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Service Manual

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ORDER NO: MAD0405004C2

Service Manual

Video Cassette Recorder

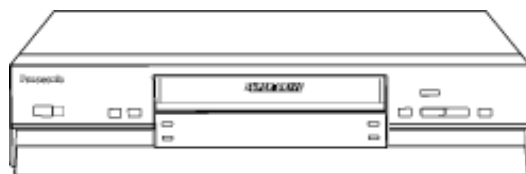


- NV-HV51EF
NV-HV61EF

R4-MECHANISM

Colour

(S).....Silver Type



NV-HV51EF: N2QA, B0000090
NV-HV61EF: N2QA, B0000088

SPECIFICATIONS

Power supply:	AC220-240 V, 50/60 Hz
Power consumption:	18 W±1.3W standby mode: 3 W±0.3W
Dimensions:	430 (W)×276 (D)×89 (H) mm (excluding protrusions)
Mass:	3.5kg
Operating temperature range:	+5°C to+40°C
Operating humidity range:	35% to 80% RH (no condensation)
Video Recording signal:	PAL/ SECAM/ MESECAM
Video Playback:	SP/LP/EP
TV tuner system:	VHF: E2-E12 UHF: 21-69 CATV: Hyper S1-S41
Video Recording system:	2 rotary heads helical scanning system
Video heads:	

4 rotary heads	1 pair for recording and playback (L-R heads) 1 pair for trick play (L'-R' heads)
----------------	--

Video input:

EURO AV (AV1/ AV2)	21 pin connector 1.0 Vp-p, 75Ω terminated
--------------------	--

Video output:

EURO AV (AV1/ AV2)	21 pin connector 1.0 Vp-p, 75Ω terminated
--------------------	--

Audio heads:

1 stationary head	Mono
2 channels	Hi-Fi Sound-Stereo

Audio input:

EURO AV (AV1/ AV2)	21 pin connector -6dBV (500mV) more than 10kΩ
--------------------	---

Audio output:

EURO AV (AV1/ AV2)	21 pin connector -6dBV (500mV) less than 1kΩ
AUDIO OUT (NV-SV61EF)	PHONO TYPE connector -6dBV (500mV) less than 1kΩ

Videotape speed:

SP:	23.39mm/s
LP:	11.695mm/s
EP:	7.796mm/s
Record/ Playback time:	SP: 4hours (240min. tape) LP: 8hours (240min. tape) EP: 12hours (240min. tape)
FF/ REW time:	43sec. (180min. tape)

Standard Accessories:

1pc. Remote Controller
1pc. AC Mains Lead
2pc. "R6" size batteries
1pc. AV21pin Cable

Solder:

Use of lead free solder (PbF).

Note:

Specifications are subject to change without notice.
Mass and dimensions are approximate.

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⚠ WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public. It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product. Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

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1 INTRODUCTION

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1.1 INFORMATIONS

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This service manual contains technical information which will allow service personnel to understand and service this model.

If the circuit is changed or modified, this information will be followed by supplementary service manual to be filed with original service manual.

Note:

1. Adjustment procedures, Disassembly Procedures and Assembly Procedures for VCR Mechanism Chassis are separate volume from this service manual. Please refer to the service manual for R4 Mechanism Chassis for EURO model (MAD0403002C2).

Model No.	Indication Mark
NV-HV51EF	51EF
NV-HV61EF	61EF

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2 SAFETY PRECAUTIONS

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2.1 ABOUT LEAD FREE SOLDER (PbF)

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Distinction of PbF PCB:

PCBs (manufactured) using lead free solder will have a PbF stamp on the PCB. For repair use only lead free handsolder.

Caution:

- Pb free solder has a higher melting point than standard solder. Typically the melting point is 50-70°F (30-40°C) higher.

Please use a high temperature soldering iron. In case of soldering iron with temperature control, please set it to 700 ±20°F (370±20°C)

- Pb free solder will tend to splash when heated too high (about 1100°F / 600°C).
- When soldering or unsoldering, please completely remove all of the solder on the pins or solder area and be sure to heat the soldering points with the Pb free solder until it melts enough.

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2.2 GENERAL GUIDELINES

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1. When servicing, observe the original lead dress. If a short circuit is found, replace all parts which have been overheated or damaged by the short circuit.
2. After servicing, see to it that all the protective devices such as insulation barriers, insulation papers shields are properly installed.
3. After servicing, make the following leakage current checks to prevent the customer from being exposed to shock hazards.

[2.2.1 LEAKAGE CURRENT COLD CHECK](#)

[2.2.2 LEAKAGE CURRENT HOT CHECK](#)

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2.2.1 LEAKAGE CURRENT COLD CHECK

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1. Unplug the AC cord and connect a jumper between the two prongs on the plug.
2. Measure the resistance value, with an ohmmeter, between the jumpered AC plug and each exposed metallic cabinet part on the equipment such as screwheads, connectors, control shafts, etc. When the exposed metallic part has a return path to the chassis, the reading should be between $1\text{M}\Omega$ and $5.2\text{M}\Omega$.

When the exposed metal does not have a return path to the chassis, the reading must be infinite.

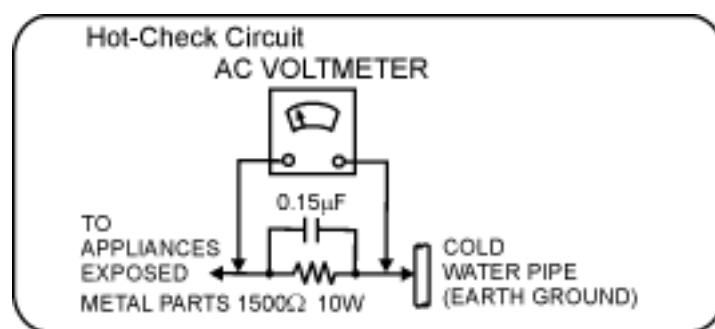
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2.2.2 LEAKAGE CURRENT HOT CHECK

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1. Plug the AC cord directly into the AC outlet. Do not use an isolation transformer for this check.
2. Connect a $1.5\text{k}\Omega$, 10 watts resistor, in parallel with a $0.15\ \mu\text{F}$ capacitor, between each exposed metallic part on the set and a good earth ground such as a water pipe, as shown in see [Figure 1](#).
3. Use an AC voltmeter, with 1000 ohms/volt or more sensitivity, to measure the potential across the resistor.
4. Check each exposed metallic part, and measure the voltage at each point.
5. Reverse the AC plug in the AC outlet and repeat each of the above measurements.
6. The potential at any point should not exceed 0.75 volts RMS. A leakage current tester (Simpson Model 229 or equivalent) may be used to make the hot checks, leakage current must not exceed 1/2 milliamp. In case a measurement is outside of the limits specified, there is a possibility of a shock hazard, and the equipment should be repaired and rechecked before it is returned to the customer.

Figure 1



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3 PREVENTION OF ELECTRO STATIC DISCHARGE (ESD) TO ELECTROSTATICALLY SENSITIVE (ES) DEVICES

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Some semiconductor (solid state) devices can be damaged easily by static electricity. Such components commonly are called Electrostatically Sensitive (ES) Devices. Examples of typical ES devices are integrated circuits and some field-effect transistors and semiconductor "chip" components. The following techniques should be used to help reduce the incidence of component damage caused by electro static discharge (ESD).


1. Immediately before handling any semiconductor component or semiconductor-equipped assembly, drain off any ESD on your body by touching a known earth ground. Alternatively, obtain and wear a commercially available discharging ESD wrist strap, which should be removed for potential shock reasons prior to applying power to the unit under test.
2. After removing an electrical assembly equipped with ES devices, place the assembly on a conductive surface such as aluminum foil, to prevent electrostatic charge buildup or exposure of the assembly.
3. Use only a grounded-tip soldering iron to solder or unsolder ES devices.
4. Use only an anti-static solder removal device. Some solder removal devices not classified as "anti-static (ESD protected)" can generate electrical charge sufficient to damage ES devices.
5. Do not use freon-propelled chemicals. These can generate electrical charges sufficient to damage ES devices.
6. Do not remove a replacement ES device from its protective package until immediately before you are ready to install it. (Most replacement ES devices are packaged with leads electrically shorted together by conductive foam, aluminium foil or comparable conductive material).
7. Immediately before removing the protective material from the leads of a replacement ES device, touch the protective material to the chassis or circuit assembly into which the device will be installed.

Caution

Be sure no power is applied to the chassis or circuit, and observe all other safety precautions.

8. Minimize bodily motions when handling unpackaged replacement ES devices. (Otherwise harmless motion such as the brushing together of your clothes fabric or the lifting of your foot from a carpeted floor can generate static electricity (ESD) sufficient to damage an ES device).

IMPORTANT SAFETY NOTICE

There are special components used in this equipment which are important for safety. These parts are marked by  in the schematic diagrams, Exploded Views and replacement parts list. It is essential that these critical parts should be replaced with manufacturer's specified parts to prevent shock, fire, or other hazards. Do not modify the original design without permission of manufacturer.

[3.1 GROUNDING FOR ELECTROSTATIC BREAKDOWN PREVENTION](#)

[3.1.1 WORKTABLE GROUNDING](#)

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3.1 GROUNDING FOR ELECTROSTATIC BREAKDOWN PREVENTION

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Proceed servicing works under the working environment where grounding works is completed.

[3.1.1 WORKTABLE GROUNDING](#)

[3.1.2 HUMAN BODY GROUNDING](#)

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3.1.1 WORKTABLE GROUNDING

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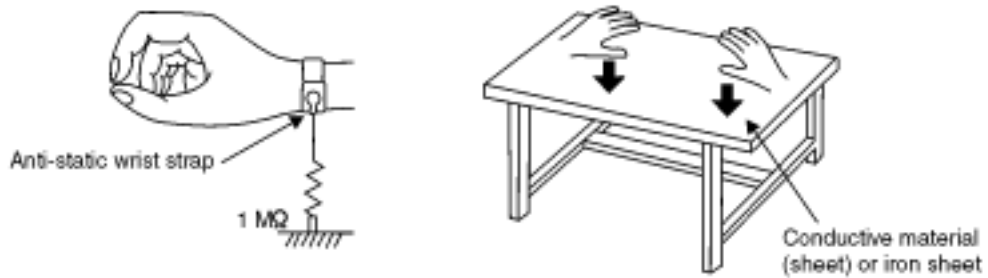
1. Put a conductive material (sheet) or iron sheet on the area where the optical pickup is placed, and ground the sheet.

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3.1.2 HUMAN BODY GROUNDING

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1. Use the anti-static wrist strap to discharge the static electricity form your body.



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4 GENERAL DESCRIPTION

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[4.2.4 ATTENTION FOR REPLACING THE DD CYLINDER](#)

[4.2.5 FLAT CARD CABLE INSTALLATION](#)

[4.3 SELF-DIAGNOSIS & SERVICE INFORMATION DISPLAY](#)

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4.2.1 REPLACING IC6002/EEPROM

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When the EEPROM: IC6002 is replaced, applicable model code, option code and electrical adjustment data will not be available.





Therefore, enter and/or adjust the necessary data after replacing IC6002 by referring following procedure.

STEP1.REPLACE THE IC6002

1. Remove the PCB with Mechanism unit by referring the Disassembly procedure.
2. Disconnect the AC plug and replace the IC6002.

STEP2.INPUT THE MODEL & OPTION CODE

1. Set up the applicable model code and option code by ordering the following table.

PROCEDURE	F.I.P. DISPLAY
Turn on the Service Mode 1.Press the FF key and the EJECT key simultaneously for more than 3 seconds.	
Activate the Service Mode 2 2.While keep placing FF key, press the EJECT key in twice.	
Activate the Entering Mode. 3.Press the EJECT key for more than 3 seconds.	
Set the Mode 2. 4.Press the CH UP key in twice.	


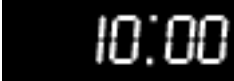
<p>Display the Setting Code. 5.Press the POWER Button to turn the power on.</p>	 <p>(Colon starts flashing)</p>
<p>Enter the Model and Option Code. 6.Service Screen is displayed on the monitor. 7.Set the applicable Model and Option code by using REW, PLAY, STOP and FF keys on the RemoteController, see Fig.S1 & S2.</p>	
<p>Exit from Service Mode. 8.Press the POWER Button to turn the power off. 9. Press FF and EJECT keys simultaneously in 6 times.</p>	 <p>(Normal Indication)</p>

Fig. S1 Service Screen Sample for NV-HV61EF

Service	
MAIN	VLUP1.02
ACS	NONE
Err	00 00 00
MC	45
OC 1	7C
OC 2	30
CLK	- 1
V/P	OFF (depend)

Fig. S2 Model Code & Option Code

Model No.	Model Code	Option Code	
		1	2
NV-HV51EF	45	08	20
NV-HV61EF	45	7C	30

NOTE:

Since all electrical adjustments data is still not available, perform the Electrical Adjustment continuously.

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4.2.2 REMOVAL OF CASSETTE TAPE

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When the cassette tape could not be uninstalled from an electrical malfunction, there are 2 ways to remove a cassette tape.

1. Removal by compulsory unloading.

- A. Press FF and EJECT button simultaneously for more than 3 seconds and set the Service Mode to 7.
- B. Press STOP button in order to unload the mechanism.

