1000pF 50V K		R343	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	
C902	NCB31CK-104X	C CAPACITOR	0.1uF 16V K		R344	NRSA63J-6R8X	MG RESISTOR	6.8Ω 1/16W J	
C903	NCB31CK-104X	C CAPACITOR	0.1uF 16V K		R345	NQR0129-002X	FERRITE BEADS		
C904	NCB31CK-104X	C CAPACITOR	0.1uF 16V K		R351	NRSA63J-681X	MG RESISTOR	680Ω 1/16W J	
C906	NCB31CK-104X	C CAPACITOR	0.1uF 16V K		R352	NRSA63J-105X	MG RESISTOR	1MΩ 1/16W J	
C907	NRSA02J-100X	MG RESISTOR	10Ω 1/10W J		R357	NRSA63J-101X	MG RESISTOR	100Ω 1/16W J	
R101	NRSA63J-101X	MG RESISTOR	100Ω 1/16W J		R358	NRSA63J-101X	MG RESISTOR	100Ω 1/16W J	
R102	NRSA63J-101X	MG RESISTOR	100Ω 1/16W J		R361	NRSA63J-101X	MG RESISTOR	100Ω 1/16W J	
R103	NRSA63J-243X	MG RESISTOR	24kΩ 1/16W J		R362	NRSA63J-331X	MG RESISTOR	330Ω 1/16W J	
R104	NRSA63J-303X	MG RESISTOR	30kΩ 1/16W J		R363	NRSA63J-151X	MG RESISTOR	150Ω 1/16W J	
R105	NRS125J-180X	MG RESISTOR	18Ω 1/2W J		R372	NRSA63J-102X	MG RESISTOR	1kΩ 1/16W J	
R106	NRSA63J-2R2X	MG RESISTOR	2.2Ω 1/16W J		R373	NRSA63J-102X	MG RESISTOR	1kΩ 1/16W J	
R107	NRSA63J-102X	MG RESISTOR	1kΩ 1/16W J		R378	NRSA63J-102X	MG RESISTOR	1kΩ 1/16W J	
R108	NRSA63J-471X	MG RESISTOR	470Ω 1/16W J		R379	NRSA63J-102X	MG RESISTOR	1kΩ 1/16W J	
R109	NRSA63J-331X	MG RESISTOR	330Ω 1/16W J		R384	NRSA63J-102X	MG RESISTOR	1kΩ 1/16W J	
R110	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J		R385	NRSA63J-102X	MG RESISTOR	1kΩ 1/16W J	
R111	NRSA63J-243X	MG RESISTOR	24kΩ 1/16W J		R390	NRSA63J-472X	MG RESISTOR	4.7kΩ 1/16W J	
R112	NRSA63J-303X	MG RESISTOR	30kΩ 1/16W J		R391	NAD0025-103X	N THERMISTOR	10kΩ	
R113	NRS125J-270X	MG RESISTOR	27Ω 1/2W J		R392	NRSA63J-103X	MG RESISTOR	10kΩ 1/16W J	
R114	NRSA63J-2R2X	MG RESISTOR	2.2Ω 1/16W J		R393	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	
R115	NRSA63J-101X	MG RESISTOR	100Ω 1/16W J		R394	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	
R116	NRSA63J-471X	MG RESISTOR	470Ω 1/16W J		R395	NRSA02J-0R0X	MG RESISTOR	0Ω 1/10W J	
R117	NRSA63J-331X	MG RESISTOR	330Ω 1/16W J		R457	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	
R118	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J		R458	NRSA63J-102X	MG RESISTOR	1kΩ 1/16W J	
R119	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J		R501	NRSA63J-471X	MG RESISTOR	470Ω 1/16W J	
R120	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J		R502	NRSA63J-471X	MG RESISTOR	470Ω 1/16W J	