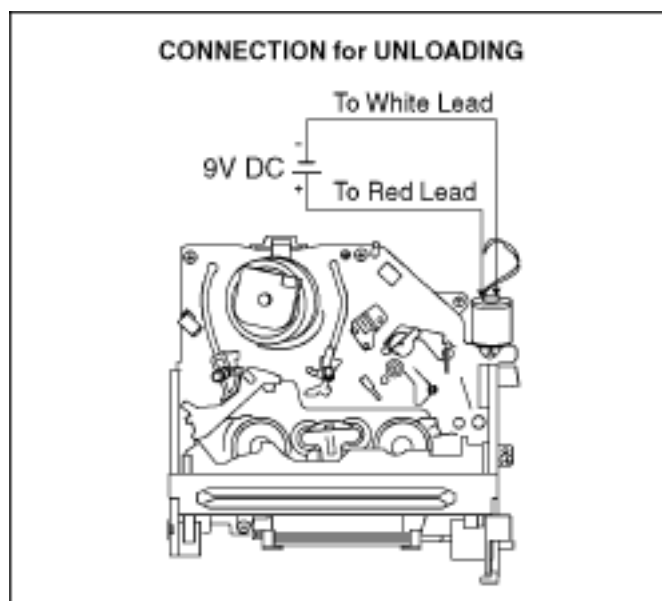
(Pay attention to tape slack)

Service Mode Indication:

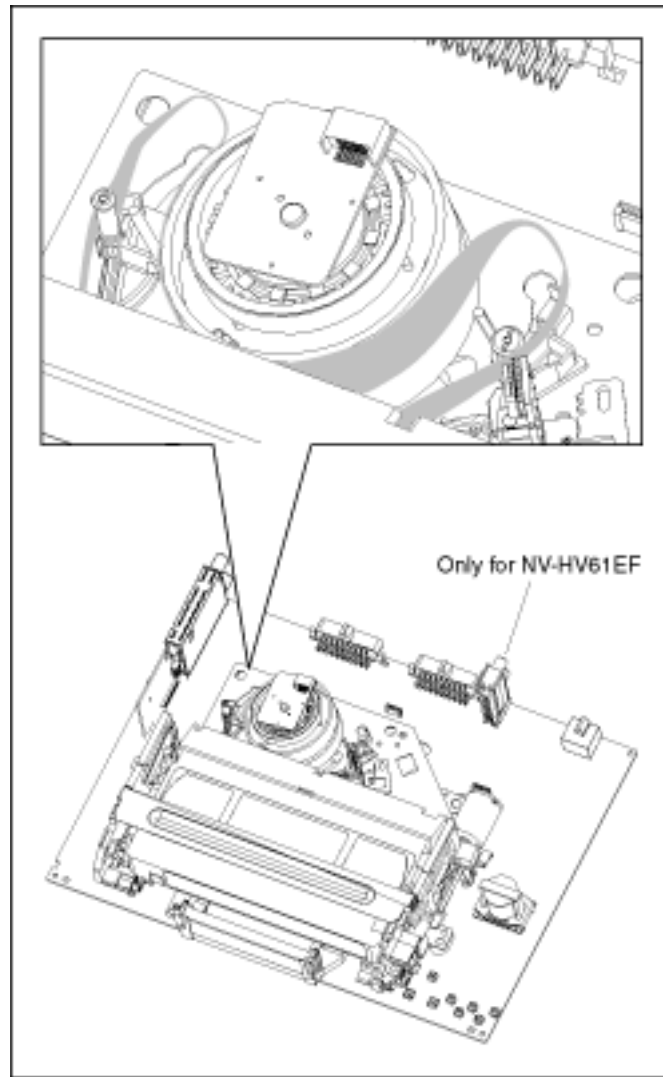
7 0L 00 (STOP) 7 0L A2 (EJECT)

2. Removal by manual operation by rotating the Loading Motor with the batterie.

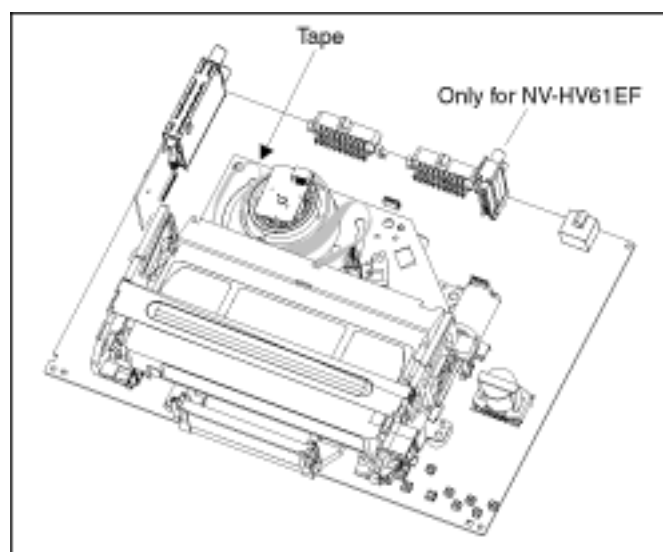
- A. Disconnect the AC plug, and remove the Top Panel and the Front Panel by referring to the Disassembly Procedures.
- B. Connect one batterie (9V spec.) to the Loading Motor in series for supplying 9V to rotate the Loading Motor.



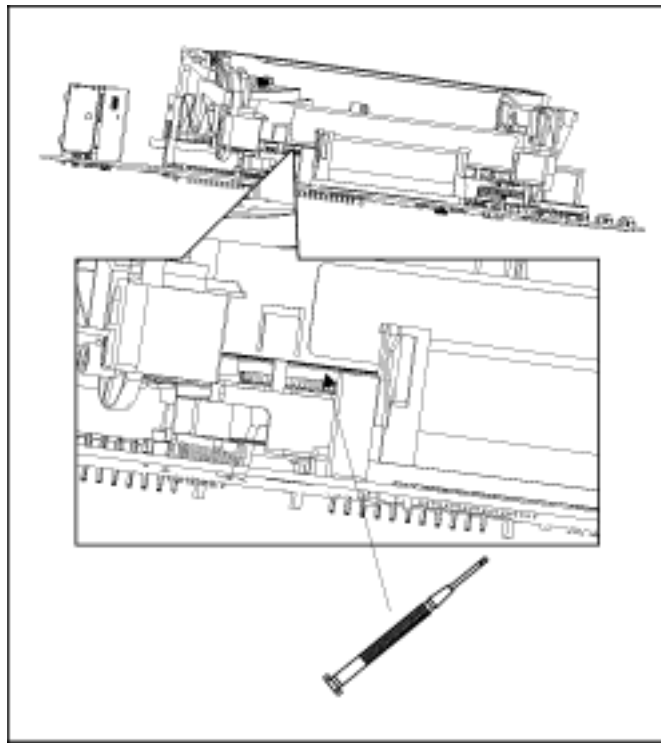
3. Stop unloading just before unloading would be completed.



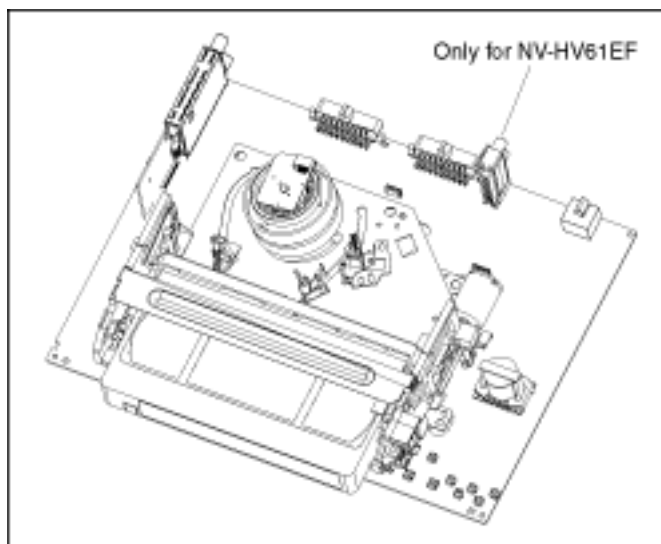
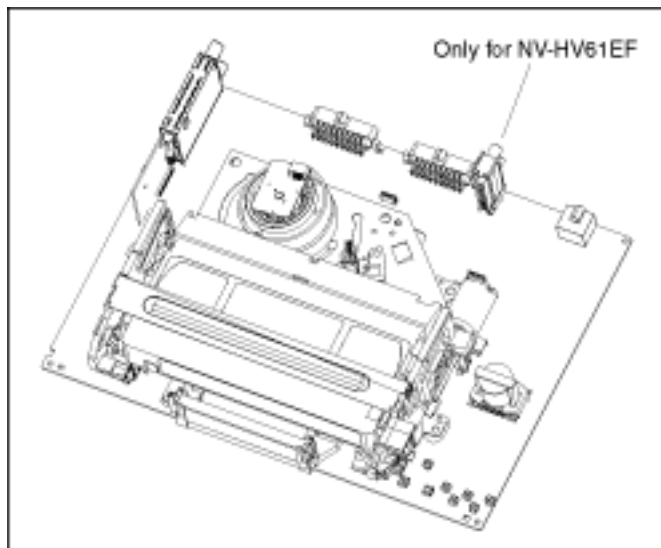
4. Then the tape becomes slack.



5. Rotate the S-Reel by a small minus screwdriver to remove the slack tape.



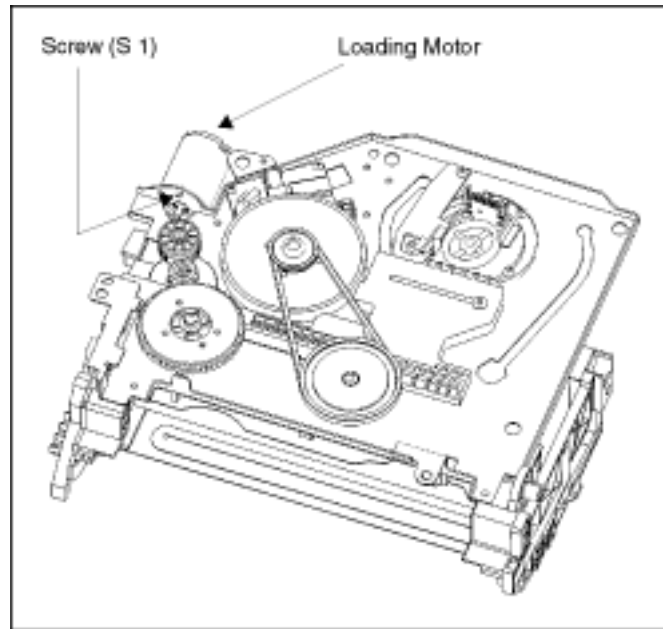
6. Then unload again to remove the cassette tape.



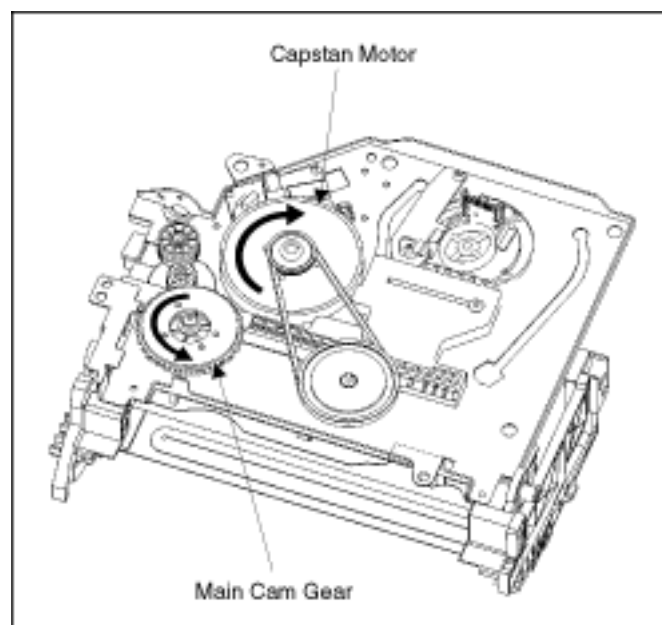
- Removal by manual operations after uninstalling the mechanism, refer to the DISASSEMBLY PROCEDURE of item 5.1.

A. Disconnect the AC plug, and remove the Top Panel, Front Panel and the Mechanism by referring to the Disassembly Procedures.

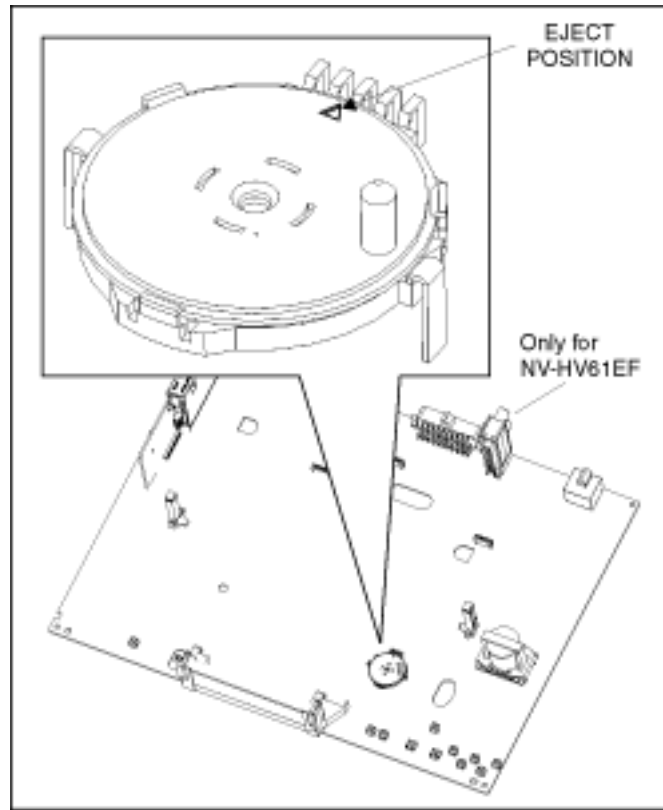
B. Remove the Screw (S1) and remove the Loading Motor both.



- Rotate the Main Cam Gear counter-clockwise until just before the unloading would be completed.
- Rotate the Capstan Motor clockwise to remove the slack tape.



- Rotate the Main Cam Gear counter-clockwise again to remove the cassette-tape.
- Set the Position Switch to EJECT POSITION certainly.



- Install the Loading Motor and tighten screw (S1).

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4.2.3 CYLINDER UNIT REPLACEMENT

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1. Remove the Mechanism Unit from Main PCB / Chassis

referring to "Disassembly Procedure".

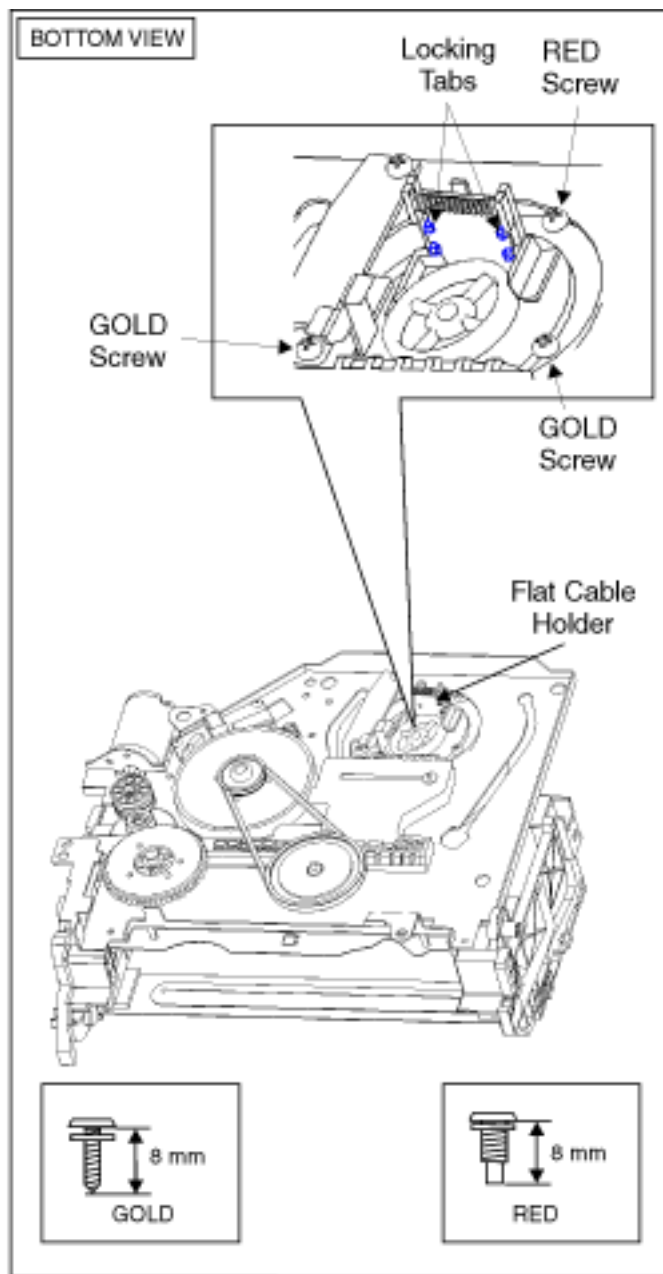
2. Unlock 2 locking tabs on a side to release the Cylinder

Flat Cable as shown.

CAUTION:

Handle the Cylinder Flat Cable (flexible card) with care. When it damaged, you should replace whole Cylinder unit.

3. Remove the RED screw and GOLD screw to disassemble the Cylinder Unit.



NOTE:

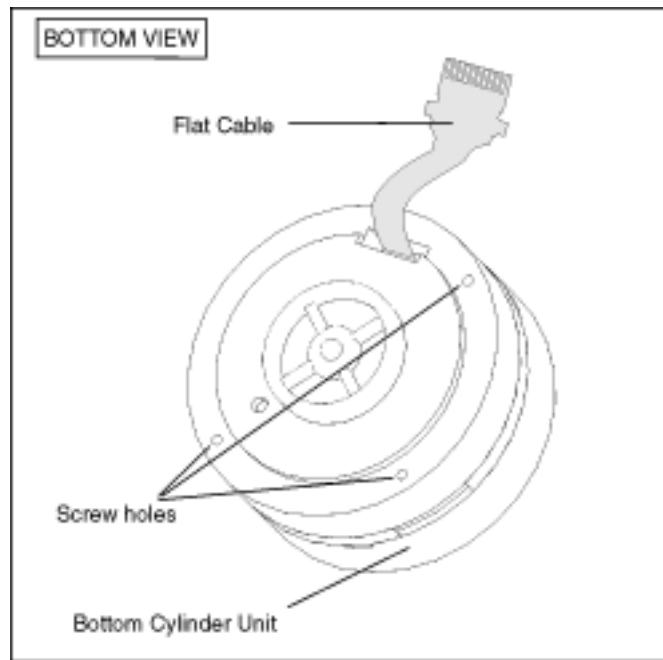
When reassembling, perform the steps in the reverse order, and perform the COMPATIBILITY ADJUSTMENT certainly after CYLINDER UNIT REPLACEMENT.

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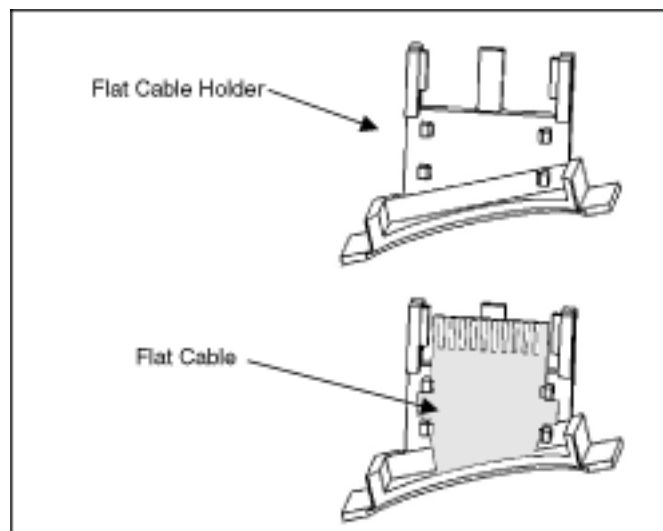
4.2.4 ATTENTION FOR REPLACING THE DD CYLINDER

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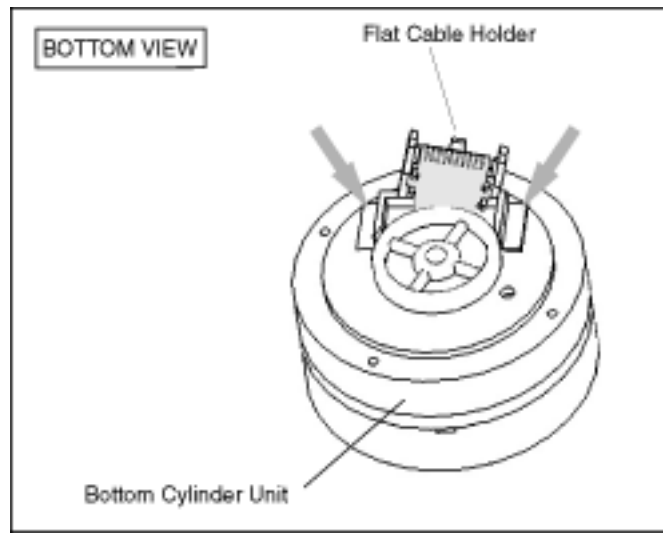
1. Put the gloves on your hands.
2. Turn the DD Cylinder Unit over.



3. Insert the Flat Cable into the Flat Cable Holder



4. Insert the Flat Cable Holder to the DD Cylinder Unit.

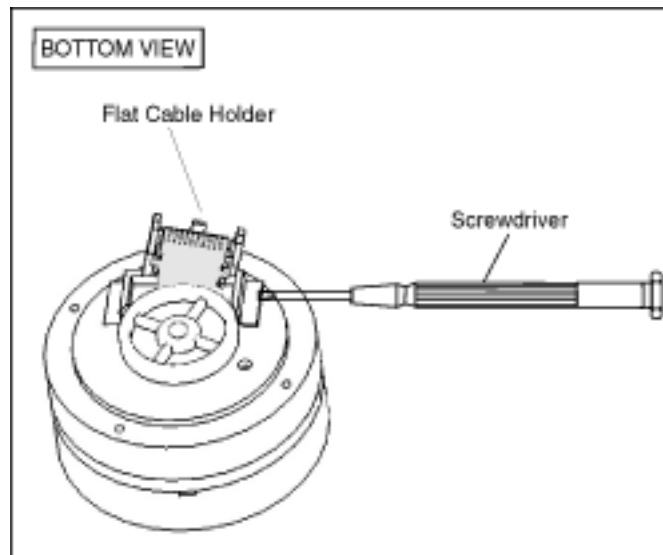


5. The "COMPATIBILITY ADJUSTMENT" should be performed after the replacement of the DD Cylinder Unit.

NOTE:

In case that you have inserted the Flat Cable Holder

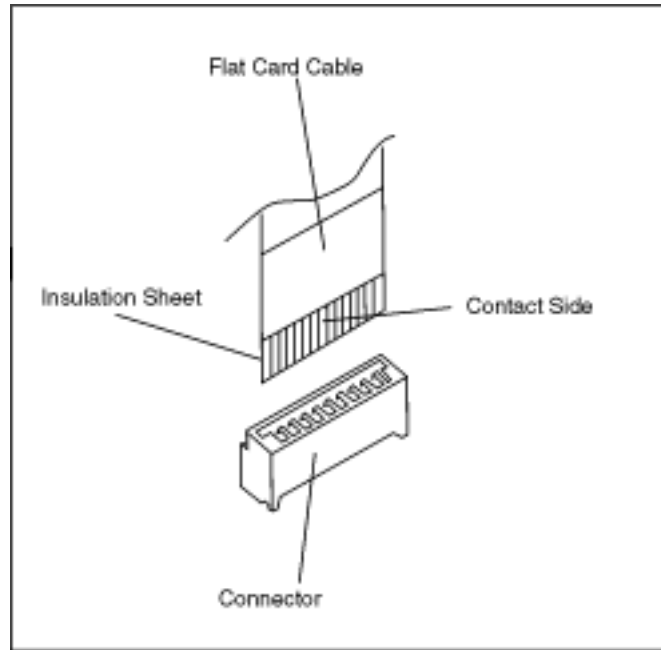
(FPC Holder) to the DD Cylinder Unit before inserting the Flat Cable (Flexible card) into the Flat Cable Holder. Pushing stopper portion of the Flat Cable Holder with a small minus screw driver and so on, remove the Flat Cable Holder while paying attention for not to scratch the DD Cylinder and not to break the Head Chip as shown below.



4.2.5 FLAT CARD CABLE INSTALLATION

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When installing the Flat Card Cable on the connector, install the Flat Card Cable with the cable contacts facing the connector contacts.



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4.3 SELF-DIAGNOSIS& SERVICE INFORMATION DISPLAY

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Refer to the Service Manual for R4 Mechanism Chassis for EURO model (MAD0403002C2).

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4.4 INTRODUCTION OF VIDEO HEAD CLEANING CASSETTE (POLISHING TYPE)

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1. We are pleased to introduce Panasonic Video Head Cleaning Cassette, [VFK0923FT](#) [for service purposes] and [VFK0923FSE](#) [for end users] for all VHS/SVHS VCP and VCR.
2. These cleaning cassettes are exclusive removing the hard and sticky clogging on video heads.
3. These improve the efficiency of video head cleaning service and shortening cleaning time for end users.

VFK0923FT (For Service usage)	
Type of Cassette	Full VHS Cassette
Cleaning Time	10 Seconds/Time
Tape Length	20 m
Usability in a Path	180 Times
	

VFK0823FSE (For end users)	
Type of Cassette	Full VHS Cassette
Cleaning Time	10 Seconds/Time
Tape Length	3.34 m
Usability in a Path	30 Times



Note:

The tape material itself is the same in both types.

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5 DISASSEMBLING THE CASING AND CHECKING PCBs

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[5.5 MECHANISM UNIT](#)

[5.6 MAIN PCB UNIT](#)

[5.7 SERVICE POSITION](#)

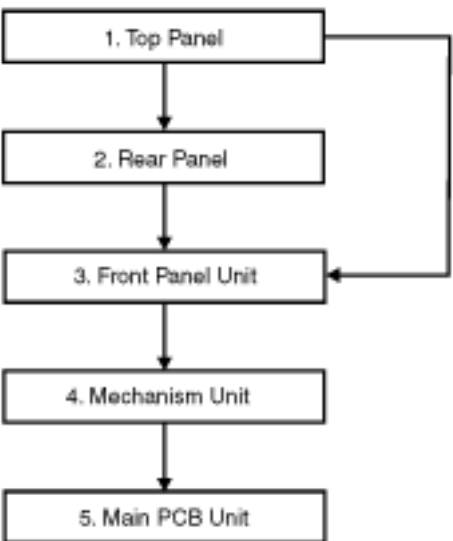
[5.7.1 SERVICE POSITION OF THE MAIN PCB](#)

[5.7.2 MECHANICAL ADJUSTMENT PROCEDURES](#)

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5.1 DISASSEMBLY PROCEDURE

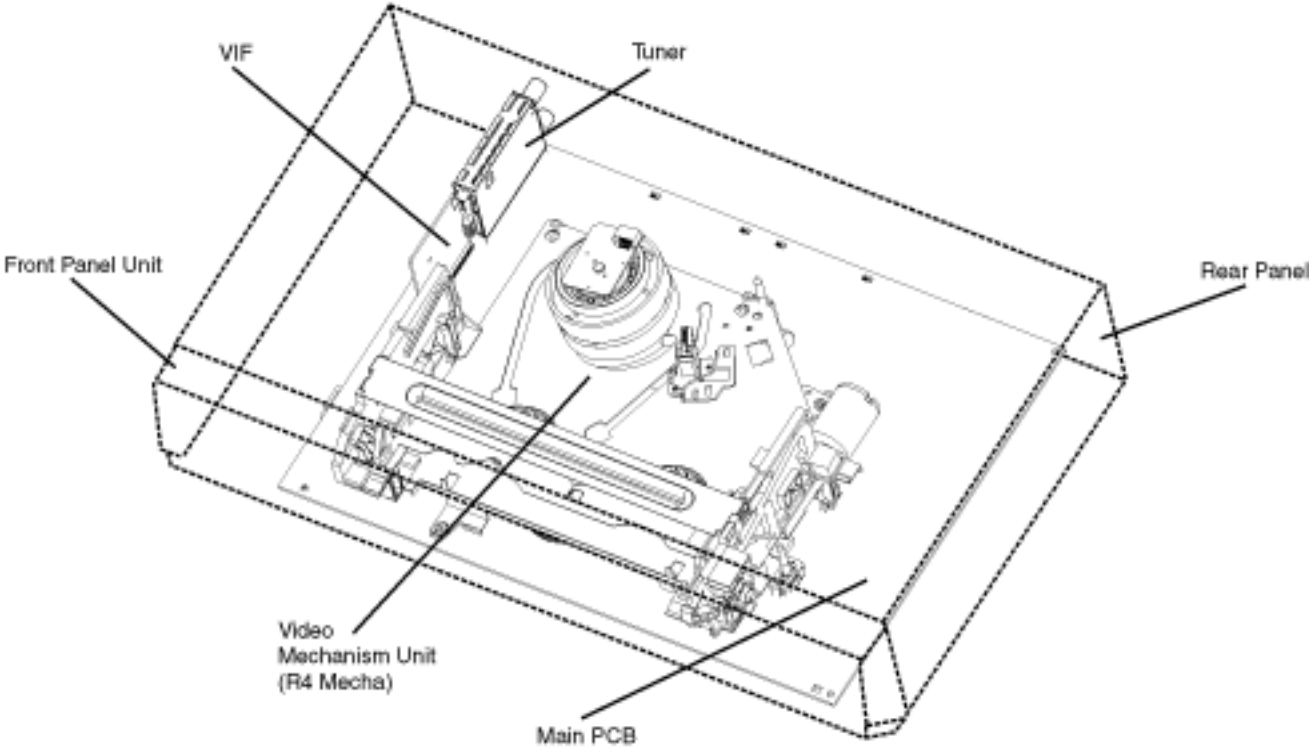
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5.2 CASING PARTS AND PCB POSITIONS