R122	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J		R503	NRSA63J-101X	MG RESISTOR	100Ω 1/16W J	
R123	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J		R551	NRSA63J-102X	MG RESISTOR	1kΩ 1/16W J	
R125	NRS125J-1R0X	MG RESISTOR	1Ω 1/2W J		R553	NRSA63J-151X	MG RESISTOR	150Ω 1/16W J	
R126	NRSA02J-101X	MG RESISTOR	100Ω 1/10W J		R554	NRSA63J-151X	MG RESISTOR	150Ω 1/16W J	
R128	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J		R555	NRSA63J-151X	MG RESISTOR	150Ω 1/16W J	
R204	NRSA63J-273X	MG RESISTOR	27kΩ 1/16W J		R556	NRSA63J-151X	MG RESISTOR	150Ω 1/16W J	
R205	NRSA63J-273X	MG RESISTOR	27kΩ 1/16W J		R557	NRSA63J-151X	MG RESISTOR	150Ω 1/16W J	
R206	NRSA63J-303X	MG RESISTOR	30kΩ 1/16W J		R558	NRSA63J-102X	MG RESISTOR	1kΩ 1/16W J	
R207	NRSA63J-473X	MG RESISTOR	47kΩ 1/16W J		R701	NRSA63J-100X	MG RESISTOR	10Ω 1/16W J	
R208	NRSA63J-223X	MG RESISTOR	22kΩ 1/16W J		R702	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	
R213	NRSA63J-103X	MG RESISTOR	10kΩ 1/16W J		R710	NRSA63J-100X	MG RESISTOR	10Ω 1/16W J	
R214	NRSA63J-103X	MG RESISTOR	10kΩ 1/16W J		R711	NRSA63J-101X	MG RESISTOR	100Ω 1/16W J	
R215	NRSA63J-103X	MG RESISTOR	10kΩ 1/16W J		R712	NRSA63J-101X	MG RESISTOR	100Ω 1/16W J	
R219	NRSA63J-183X	MG RESISTOR	18kΩ 1/16W J		R713	NRSA63J-101X	MG RESISTOR	100Ω 1/16W J	
R220	NRSA63J-243X	MG RESISTOR	24kΩ 1/16W J		R716	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	
R221	NRSA63J-682X	MG RESISTOR	6.8kΩ 1/16W J		R718	NRSA63J-473X	MG RESISTOR	47kΩ 1/16W J	
R251	NRS125J-R47X	MG RESISTOR	0.47Ω 1/2W J		R719	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J	
R252	NRSA63J-2R2X	MG RESISTOR	2.2Ω 1/16W J		R909	NRSA02J-100X	MG RESISTOR	10Ω 1/10W J	
R254	NRSA63J-203X	MG RESISTOR	20kΩ 1/16W J		R911	NRSA02J-0R0X	MG RESISTOR	0Ω 1/10W J	
R255	NRSA63J-103X	MG RESISTOR	10kΩ 1/16W J		CN101	QGF0523F1-24W	CONNECTOR	FFC/FPC (1-24)	
R257	NRSA63J-0R0X	MG RESISTOR	0Ω 1/16W J		CN201	QGF1016F2-08W	CONNECTOR	FFC/FPC (1-8)	
R259	NRSA63J-103X	MG RESISTOR	10kΩ 1/16W J		CN501	QGF1016F2-19W	CONNECTOR	FFC/FPC (1-19)	
R302	NRSA63J-240X	MG RESISTOR	24Ω 1/16W J		CN503	QGF1016F2-17W	CONNECTOR	FFC/FPC (1-17)	
R303	NRSA63J-270X	MG RESISTOR	27Ω 1/16W J		K101	NRSA02J-0R0X	MG RESISTOR	0Ω 1/10W J	
R306	NRSA63J-102X	MG RESISTOR	1kΩ 1/16W J		K102	NRSA02J-0R0X	MG RESISTOR	0Ω 1/10W J	