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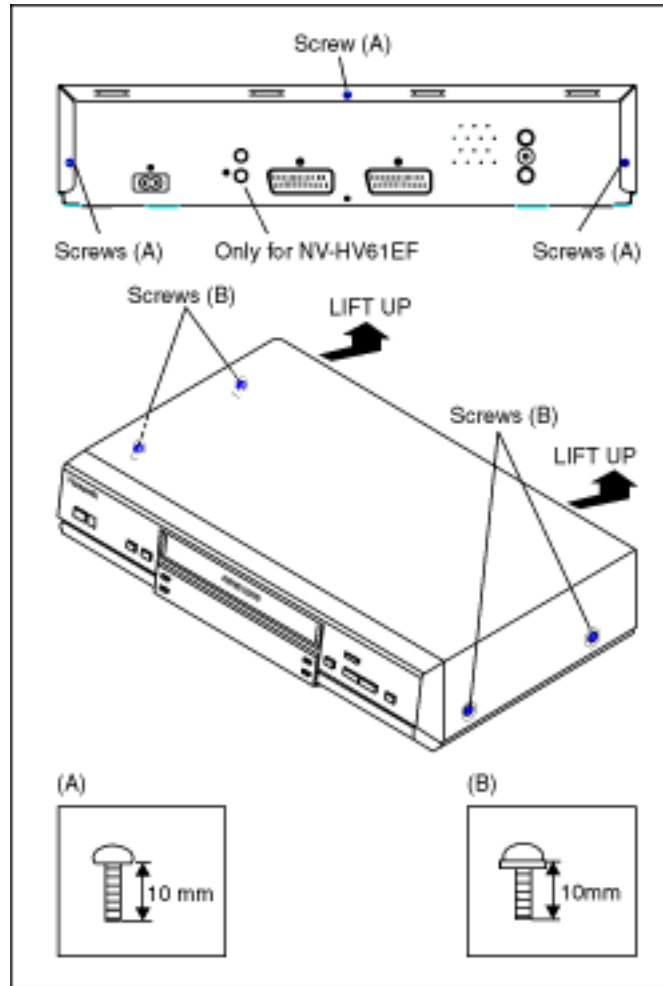


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5.3 TOP PANEL

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1. Unscrew the Screws.

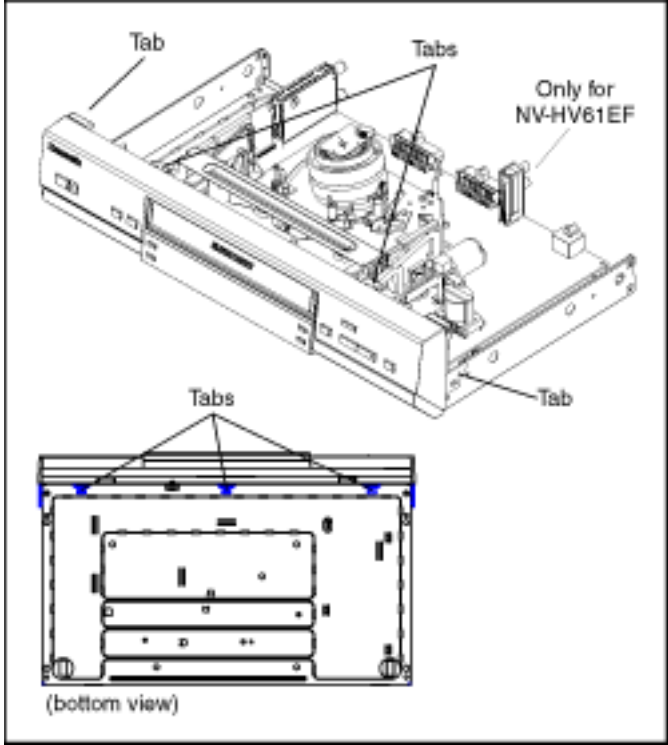


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5.4 FRONT PANEL UNIT

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- 1. Remove the Tabs.

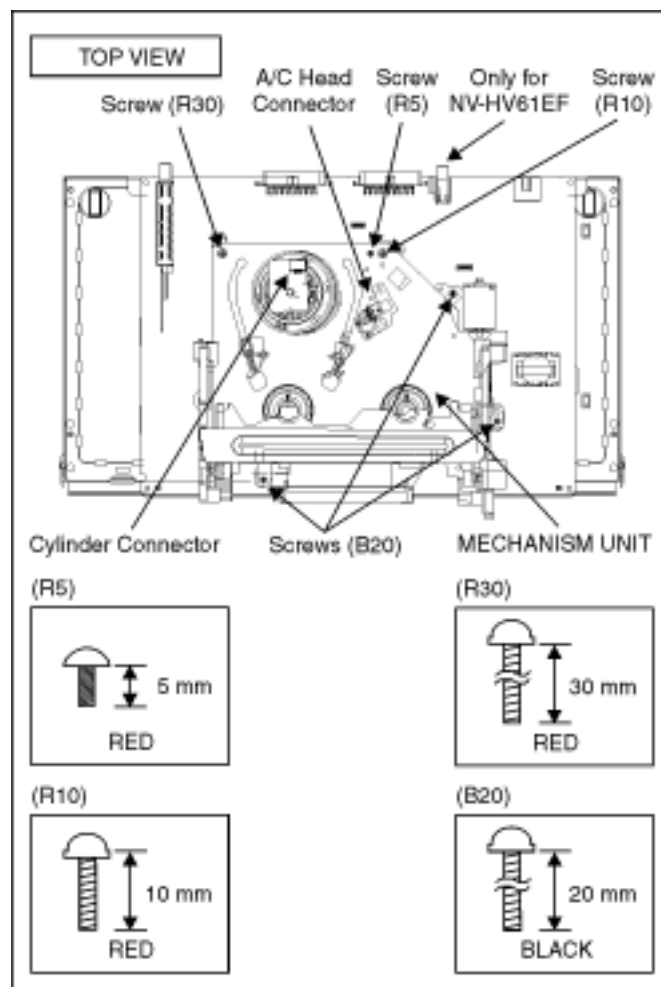


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5.5 MECHANISM UNIT

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Remove	Screw (R5)
Remove	Screw (R10)
Remove	Screw (R30)
Remove	3 Screws (B20)
Disconnect	Cylinder Connector
Disconnect	A/C Head Connector

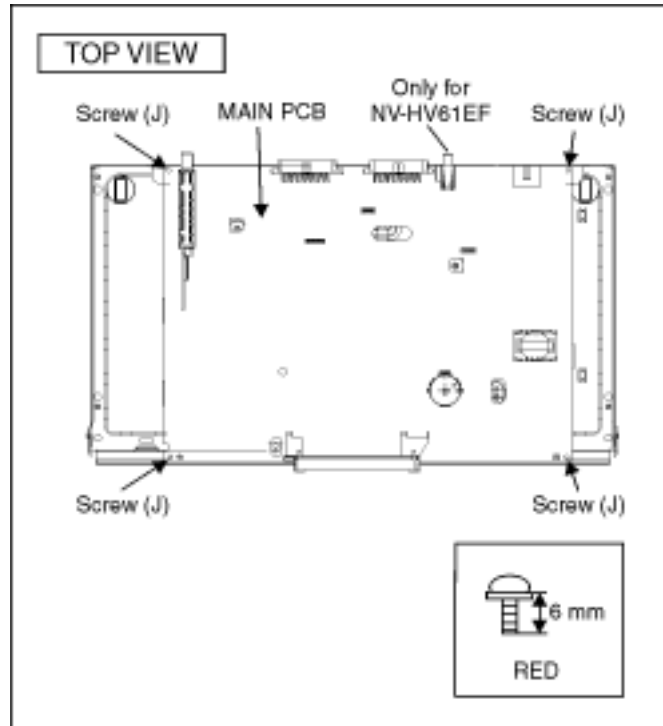


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5.6 MAIN PCB UNIT

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1. Unscrew the Screws.



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5.7 SERVICE POSITION

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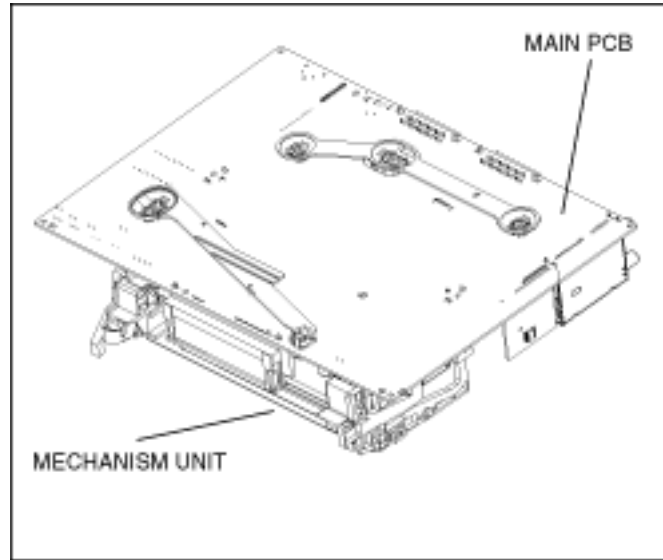
[5.7.1 SERVICE POSITION OF THE MAIN PCB](#)

[5.7.2 MECHANICAL ADJUSTMENT PROCEDURES](#)

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5.7.1 SERVICE POSITION OF THE MAIN PCB

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5.7.2 MECHANICAL ADJUSTMENT PROCEDURES

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Refer to the Service Manual for R4 Mechanism Chassis for EURO model (MAD0403002C2).

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6 SELF-DIAGNOSIS FUNCTION AND SERVICE MODES

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[6.1 VCR SELF-DIAGNOSIS RESULT DISPLAY](#)

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6.1 VCR SELF-DIAGNOSIS RESULT DISPLAY

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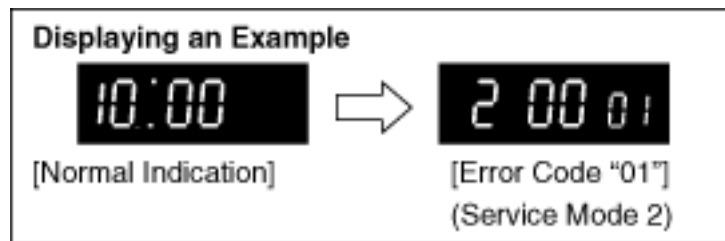
The "SELF-DIAGNOSIS RESULT DISPLAY & MEMORY function is built in this VTR.

It means that when the VCR detects undesirable condition, it can be displayed a "Error code (Two numbers from the right)" with Service Mode 2.

Since the "Error code" is stored in the EEPROM, it can be displayed although after disconnected the AC leads. It can be displayed with Service Mode 2.

(If a second error had been detected, only the most recent error is displayed.)

For more details, refer to the Service Manual for R4 Mechanism Chassis for EURO model (MAD0403002C2).



INDICATION	CAUSE	REMEDY/CHECK
01	After cylinder lock is detected, the cylinder does not start rotating again even after tape unloading.	Check the cylinder motor drive circuit.
02	Cassette tape is not wound up during the tape unloading except EJECT mode.	Check the capstan motor drive circuit.
03	Mechanism locks during mode transition except EJECT mode.	<ol style="list-style-type: none"> 1. Check the loading motor drive circuit. 2. Check the mechanism phase alignment. 3. Check the mode switch.
04	Mechanism locks during tape unloading.	<ol style="list-style-type: none"> 1. Check the loading motor drive circuit. 2. Check the mechanism phase alignment.
06	Mechanism locks after tape unloading in EJECT mode.	<ol style="list-style-type: none"> 1. Check the loading motor drive circuit. 2. Check the mechanism phase alignment for cassette holder unit.

16	Cylinder lock detection.	Check the cylinder unit and the cylinder motor drive circuit.
17	Supply reel mechanism lock detection	Check the supply reel mechanism and the supply reel circuit.
18	Take-up reel mechanism lock detection	Check the Take-up reel mechanism and the Take-up reel circuit.
2*	PG shifter automatic adjustment error.	Check the servo/system control circuit and the cylinder unit.

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7 ADJUSTMENT PROCEDURES

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[7.1 VCR ELECTRICAL ADJUSTMENT PROCEDURES](#)

[7.1.1 TEST EQUIPMENT](#)

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[7.1.3 ADJUSTMENTS](#)

[7.1.4 PG SHIFTER ADJUSTMENT \(AUTOMATIC\)](#)

[7.1.5 VHS VIDEO FREQUENCY RESPONSE ADJUSTMENT](#)

[7.1.6 LOCATION OF TEST POINTS & CONTROLS \(MAIN PCB\)](#)

[7.1.7 CIRCUIT BOARD LAYOUT](#)

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7.1 VCR ELECTRICAL ADJUSTMENT PROCEDURES

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[7.1.1 TEST EQUIPMENT](#)

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7.1.1 TEST EQUIPMENT

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The following equipments are required for Electrical Adjustments.

1. Dual-Trace Oscilloscope
 - Voltage Range: 0.005-5V/div
 - Frequency Range: DC-35MHz
 - Probes: 10:1 / 1:1
2. Frequency Counter
 - Frequency Range: 0-10MHz
 - Probes: 1:1
3. Universal Counter
4. Digital Volt Meter (D.V.M.)
5. Video Sweep Generator
6. Sinewave Generator
7. Video Pattern Generator
8. Monitor TV
9. DC Power Supply
10. VHS Blank Tape
11. VHS Alignment Tape
 - Parts No.: VFJ8125H3F(PAL)

7.1.2 VCR SETTING

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When no indication in the procedure, set each selector as follows.

1. TAPE SPEED: SP
2. CHANNEL: AV1/AV2

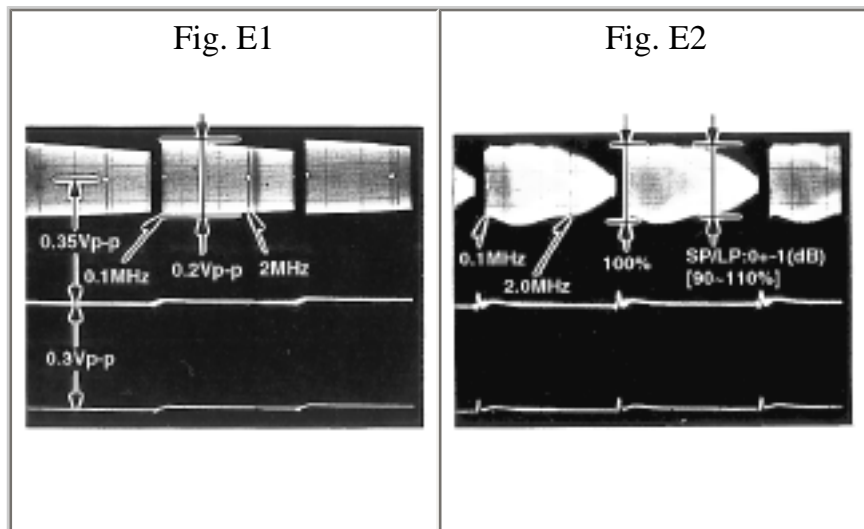
(Set to signal input terminal number)

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7.1.3 ADJUSTMENTS

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ITEM	TP	ADJ.	MODE	INPUT	TAPE	M. EQ.	SPEC	REMARKS
PG SHIFTER ADJUSTMENT	---	---	PLAYBACK	---	ALIGNMENT TAPE (PAL)	---	---	Refer to procedure as shown in "PG SHIFTER ADJUSTMENT".
VHS FREQUENCY RESPONSE ADJUSTMENT	VIDEO OUT (TW3002)	---	SP/LP PLAYBACK (SELF-REC)	VIDEO SWEEP (See Fig. E1)	VHS BLANK TAPE	OSCILLOSCOPE/ VIDEO SWEEP GENERATOR	SP: 0+-1 (dB) (90~110%) LP: 0+-1 (dB) (90~110%) (See Fig. E2)	Refer to the procedure as shown in "VHS VIDEO FREQUENCY RESPONSE ADJUSTMENT".



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7.1.4 PG SHIFTER ADJUSTMENT (AUTOMATIC)






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PROCEDURES	FIP DISPLAY
Press the FF and EJECT Keys simultaneously for 3 seconds.	
Press the FF and EJECT Keys simultaneously twice.	
Press the EJECT key for 3 seconds.	
Press the CH UP key once.	
Insert the Alignment cassette tape. (PAL:VFJ8125H3F)	
When the sequence of the automatic adjustment has been terminated, the following action has been made. *SUCCEED: The cassette tape is ejected. *ERROR : The "F2" is displayed on the FIP. (Check the Servo/Syscon circuit and Cylinder unit.)	
Release the Service mode by pressing the EJECT and FF keys simultaneously in 6 times until the FIP becomes normal indication.	

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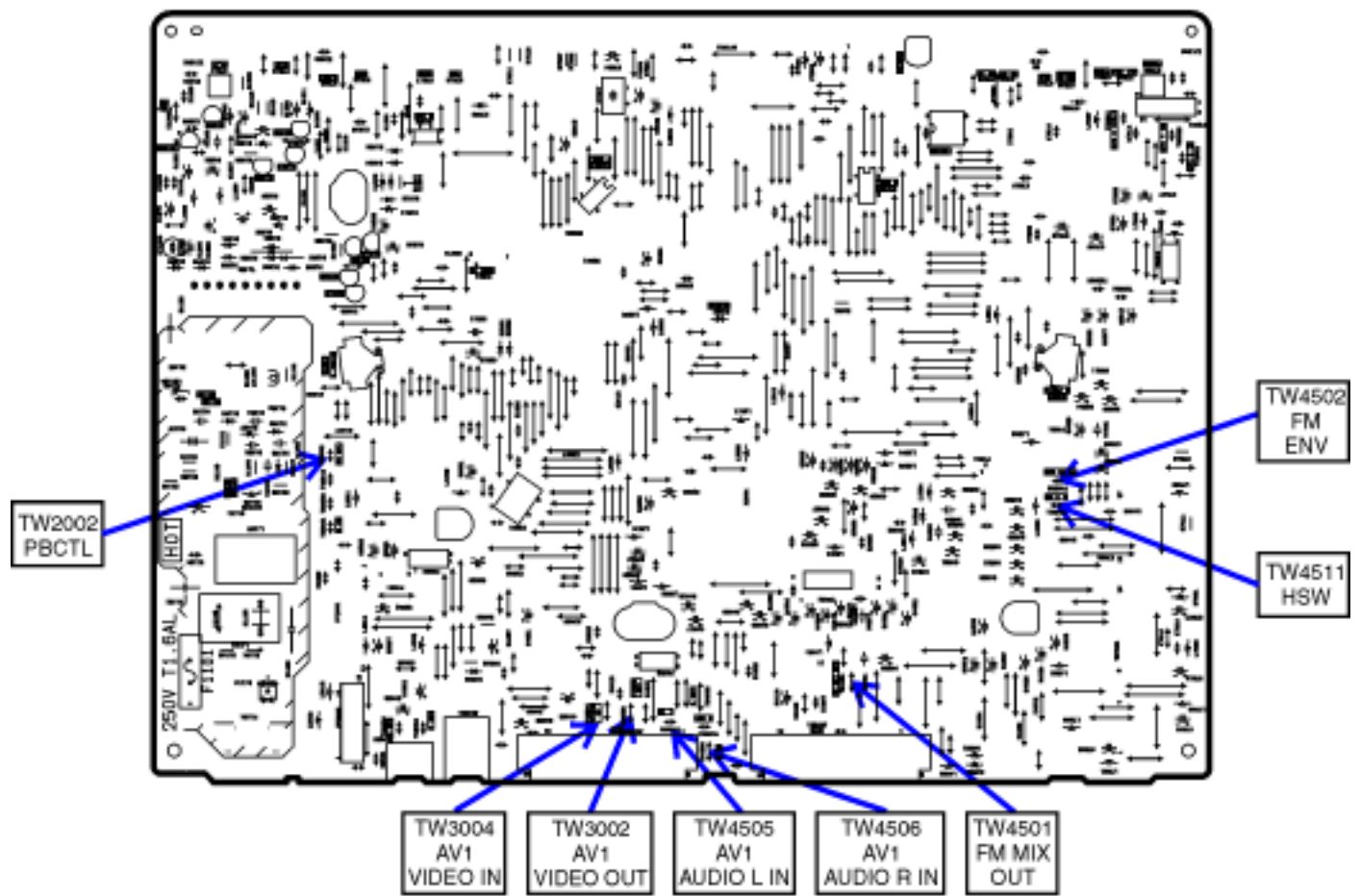
7.1.5 VHS VIDEO FREQUENCY RESPONSE ADJUSTMENT

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PROCEDURES	FIP DISPLAY
Insert the VHS Blank Tape. Input the Video sweep signal (See Fig. E1) to AV1 (VIDEO IN) and record it in SP and LP.	
Press the FF and EJECT Keys simultaneously for 3 seconds.	
Press the FF and EJECT Keys simultaneously twice.	
Press the EJECT key for 3 seconds.	
Press the CH UP and/or CH DOWN key until "11" is displayed on FIP.	
Insert the Self-recorded tape and playback it. (SP/LP/EP mode)	
Connect the Oscilloscope to: *CH1....Video Out (TW3002). *CH2....V.FREQ. (TW6002).	
Press the "4" key on the remote controller. (Confirm that TW6002 becomes high(2.5V)).	
Adjust the Frequency response by pressing the "2"(increase) and/or "8"(decrease) key on the Remote Controller. (See Fig. E2)	
Store the Adjusted value by pressing the "5" key on the Remote Controller.	
Release the Service mode by pressing the EJECT and FF keys simultaneously in 6 times until the FIP becomes normal indication.	

7.1.6 LOCATION OF TEST POINTS & CONTROLS (MAIN PCB)

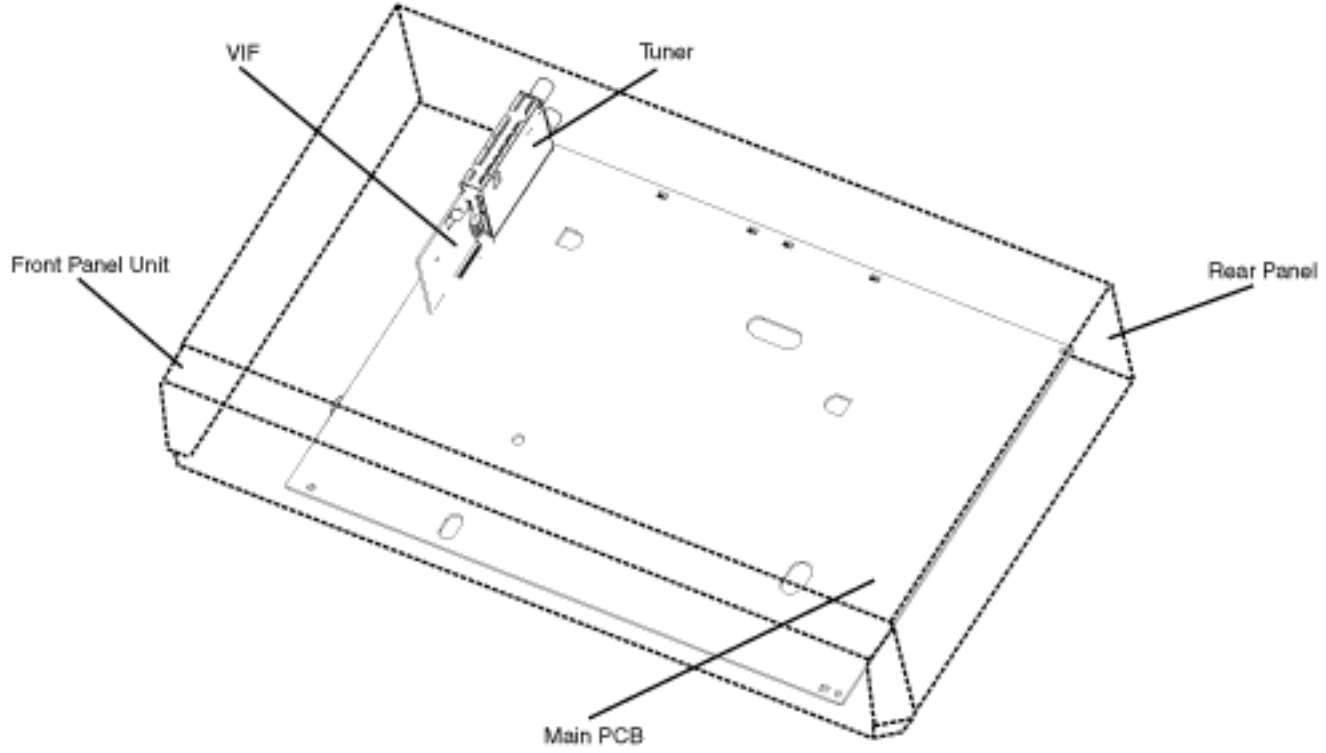
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7.1.7 CIRCUIT BOARD LAYOUT

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8 ABBREVIATIONS

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INITIAL/LOGO		ABBREVIATIONS
A	A0~UP ACLK AD0~UP ADATA ALE AMUTE AREQ ARF ASI ASO ASync	ADDRESS AUDIO CLOCK ADDRESS BUS AUDIO PES PACKET DATA ADDRESS LATCH ENABLE AUDIO MUTE AUDIO PES PACKET REQUEST AUDIO RF SERVO AMP INVERTED INPUT SERVOAMPOUTPUT AUDIO WORD DISTINCTION SYNC
B	BCK BCKIN BDO BLKCK BOTTOM BYP BYTCK	BIT CLOCK (PCM) BIT CLOCK INPUT BLACK DROP OUT SUB CODE BLOCK CLOCK CAP. FOR BOTTOM HOLD BYPATH BYTE CLOCK
C	CAV CBDO CD CDSCK CDSRDATA CDRF CDV CHNDATA CKSL CLV COFTR CPA CPCS CPDT CPUADR CPUADT CPUIRQ CPRD CPWR CS CSyncIN CSyncOUT	CONSTANT ANGULAR VELOCITY CAP. BLACK DROP OUT COMPACT DISC CD SERIAL DATA CLOCK CD SERIAL DATA CD RF (EFM) SIGNAL COMPACT DISC-VIDEO CHANNEL DATA SYSTEMCLOCKSELECT CONSTANT LINEAR VELOCITY CAP. OFF TRACK CPU ADDRESS CPU CHIP SELECT CPU DATA CPU ADDRESS LATCH CPU ADDRESS DATA BUS CPU INTERRUPT REQUEST CPU READ ENABLE CPU WRITE ENABLE CHIPSELECT COMPOSITESync IN COMPOSITE Sync OUT

D	DACCK DEEMP DEMPH DIG0~UP DIN DMSRCK DMUTE DO DOUT0~UP DRF DRPOUT DREQ DRESP DSC DSLFB DVD	D/A CONVERTER CLOCK DEEMPHASIS BIT ON/OFF DEEMPHASIS SWITCHING FL DIGIT OUTPUT DATA INPUT DM SERIAL DATA READ CLOCK DIGITAL MUTE CONTROL DROPOUT DATAOUTPUT DATA SLICE RF (BIAS) DROP OUT SIGNAL DATA REQUEST DATA RESPONSE DIGITAL SERVO CONTROLLER DATA SLICE LOOP FILTER DIGITAL VIDEO DISC
E	EC ECR ENCSEL ETMCLK ETSCLK	ERROR TORQUE CONTROL ERROR TORQUE CONTROL REFERENCE ENCODER SELECT EXTERNAL M CLOCK (81MHz/40.5MHz) EXTERNAL S CLOCK (54MHz)
F	FBAL FCLK FE FFI FEO FG FSC FSCK	FOCUS BALANCE FRAME CLOCK FOCUS ERROR FOCUS ERROR AMP INVERTED INPUT FOCUS ERROR AMP OUTPUT FREQUENCY GENERATOR FREQUENCY SUB CARRIER FS (384 OVER SAMPLING)CLOCK
G	GND	COMMON GROUNDING (EARTH)
H	HA0~UP HD0~UP HINT HRXW	HOST ADDRESS HOST DATA HOST INTERRUPT HOST READ/WRITE
I	IECOUT IPFRAG IREF ISEL	IEC958 FORMAT DATA OUTPUT INTERPOLATION FLAG I (CURRENT) REFERENCE INTERFACE MODE SELECT
L	LDON LPC LRCK	LASER DIODE CONTROL LASER POWER CONTROL L CH/R CH DISTINCTION CLOCK
M	MA0~UP MCK MCKI MCLK MDATA MDQ0~UP MDQM MLD MPEG	MEMORY ADDRESS MEMORY CLOCK MEMORY CLOCK INPUT MEMORY SERIAL COMMAND CLOCK MEMORY SERIAL COMMAND DATA MEMORY DATA INPUT/OUTPUT MEMORY DATA I/O MASK MEMORYSERIALCOMMAND LOAD MOVING PICTURE EXPERTS GROUP