MODEL	MARK	MODEL	MARK
HR-XVC28BUC	A	HR-XVC29SUC	C
HR-XVC28BUS	B	HR-XVC29SUS	D

△ Symbol No. Part No. Part Name Description Local

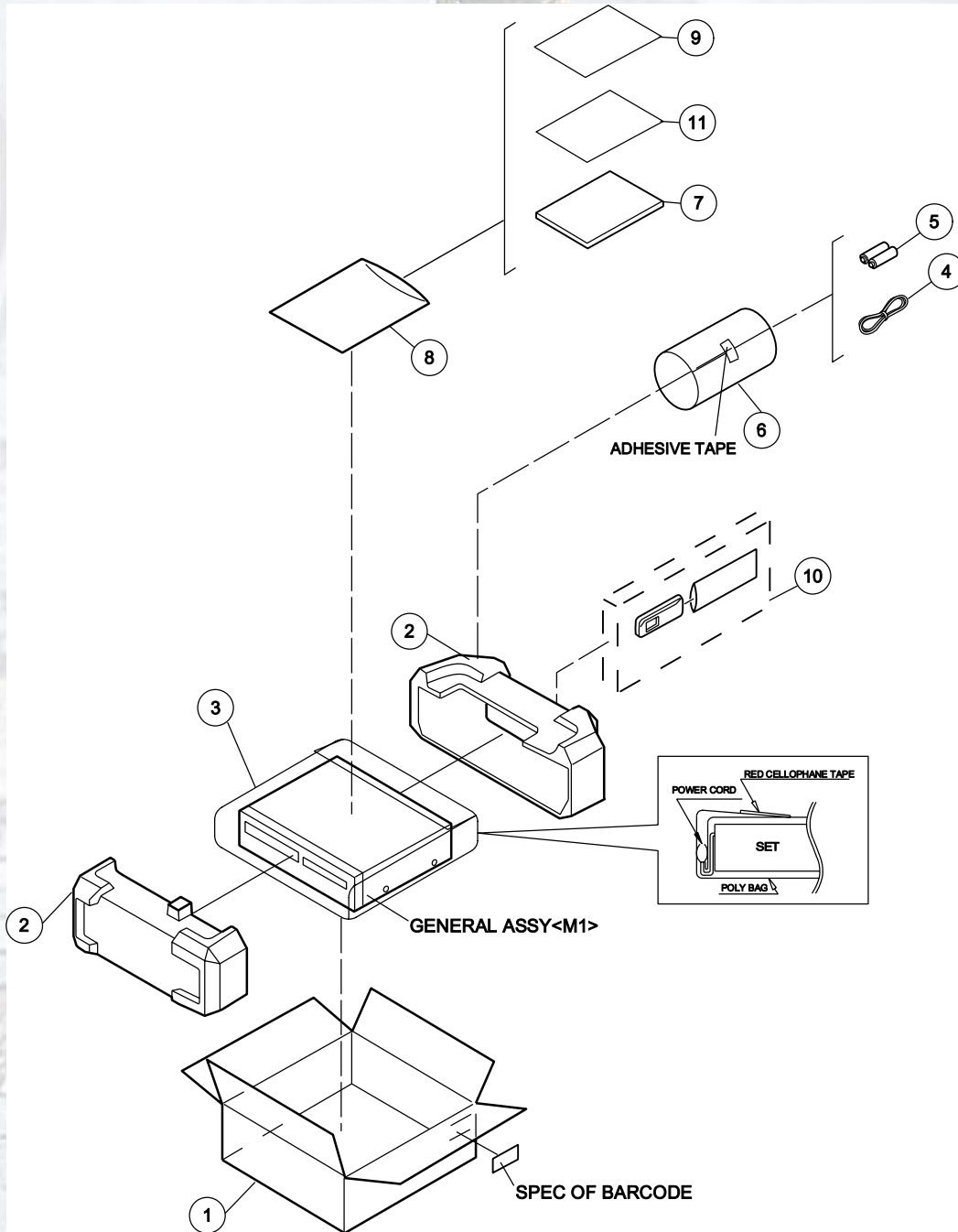
K301	NRSA02J-0R0X	MG RESISTOR	0Ω 1/10W J	
K302	NRSA63J-101X	MG RESISTOR	100Ω 1/16W J	
K303	NRSA63J-101X	MG RESISTOR	100Ω 1/16W J	
K304	NRSA02J-0R0X	MG RESISTOR	0Ω 1/10W J	
K501	NQR0129-002X	FERRITE BEADS		
K502	NQR0502-001X	FERRITE BEADS		
K551	NQR0129-002X	FERRITE BEADS		
K552	NQR0129-002X	FERRITE BEADS		
K553	NQR0129-002X	FERRITE BEADS		
K554	NQR0129-002X	FERRITE BEADS		
K555	NQR0022-005X	FERRITE BEADS		
K556	NQR0129-002X	FERRITE BEADS		
X351	NAX0550-001X	CRYSTAL	27.000MHz	



Packing materials and accessories parts list

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

Block No. M5MM



MODEL	MARK	MODEL	MARK
HR-XVC28BUC	A	HR-XVC29SUC	C
HR-XVC28BUS	B	HR-XVC29SUS	D

Packing and accessories

Block No. [M][5][M][M]

△ Symbol No.	Part No.	Part Name	Description	Local
1	LP31263-044A	PACKING CASE		A,B
1	LP31263-046A	PACKING CASE		C,D
2	LP31265-001E	CUSHION ASSY		
3	LP41038-001A	POLY BAG		
4	QAM0501-003	RF CABLE		
5	-----	BATTERY	R6 TYPE(x2)	
6	QPC02202230P	POLY BAG	22cm x 22cm	
△ 7	LPT1014-001A	INST.BOOK	(ENGLISH)	A
△ 7	LPT1014-002A	INST.BOOK	(FRENCH)	A
△ 7	LPT1017-001A	INST.BOOK	(ENGLISH)	B
△ 7	LPT1019-001A	INST.BOOK	(ENGLISH)	C
△ 7	LPT1019-002A	INST.BOOK	(FRENCH)	C
△ 7	LPT1018-001A	INST.BOOK	(ENGLISH)	D
8	QPC02503530P	POLY BAG	25cm x 35cm	
9	BT-51034-2	REGISTRATION CARD		B,D
10	RM-SHR003U	REMOCON		
11	-----	WARRANTY CARD	BT-52006-2	A,C