O	ODC OFTR OSCI OSCO OSD	OPTICAL DISC CONTROLLER OFF TRACKING OSCILLATOR INPUT OSCILLATOR OUTPUT ON SCREEN DISPLAY
P	P1~UP PCD PCK PDVD PEAK PLLCLK PLLOK PWMCTL PWMDA PWMOA, B	PORT CD TRACKING PHASE DIFFERENCE PLL CLOCK DVD TRACKING PHASE DIFFERENCE CAP. FOR PEAK HOLD CHANNEL PLL CLOCK PLL LOCK PWM OUTPUT CONTROL PULSE WAVEMOTOR DRIVEA PULSE WAVE MOTOR OUT A, B
R	RE RFENV RFO RS RSEL RST RSV	READ ENABLE RF ENVELOPE RF PHASE DIFFERENCE OUTPUT (CD-ROM) REGISTER SELECT RF POLARITY SELECT RESET RESERVE
S	SBI0, 1 SBO0 SBT0, 1 SCK SCKR SCL SCLK SDA SEG0~UP SELCLK SEN SIN1, 2 SOUT1, 2 SPDI SPDO SPEN SPRCLK SPWCLK SQCK SQCX SRDATA SRMADR SRMDT0~7 SS STAT STCLK STD0~UP STENABLE STSEL STVALID SUBC SBCK SUBQ SYSCLK	SERIAL DATA INPUT SERIAL DATA OUTPUT SERIAL CLOCK SERIAL DATA CLOCK AUDIO SERIAL CLOCK RECEIVER SERIAL CLOCK SERIAL CLOCK SERIAL DATA FL SEGMENT OUTPUT SELECTCLOCK SERIALPORT ENABLE SERIAL DATA IN SERIAL DATA OUT SERIAL PORT DATA INPUT SERIAL PORT DATA OUTPUT SERIAL PORT R/W ENABLE SERIAL PORT READ CLOCK SERIAL PORT WRITE CLOCK SUB CODE Q CLOCK SUBCODEQ DATA READ CLOCK SERIAL DATA SRAM ADDRESS BUS SRAM DATA BUS 0~7 START/STOP STATUS STREAM DATA CLOCK STREAM DATA STREAM DATA INPUT ENABLE STREAM DATA POLARITY SELECT STREAMDATAVALIDITY SUB CODE SERIAL SUB CODE CLOCK SUB CODE Q DATA SYSTEM CLOCK

T	TE TIBAL TID TIN TIP TIS TPSN TPSO TPSP TRCRS TRON TRSON	TRACKING ERROR BALANCE CONTROL BALANCE OUTPUT 1 BALANCE INPUT BALANCE INPUT BALANCE OUTPUT 2 OP AMP INPUT OP AMP OUTPUT OP AMP INVERTED INPUT TRACKCROSSIGNAL TRACKING ON TRAVERSE SERVO ON
V	VBLANK VCC VCDCONT VDD VFB VREF VSS	V BLANKING COLLECTOR POWER SUPPLY VOLTAGE VIDEO CD CONTROL (TRACKING BALANCE) DRAIN POWER SUPPLY VOLTAGE VIDEO FEED BACK VOLTAGE REFERENCE SOURCE POWERSUPPLYVOLTAGE
W	WAIT WDCK WEH WSR	BUS CYCLE WAIT WORD CLOCK WRITE ENABLE HIGH WORD SELECT RECEIVER
X	X XALE XAREQ XCDROM XCS XCSYNC XDS XHSYNCO XHINT XI XINT XMW XO XRE XSRMCE XSRMOE XSRMWE XVCS XVDS XVSYNCO	X' TAL X ADDRESS LATCH ENABLE X AUDIO DATA REQUEST X CD ROM CHIP SELECT X CHIP SELECT X COMPOSITE SYNC X DATA STROBE X HORIZONTAL SYNC OUTPUT XHINTERRUPTREQUEST X' TAL OSCILLATOR INPUT X INTERRUPT X MEMORY WRITE ENABLE X' TAL OSCILLATOR OUTPUT X READ ENABLE X SRAM CHIP ENABLE X SRAM OUTPUT ENABLE X SRAM WRITE ENABLE XV-DEC CHIPSELECT X V-DEC CONTROL BUS STROBE X VERTICAL SYNC OUTPUT

9 INPUT/ OUTPUT CHART

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[9.1 INPUT / OUTPUT CHART FOR IC6001](#)

[9.2 TRUTH TABLE](#)

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9.1 INPUT/ OUTPUT CHART FOR IC6001

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9.2 TRUTH TABLE

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10 WAVEFORM TABLE

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[10.1 WAVEFORM](#)

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10.1 WAVEFORM

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11 VOLTAGE CHART

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12 BLOCK DIAGRAM

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[12.1 SYSCON & SERVO BLOCK DIAGRAM](#)

[12.2 VCR LUMINANCE & CHROMINANCE BLOCK DIAGRAM](#)

[12.3 VCR AUDIO BLOCK DIAGRAM](#)

[12.4 SECAM BLOCK DIAGRAM](#)

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12.1 SYSCON& SERVO BLOCK DIAGRAM

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12.2 VCR LUMINANCE & CHROMINANCE BLOCK DIAGRAM

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12.3 VCR AUDIO BLOCK DIAGRAM

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12.4 SECAM BLOCK DIAGRAM

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13 SCHEMATIC DIAGRAM

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[13.1 INTERCONNECTION DIAGRAM](#)

[13.2 MAIN PCB - POWER SCHEMATIC DIAGRAM](#)

[13.3 MAIN PCB - TIMER SCHEMATIC DIAGRAM](#)

[13.4 MAIN PCB - SYSCON-SERVO SCHEMATIC DIAGRAM](#)

[13.5 MAIN PCB - VIDEO I / O SCHEMATIC DIAGRAM](#)

[13.6 MAIN PCB - AUDIO SCHEMATIC DIAGRAM](#)

[13.7 VIF-UNIT - SCHEMATIC DIAGRAM](#)

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13.1 INTERCONNECTION DIAGRAM

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13.2 MAIN PCB - POWER SCHEMATIC DIAGRAM

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13.3 MAIN PCB - TIMER SCHEMATIC DIAGRAM

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13.4 MAIN PCB - SYSCON-SERVO SCHEMATIC DIAGRAM

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13.5 MAIN PCB - VIDEO I/O SCHEMATIC DIAGRAM

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13.6 MAIN PCB - AUDIO SCHEMATIC DIAGRAM

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13.7 VIF-UNIT - SCHEMATIC DIAGRAM

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14 PRINT CIRCUIT BOARD

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[14.1 MAIN PCB \(VEP06F51P: NV-HV51EF\) \(VEP06F51K: NV-HV61EF\)](#)

[14.2 VIF PCB \(VEP07A47B\)](#)

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14.1 MAIN PCB (VEP06F51P: NV-HV51EF) (VEP06F51K: NV-HV61EF)

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14.2 VIF PCB (VEP07A47B)

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15 EXPLODED VIEWS

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[15.1 VCR CHASSIS PARTS SECTION](#)

[15.2 CASING PARTS SECTION](#)

[15.3 PACKING PARTS SECTION](#)

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15.1 VCR CHASSIS PARTS SECTION

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15.2 CASING PARTS SECTION

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15.3 PACKING PARTS SECTION

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16 REPLACEMENT PARTS LIST

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Notes:

*Important safety notice:

Components identified by  ; mark have special characteristics important for safety.

Furthermore, special parts which have purposes of fire-retardant (resistors), high-quality sound (capacitors), low-noise (resistors), etc. are used.

When replacing any of components, be sure to use only manufactures specified parts shown in the parts list.

Do not use any part number shown on the Schematic Diagramm for ordering. When you order a part, please refer only to the PARTS LIST.

*The marking (RTL) indicates the retention time is limited for this item. After the discontinuation of this assembly in production, it will no longer be available.

*PCB's are identified by “ ” character.

[16.1 CHASSIS PARTS](#)

[16.2 CASING PARTS](#)

[16.3 PACKING PARTS](#)

[16.4 PCB PARTS](#)

[16.5 ELECTRICAL PARTS](#)

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16.1 CHASSIS PARTS

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Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
1	VEG1643-DKIT	CYLINDER UNIT	1	
2	VEM0750	CAPSTAN UNIT	1	
3	L1AZ00000004	FE HEAD UNIT	1	
4	VDG1510	INTERMEDIATE GEAR	1	
5	VDG1511-4	MAIN CAM GEAR	1	
6	VDG1512	IDLER GEAR	1	
7	VDG1512	IDLER GEAR	1	
8	VDG1514-1	CHANGE GEAR	1	
9	VDR0372	REEL TABLE	1	
10	VDR0372	REEL TABLE	1	
11	VDV0391-2	CAPSTAN BELT	1	
12	VMB3550	CHANGE GEAR SPRING	1	
14	VMD4252	OPENER PIECE	1	
15	VMD4253	LED PRISM	1	
17	VML3624-1	MAIN LEVER	1	
18	VML3626-1	PINCH CHARGE ARM	1	
19	VML3632	IDLER ARM	1	
20	VMX3092	P4 CAP	1	
21	VDB1431	TENSION ARM BOSH	1	
22	VEM0796	LOADING MOTOR UNIT	1	
23	VDG1637	WORM GEAR	1	
24	VMD4987	WORM BEARING	1	
25	VXA7105-2	SUPPLY SHAFT HOLDER UNIT	1	
26	VXA7106-2	TAKE UP SHAFT HOLDER UNIT	1	
27	L1AE000000036	AC HEAD UNIT	1	
28	VXA7311	SECTOR GEAR UNIT	1	
29	VXL3107	SUPPLY LOADING ARM UNIT	1	
30	VXL3108	TAKE UP LOADING ARM UNIT	1	





<u>31</u>	VXL3109-4	PINCH ARM UNIT	1	
<u>32</u>	VXL3110	P5 ARM UNIT	1	
<u>33</u>	VXL3111-1	TENSION ARM UNIT	1	
<u>34</u>	VMB3547-3	TENSION SPRING	1	
<u>35</u>	VXL3112	SUPPLY BRAKE ARM UNIT	1	
<u>36</u>	VXL3113	TAKE UP BRAKE ARM UNIT	1	
<u>37</u>	VMB3548-2	TAKE UP BRAKE SPRING	1	
<u>38</u>	VXL3124-2	CHANGE LEVER UNIT	1	
<u>39</u>	VXP2133-1	CENTRE CLUTCH UNIT	1	
<u>40</u>	VXP2168	TORQUE CLUTCH UNIT	1	
<u>41</u>	VMD4983	FLAT CABLE HOLDER	1	
<u>50</u>	VMA0L25	TOP PLATE	1	
<u>51</u>	VMD4255-4	SIDE PLATE (L)	1	
<u>52</u>	VMD4254-4	SIDE PLATE (R) UNIT	1	
<u>53</u>	VML3706-1	OPENER LEVER	1	
<u>54</u>	VXA7110-3	CASSETTE HOLDER UNIT	1	
<u>55</u>	VXL3160	MAIN SHAFT UNIT	1	
<u>B1</u>	VHD1044	SCREW	1	
<u>B2</u>	XSN3+35	SCREW	1	
<u>B3</u>	XTN26+7J	SCREW	1	
<u>B4</u>	XTN26+7J	SCREW	1	
<u>B5</u>	XTN26+7J	SCREW	1	
<u>B6</u>	XTV26+5F	SCREW	1	
<u>B7</u>	XTV26+5F	SCREW	1	
<u>B8</u>	XTV26+8FR	SCREW	1	
<u>B9</u>	XTV26+8FR	SCREW	1	
<u>B10</u>	VHD1066	SCREW	1	
<u>B11</u>	VHD1066	SCREW	1	
<u>B12</u>	VHD1185	SCREW	1	
<u>B13</u>	VHD1095	SCREW	1	
<u>B14</u>	VHD1117	SCREW	1	
<u>B15</u>	VHD1117	SCREW	1	
<u>W1</u>	VMX2208	WASHER	1	
<u>W2</u>	VMX3196	WASHER	1	

W3	VMX2699	WASHER	1	
W4	VMX3196	WASHER	1	

[TOP](#) [PREVIOUS](#) [NEXT](#)

16.2 CASING PARTS


[TOP](#) [PREVIOUS](#) [NEXT](#)

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
101	VGM2059	TOP PANEL	1	
102	VYK1C48	CHASSIS UNIT	1	
103	VMP7804	REAR PANEL	1	 NV-HV51EF-S
103	VMP7805	REAR PANEL	1	 NV-HV61EF-S
104	VYP8907	FRONT PANEL UNIT	1	NV-HV51EF-S
104	VYP8901	FRONT PANEL UNIT	1	NV-HV61EF-S
106	VKF3686	BLINDER PANEL	1	
112	VMX3398	MECHA SPACER (F)	1	
113	VMX3229	MECHA SPACER (R)	1	
114	VMZ3393	BARRIER	1	
115	VKA0364	FOOT	1	
119	VWJ060W120MM	FFC (A/C HEAD)	1	
120	REZD0012	FFC (7P) (CYLINDER)	1	
B101	VHD1094	SCREW	2	
B103	XSN3+4FZ	SCREW (TUNER)	1	
B104	VHD0690	SCREW (BACK P)	8	
B110	RHD30090	SCREW (MAIN)	4	
B105	VHD1452-1	SCREW(R4MECH L)	1	
B209	VHD1453-1	SCREW(R4MECH S)	3	
B225	XTV26+6FR	SCREW EARTH	1	
B238	XTW3+10PR	SCREW MECHA	1	

[TOP](#) [PREVIOUS](#) [NEXT](#)

16.3 PACKING PARTS


[TOP](#) [PREVIOUS](#) [NEXT](#)

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
PC1	VPG0W68	PACKING CASE	1	NV-HV51EF-S
PC1	VPG0W66	PACKING CASE	1	NV-HV61EF-S
PC2	VZZ0025-A	PROTECTION BAG	1	
PC3	VPN6139	CUSHION (L)	1	
PC4	VPN6140	CUSHION (R)	1	
A1	N2QAJB000090	REMOTE CONTROLLER	1	NV-HV51EF-S
A1	N2QAJB000088	REMOTE CONTROLLER	1	NV-HV61EF-S
A2	ETR0051-52	BATTERY COVER	1	
A3	RJA0043-1C	POWER CORD	1	
A5	RQTD0089-F	O/I BOOK FRE SEC	1	
A6	K1TWACB00005	RF CABLE	1	
A7	VJA1057	21 PIN CABLE	1	
A8	VPK2246	ACCESSORY BOX	1	

[TOP](#) [PREVIOUS](#) [NEXT](#)

16.4 PCB PARTS

[TOP](#) [PREVIOUS](#) [NEXT](#)




Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
	VEP06F51P	MAIN PCB	1	RTL NV-HV51EF-S THE FOLLOWING PCB IS INCLUDED IN MAIN PCB VEP07A47B
	VEP06F51K	MAIN PCB	1	RTL NV-HV61EF-S THE FOLLOWING PCB IS INCLUDED IN MAIN PCB VEP07A47B
DU7601	VEP07A47B	VIF PCB	1	RTL
TU7601	ENV57G04H6	TUNER	1	

[TOP](#) [PREVIOUS](#) [NEXT](#)

16.5 ELECTRICAL PARTS

[TOP](#) [PREVIOUS](#) [NEXT](#)

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
C0701	F1H1H1030007	CHIP CAPACITOR	1	
C0702	ECJ2VC1H151J	CHIP CAPACITOR	1	
C0703	F1H1H1030007	CHIP CAPACITOR	1	
C0704	ECJ2VC1H270J	CHIP CAPACITOR	1	
C0705	F1H1H1030007	CHIP CAPACITOR	1	
C0706	ECJ2VF1H103Z	CHIP CAPACITOR	1	
C0707	F1H1H1030007	CHIP CAPACITOR	1	
C0708	F1H1H1030007	CHIP CAPACITOR	1	
C0709	F1H1H1030007	CHIP CAPACITOR	1	
C0710	F1H1H1030007	CHIP CAPACITOR	1	
C0712	F1J1C4740012	CHIP CAPACITOR	1	
C0714	F1H1H1030007	CHIP CAPACITOR	1	
C0715	F1H1H1030007	CHIP CAPACITOR	1	
C0716	ECJ1VC1H391J	CHIP CAPACITOR	1	
C0717	F1H1H1030007	CHIP CAPACITOR	1	
C0719	F1J1C4740012	CHIP CAPACITOR	1	
C0720	F1H1H1030007	CHIP CAPACITOR	1	
C0721	F1H1H1030007	CHIP CAPACITOR	1	
C0722	F1J1H1040007	CHIP CAPACITOR	1	
C0723	ECEA1CKA101B	CHIP CAPACITOR	1	
C0725	ECEA1HKA2R2B	CHIP CAPACITOR	1	
C0726	ECJ1VB1H152K	CHIP CAPACITOR	1	
C0728	ECEA1HKA0R1B	CHIP CAPACITOR	1	
C0729	F1H1H1030007	CHIP CAPACITOR	1	
C0730	ECEA1CKA220B	CHIP CAPACITOR	1	
C0733	ECEA1HKAR22B	CHIP CAPACITOR	1	
C0734	ECJ1VB1H152K	CHIP CAPACITOR	1	
C0735	F1H1H1030007	CHIP CAPACITOR	1	
C0738	ECJ1VC1H390J	CHIP CAPACITOR	1	
C0739	F1H1H470A230	CHIP CAPACITOR	1	
C0740	ERJ3GEY0R00V	CHIP CAPACITOR	1	

C0741	F1H1H1030007	CHIP CAPACITOR	1	
C0742	F1H1H4700004	CHIP CAPACITOR	1	
C0743	ECJ1VC1H180J	CHIP CAPACITOR	1	
C1002	EEUEB1E470SB	CHIP CAPACITOR	1	
C1003	F1H1C104A008	CHIP CAPACITOR	1	
C1004	EEUEB1E470SB	CHIP CAPACITOR	1	
C1008	F1H1C104A008	CHIP CAPACITOR	1	
C1009	F1H1C104A008	CHIP CAPACITOR	1	
C1011	EEUEB1E470SB	CHIP CAPACITOR	1	
C1016	ECEA1AKA101B	CHIP CAPACITOR	1	
C1019	F1H1C104A008	CHIP CAPACITOR	1	
C1025	F1H1H104A783	CHIP CAPACITOR	1	
C1026	F1H1H104A783	CHIP CAPACITOR	1	
C1120	F0CAF154A019	CHIP CAPACITOR	1	
C1121	F1BAF1020020	CHIP CAPACITOR	1	
C1123	F1BAF1020020	CHIP CAPACITOR	1	
C1141	EEUEB2G330E	CHIP CAPACITOR	1	
C1151	ECQB1H473JF3	CHIP CAPACITOR	1	
C1152	ECQB1H103JF3	CHIP CAPACITOR	1	
C1153	ECQV1H104JL3	CHIP CAPACITOR	1	
C1154	ECQB1H223JF3	CHIP CAPACITOR	1	
C1155	F1A3A271A028	CHIP CAPACITOR	1	
C1200	ECQV1H104JL3	CHIP CAPACITOR	1	
C1210	F1B3A332A004	CHIP CAPACITOR	1	
C1230	F2A1H2200032	CHIP CAPACITOR	1	
C1250	F2A1E6810012	CHIP CAPACITOR	1	
C1251	F2A1E101A122	CHIP CAPACITOR	1	
C1260	F2A1A1020056	CHIP CAPACITOR	1	
C1261	ECA1AHJ331B	CHIP CAPACITOR	1	
C1270	F2A1H2200032	CHIP CAPACITOR	1	
C1280	F2A1A1010072	CHIP CAPACITOR	1	
C2501	F1H1H1030007	CHIP CAPACITOR	1	
C2504	ECJ1VB1C563K	CHIP CAPACITOR	1	
C2505	ECJ1VB1C563K	CHIP CAPACITOR	1	
C2506	ECJ1VB1C563K	CHIP CAPACITOR	1	
C2507	ECJ1VB1C563K	CHIP CAPACITOR	1	
C2508	F1H1C104A042	CHIP CAPACITOR	1	

C2509	F1H1A105A004	CHIP CAPACITOR	1	
C2510	F1H1H330A736	CHIP CAPACITOR	1	
C2511	ECEA0JKN220B	CHIP CAPACITOR	1	
C2512	ECEA1EKA4R7B	CHIP CAPACITOR	1	
C2513	ECJ1VB1H392K	CHIP CAPACITOR	1	
C2514	F1H1C104A008	CHIP CAPACITOR	1	
C2515	F1H1C104A008	CHIP CAPACITOR	1	
C2516	F1H1A2240004	CHIP CAPACITOR	1	
C2517	F1H1E223A029	CHIP CAPACITOR	1	
C2518	F1H1E223A029	CHIP CAPACITOR	1	
C2519	F1H1C104A042	CHIP CAPACITOR	1	
C2520	F1H1H1020005	CHIP CAPACITOR	1	
C2521	ECEA1CKA220B	CHIP CAPACITOR	1	
C2522	F2A0J471A016	CHIP CAPACITOR	1	
C2523	F1H1C104A042	CHIP CAPACITOR	1	
C2524	F1H1C104A042	CHIP CAPACITOR	1	
C2525	F1H1C104A042	CHIP CAPACITOR	1	
C2526	F1H1C104A008	CHIP CAPACITOR	1	
C2527	F1H1H182A219	CHIP CAPACITOR	1	
C2529	F1H1A105A004	CHIP CAPACITOR	1	
C2530	F2A1E221A122	CHIP CAPACITOR	1	
C3001	F1H1H1510001	CHIP CAPACITOR	1	
C3002	F1H0J1050012	CHIP CAPACITOR	1	
C3003	F1H1C104A042	CHIP CAPACITOR	1	
C3005	F1H1H2700003	CHIP CAPACITOR	1	
C3006	F1H1C104A042	CHIP CAPACITOR	1	
C3007	F1H1A105A004	CHIP CAPACITOR	1	
C3008	ECEA1HKA4R7B	CHIP CAPACITOR	1	
C3009	F1H1A105A004	CHIP CAPACITOR	1	
C3010	F1H1H1030007	CHIP CAPACITOR	1	
C3011	F1H1H1030007	CHIP CAPACITOR	1	
C3012	ECEA0JKA470B	CHIP CAPACITOR	1	
C3014	F1H0J1050012	CHIP CAPACITOR	1	
C3015	F1H0J1050012	CHIP CAPACITOR	1	
C3017	F1H1C104A042	CHIP CAPACITOR	1	
C3018	F1H1C104A008	CHIP CAPACITOR	1	
C3019	F1H1C104A042	CHIP CAPACITOR	1	


C3020	ECEA1HKA3R3B	CHIP CAPACITOR	1	
C3021	ECEA1CKA100B	CHIP CAPACITOR	1	
C3022	F1H1C104A042	CHIP CAPACITOR	1	
C3023	F1H1H1030006	CHIP CAPACITOR	1	
C3024	ECJ1VC1H331J	CHIP CAPACITOR	1	
C3025	F1H1C104A042	CHIP CAPACITOR	1	
C3026	ECEA0JKA470B	CHIP CAPACITOR	1	
C3027	ECEA1HKA010B	CHIP CAPACITOR	1	
C3028	ECEA1HKA4R7B	CHIP CAPACITOR	1	
C3029	ECEA1HKAR47B	CHIP CAPACITOR	1	
C3030	F1H1E223A029	CHIP CAPACITOR	1	
C3031	F1H1C333A041	CHIP CAPACITOR	1	
C3032	ECEA1HKA3R3B	CHIP CAPACITOR	1	
C3033	F1H1C104A042	CHIP CAPACITOR	1	
C3034	ECEA1HKA2R2B	CHIP CAPACITOR	1	
C3035	F1H1E223A029	CHIP CAPACITOR	1	
C3036	ECEA0JKA470B	CHIP CAPACITOR	1	
C3037	F1H1H1030007	CHIP CAPACITOR	1	
C3038	ECJ1VC1H030C	CHIP CAPACITOR	1	
C3039	ECEA1HKA010B	CHIP CAPACITOR	1	
C3040	F1H1H1030007	CHIP CAPACITOR	1	
C3041	F1H1H1030007	CHIP CAPACITOR	1	
C3042	F1H1A105A004	CHIP CAPACITOR	1	
C3053	F1H1H1030007	CHIP CAPACITOR	1	
C3054	F1H1H4700004	CHIP CAPACITOR	1	
C3058	F1H1C104A042	CHIP CAPACITOR	1	
C3062	ERJ3GEY0R00V	CHIP CAPACITOR	1	
C3070	F1H1C104A042	CHIP CAPACITOR	1	
C4001	ECEA0JKA101B	CHIP CAPACITOR	1	
C4003	F1H1H472A219	CHIP CAPACITOR	1	
C4004	ECJ1VB1H122K	CHIP CAPACITOR	1	
C4005	ECEA0JKA220B	CHIP CAPACITOR	1	
C4006	ECEA1EKA4R7B	CHIP CAPACITOR	1	
C4008	ECEA1HKA3R3B	CHIP CAPACITOR	1	
C4009	ECEA0JKA220B	CHIP CAPACITOR	1	
C4011	ECJ1VB1H822K	CHIP CAPACITOR	1	
C4012	ECEA1HKA4R7B	CHIP CAPACITOR	1	


C4013	F1H1H1030007	CHIP CAPACITOR	1	
C4016	F1H1C104A042	CHIP CAPACITOR	1	
C4017	ECEA1CKA100B	CHIP CAPACITOR	1	
C4018	ECEA1HKA010B	CHIP CAPACITOR	1	
C4019	ECEA1CKA100B	CHIP CAPACITOR	1	
C4020	ECJ1VC1H221J	CHIP CAPACITOR	1	
C4021	ECQB1H223JF3	CHIP CAPACITOR	1	
C4022	ECJ1VB1H152K	CHIP CAPACITOR	1	
C4023	ECEA1AKA470B	CHIP CAPACITOR	1	
C4024	F1H1E223A029	CHIP CAPACITOR	1	
C4025	ECEA1AKA220B	CHIP CAPACITOR	1	
C4026	ECEA1CKA100B	CHIP CAPACITOR	1	
C4501	ECEA1CKA100B	CHIP CAPACITOR	1	
C4502	ECEA1CKA100B	CHIP CAPACITOR	1	
C4503	ECEA1CKA100B	CHIP CAPACITOR	1	
C4504	ECQB1H473JF3	CHIP CAPACITOR	1	
C4505	ECEA1AKA330B	CHIP CAPACITOR	1	
C4506	ECEA1CKA100B	CHIP CAPACITOR	1	
C4507	ECEA1CKA220B	CHIP CAPACITOR	1	
C4508	ECQB1H153JF3	CHIP CAPACITOR	1	
C4509	F1H1C333A041	CHIP CAPACITOR	1	
C4511	F1H1H1030006	CHIP CAPACITOR	1	
C4514	F1H1H1030006	CHIP CAPACITOR	1	
C4515	ECEA0JKA101B	CHIP CAPACITOR	1	
C4516	F1H1C104A008	CHIP CAPACITOR	1	
C4517	F1H1C104A042	CHIP CAPACITOR	1	
C4519	F1H1A2240004	CHIP CAPACITOR	1	
C4520	ECQB1H153JF3	CHIP CAPACITOR	1	
C4521	ECEA0JKA220B	CHIP CAPACITOR	1	
C4522	ECEA1CKA100B	CHIP CAPACITOR	1	
C4523	ECEA1AKA330B	CHIP CAPACITOR	1	
C4524	ECQB1H473JF3	CHIP CAPACITOR	1	
C4525	ECEA0JKA101B	CHIP CAPACITOR	1	
C4526	F1H1C104A008	CHIP CAPACITOR	1	
C4529	ECEA1CKA100B	CHIP CAPACITOR	1	
C4530	ECEA1CKA100B	CHIP CAPACITOR	1	
C4531	ECEA1CKA100B	CHIP CAPACITOR	1	

C4532	ECEA1CKA100B	CHIP CAPACITOR	1	
C4533	ECEA1CKA100B	CHIP CAPACITOR	1	
C4534	ECEA1CKA470B	CHIP CAPACITOR	1	
C4538	F1H1C104A042	CHIP CAPACITOR	1	
C4539	F1H1C104A008	CHIP CAPACITOR	1	
C4540	F1H1C104A042	CHIP CAPACITOR	1	
C4541	F1H1C104A042	CHIP CAPACITOR	1	
C4544	F1H1H1010005	CHIP CAPACITOR	1	
C4545	F1H1H1010005	CHIP CAPACITOR	1	
C4904	F1H1H4700004	CHIP CAPACITOR	1	
C4905	F1H1H4700004	CHIP CAPACITOR	1	
C4906	ECJ1VC1H471J	CHIP CAPACITOR	1	
C4907	ECJ1VC1H471J	CHIP CAPACITOR	1	
C4908	ECJ1VC1H471J	CHIP CAPACITOR	1	
C4909	ECJ1VC1H471J	CHIP CAPACITOR	1	
C4910	F1H1C104A042	CHIP CAPACITOR	1	
C4911	ECJ1VC1H471J	CHIP CAPACITOR	1	
C4912	F1H1H4700004	CHIP CAPACITOR	1	
C4913	F1H1H4700004	CHIP CAPACITOR	1	
C4914	ECJ1VC1H471J	CHIP CAPACITOR	1	
C4915	F1H1H1010005	CHIP CAPACITOR	1	
C4916	F1H1H1010005	CHIP CAPACITOR	1	
C4917	F1H1C104A042	CHIP CAPACITOR	1	
C4918	F1H1H1030007	CHIP CAPACITOR	1	
C4919	F1H1C104A042	CHIP CAPACITOR	1	
C4920	F1H1C104A042	CHIP CAPACITOR	1	
C4924	F1H1C104A042	CHIP CAPACITOR	1	
C4926	F1H1C104A008	CHIP CAPACITOR	1	
C4927	F1H1C104A008	CHIP CAPACITOR	1	
C4928	F1H1C104A042	CHIP CAPACITOR	1	
C4929	F1H1H1030007	CHIP CAPACITOR	1	
C4930	F1H1C104A042	CHIP CAPACITOR	1	
C4931	F1H1C104A042	CHIP CAPACITOR	1	
C4932	F1H1C104A042	CHIP CAPACITOR	1	
C4933	F1H1H1030007	CHIP CAPACITOR	1	
C4934	F1H1C104A008	CHIP CAPACITOR	1	
C4935	F1H1H1030007	CHIP CAPACITOR	1	


C4936	F1H1C104A042	CHIP CAPACITOR	1	
C4943	F1H1C104A008	CHIP CAPACITOR	1	
C4952	ECJ1VC1H471J	CHIP CAPACITOR	1	NV-HV61EF-S
C4953	F1H1H4700004	CHIP CAPACITOR	1	NV-HV61EF-S
C4954	ECJ1VC1H471J	CHIP CAPACITOR	1	NV-HV61EF-S
C4955	F1H1H4700004	CHIP CAPACITOR	1	NV-HV61EF-S
C4957	ECEA0JKA331Q	CHIP CAPACITOR	1	
C4958	F1H1C104A008	CHIP CAPACITOR	1	
C4959	F1H1H4700004	CHIP CAPACITOR	1	
C5001	F1H1H1030006	CHIP CAPACITOR	1	
C5002	F1H1H1030006	CHIP CAPACITOR	1	
C5003	F1H1H1030006	CHIP CAPACITOR	1	
C5004	F1H1H1030006	CHIP CAPACITOR	1	
C5005	F1H1C104A042	CHIP CAPACITOR	1	
C5006	ECEA0JKA470B	CHIP CAPACITOR	1	
C5007	F1H1C104A008	CHIP CAPACITOR	1	
C6001	ECEA0JKA221B	CHIP CAPACITOR	1	
C6003	ECJ1VC1H471J	CHIP CAPACITOR	1	
C6004	F1H1H1030007	CHIP CAPACITOR	1	
C6005	F1H1H1030007	CHIP CAPACITOR	1	
C6006	F1H1H330A736	CHIP CAPACITOR	1	
C6008	F1H1H1030007	CHIP CAPACITOR	1	
C6009	ECJ1VC1H180J	CHIP CAPACITOR	1	
C6010	ECJ1VC1H180J	CHIP CAPACITOR	1	
C6011	ECJ1VC1H180J	CHIP CAPACITOR	1	
C6012	F1H1H1500009	CHIP CAPACITOR	1	
C6015	ECEA1CKA100B	CHIP CAPACITOR	1	
C6016	F1H1H1030007	CHIP CAPACITOR	1	
C6017	ECJ1VC1H681J	CHIP CAPACITOR	1	
C6022	ECJ1VC1H221J	CHIP CAPACITOR	1	
C6023	F1H1A105A004	CHIP CAPACITOR	1	
C6024	ECEA1AKS221Q	CHIP CAPACITOR	1	
C6025	F1H1C104A008	CHIP CAPACITOR	1	
C6027	F1H1C333A041	CHIP CAPACITOR	1	NV-HV61EF-S
C6028	F1H1H222A219	CHIP CAPACITOR	1	NV-HV61EF-S
C6029	ECJ1VF1C474Z	CHIP CAPACITOR	1	NV-HV61EF-S
C6030	F1H1H1510001	CHIP CAPACITOR	1	NV-HV61EF-S



C6031	F1H1C104A008	CHIP CAPACITOR	1	NV-HV61EF-S
C6032	ECEA0JKA470B	CHIP CAPACITOR	1	NV-HV61EF-S
C6035	F1H0J1050012	CHIP CAPACITOR	1	
C6036	ECJ1VC1H561J	CHIP CAPACITOR	1	
C6040	F1H1C104A008	CHIP CAPACITOR	1	
C6041	F1H1C104A008	CHIP CAPACITOR	1	
C6042	F1H1H1030007	CHIP CAPACITOR	1	
C7501	F1H1H1030007	CHIP CAPACITOR	1	
C7502	ECEA1HKA100B	CHIP CAPACITOR	1	
C7503	ECJ1VC1H120J	CHIP CAPACITOR	1	
C7504	ECEA0JKA101B	CHIP CAPACITOR	1	
C7507	F4D55473A005	CHIP CAPACITOR	1	
C7508	ECEA0JKA221B	CHIP CAPACITOR	1	
C7509	F1H1H682A219	CHIP CAPACITOR	1	
C7510	F1H1H1030007	CHIP CAPACITOR	1	
C7511	F1H1C104A008	CHIP CAPACITOR	1	
C7512	F1H1C104A008	CHIP CAPACITOR	1	
C7603	ECEA0JKA101B	CHIP CAPACITOR	1	
C7605	F1H1H1030007	CHIP CAPACITOR	1	
C7607	ECEA1HKA010B	CHIP CAPACITOR	1	
C7609	F1H1H330A736	CHIP CAPACITOR	1	
C7610	F1H1H330A736	CHIP CAPACITOR	1	
C7611	F1H1H330A736	CHIP CAPACITOR	1	
C7612	F1H1H104A731	CHIP CAPACITOR	1	
C7614	ECEA0JKA101B	CHIP CAPACITOR	1	
C7615	F1H1H1030007	CHIP CAPACITOR	1	
C7617	F1H1H1030007	CHIP CAPACITOR	1	
C7618	F1H1C104A042	CHIP CAPACITOR	1	
C7622	F1H1C104A042	CHIP CAPACITOR	1	
C7623	F1J1C105A091	CHIP CAPACITOR	1	
C7624	F1H1C104A042	CHIP CAPACITOR	1	
C7625	F1H1H1030007	CHIP CAPACITOR	1	
C7628	F1H1C104A042	CHIP CAPACITOR	1	
C7630	ERJ3GEYJ822V	CHIP CAPACITOR	1	
C7631	ERJ3GEY0R00V	CHIP CAPACITOR	1	
C7635	ECEA0JKA470B	CHIP CAPACITOR	1	
C7640	F1H1C104A042	CHIP CAPACITOR	1	

C7641	F1H1C104A042	CHIP CAPACITOR	1	
C7642	F1H1C104A042	CHIP CAPACITOR	1	
C7645	ECEA1CKA100B	CHIP CAPACITOR	1	
C7646	ECEA1CKA100B	CHIP CAPACITOR	1	
C7647	ECEA0JKA101B	CHIP CAPACITOR	1	
C7648	F1H1H1030006	CHIP CAPACITOR	1	
C7651	ECEA1CKA100B	CHIP CAPACITOR	1	
C7653	F1H1H100A735	CHIP CAPACITOR	1	
C7654	F1H1H100A735	CHIP CAPACITOR	1	
C7655	F1H1H1020005	CHIP CAPACITOR	1	
C8801	F1H1H1030007	CHIP CAPACITOR	1	
C8802	ECEA1HKA010B	CHIP CAPACITOR	1	
C8803	F1H1H1030006	CHIP CAPACITOR	1	
C8804	ECEA1HKA2R2B	CHIP CAPACITOR	1	
C8805	F1H1H222A219	CHIP CAPACITOR	1	
C8806	F1H1H222A219	CHIP CAPACITOR	1	
C8807	ECEA1HKA010B	CHIP CAPACITOR	1	
C8808	ECEA1HKAR47B	CHIP CAPACITOR	1	
C8809	F1H1H1030007	CHIP CAPACITOR	1	
C8810	F1H1C104A042	CHIP CAPACITOR	1	
C8811	ECEA0JKA101B	CHIP CAPACITOR	1	
C8812	F1H1C104A042	CHIP CAPACITOR	1	
C8813	F1H1C104A042	CHIP CAPACITOR	1	
C8814	F1H1C104A042	CHIP CAPACITOR	1	
C8815	ECEA1HKAR47B	CHIP CAPACITOR	1	
C8816	F1H1C104A008	CHIP CAPACITOR	1	
C8817	F1H1C104A042	CHIP CAPACITOR	1	
D0701	MA3Z080D0L	DIODE	1	
D0703	MA3Z080E0L	DIODE	1	
D1002	MAZ4056NHF	DIODE	1	
D1003	MAZ4130NLF	DIODE	1	
D1005	MAZ4056NHF	DIODE	1	
D1011	MAZ4051NMF	DIODE	1	
D1012	BOEADD000002	DIODE	1	
D1110	ERZVA5V471	SURGE ABSORBER	1	
D1140	BOEBKT000002	BRIDGE RECTIFIER	1	
D1150	BOHAGM000006	DIODE	1	

D1152	MA2C18500E	DIODE	1	
D1155	B0EADD000002	DIODE	1	
D1157	MAZ40270LF	DIODE	1	
D1180	MAZ751000C	DIODE	1	
D1230	MA2C18500E	DIODE	1	
D1250	B0JAMK000015	DIODE	1	
D1251	B0JAMK000015	DIODE	1	
D1263	B0JAME000033	DIODE	1	
D1270	MA2C18500E	DIODE	1	
D1280	B0JAME000025	DIODE	1	
D1501	B3EA00000072	DIODE	1	
D2501	B0EADD000002	DIODE	1	
D2502	B0EADD000002	DIODE	1	
D4502	B0EADD000002	DIODE	1	
D4901	MAZ4056NHF	DIODE	1	
D4902	MAZ4056NHF	DIODE	1	
D4903	B0EADD000002	DIODE	1	
D6004	B0ACCK000005	DIODE	1	
D7501	MAZ4240NMF	DIODE	1	
D7503	B0JACE000001	DIODE	1	
D7601	MAZ43000MF	DIODE	1	
D7602	B0EADD000002	DIODE	1	
DP7501	A2BA00000215	DISPLAY	1	
F1101	K5D162BK0005	MINIATURE FUSE	1	
IC0701	C1AB00001598	IC	1	
IC1200	C0DAEJC00003	IC	1	
IC1501	B3NAA0000073	IC	1	
IC1502	B3NAA0000073	IC	1	
IC2501	C1AB00001767	IC	1	
IC3001	C1AB00001836	IC	1	
IC4501	AN3656NFBPBV	IC	1	
IC4902	C1AB00001614	IC	1	
IC6001	C2CBJG000435	IC	1	
IC6002	C3EAGC000015	IC	1	
IC6003	C1AB00001293	IC	1	NV-HV61EF-S
IC6004	C0DBCHD00002	IC	1	
IC6005	C0DBZJG00007	IC	1	

IC7501	C0HBB0000023	IC	1	
IC7502	PNA4618M09VT	IC	1	
IC7503	C0EBE0000211	IC	1	
IC7504	C0EBH0000218	IC	1	
IC7602	C1AB00001404	IC	1	
IC8801	C1AB00001759	IC	1	
IP1280	UNH000700A	IC PROTECTOR	1	
J1	VEE0U97	EARTH WIRE	1	
JK4901	K1FB121B0013	21 PIN SCART (VCR)	1	
JK4902	K1FB121B0013	21 PIN SCART (VCR)	1	
JK4904	K2HA203B0012	AV	1	NV-HV61EF-S
K3004	ERJ6GEY0R00Z	CHIP RESISTOR	1	
K3016	ERJ6GEY0R00Z	CHIP RESISTOR	1	
K3017	ERJ6GEY0R00Z	CHIP RESISTOR	1	
K3018	ERJ6GEY0R00Z	CHIP RESISTOR	1	
K3020	ERJ6GEY0R00Z	CHIP RESISTOR	1	
K3030	ERJ6GEY0R00Z	CHIP RESISTOR	1	
K4001	ERJ6GEY0R00Z	CHIP RESISTOR	1	
K4901	ERJ6GEY0R00Z	CHIP RESISTOR	1	
K4903	ERJ6GEY0R00Z	CHIP RESISTOR	1	
K4907	ERJ6GEY0R00Z	CHIP RESISTOR	1	
K4908	ERJ6GEY0R00Z	CHIP RESISTOR	1	
K4909	ERJ6GEY0R00Z	CHIP RESISTOR	1	
K4910	ERJ6GEY0R00Z	CHIP RESISTOR	1	
K4911	ERJ6GEY0R00Z	CHIP RESISTOR	1	
K5001	ERJ6GEY0R00Z	CHIP RESISTOR	1	
K6001	ERJ6GEY0R00Z	CHIP RESISTOR	1	
K7601	ERJ6GEY0R00Z	CHIP RESISTOR	1	
K7615	ERJ6GEY0R00Z	CHIP RESISTOR	1	
K7618	ERJ6GEY0R00Z	CHIP RESISTOR	1	
K7621	ERJ6GEY0R00Z	CHIP RESISTOR	1	
L0702	ELJNAR18JF	CHIP INDUCTOR	1	
L0703	ELJNAR68JF	CHIP INDUCTOR	1	
L0704	ELJFA151KF	CHIP INDUCTOR	1	
L0705	ELJFA151KF	CHIP INDUCTOR	1	
L0706	ELJFA151KF	CHIP INDUCTOR	1	
L0707	ELJFA151KF	CHIP INDUCTOR	1	

L1120	ELF15N003AB	LINE FILTER	1	
L1250	G0A220G00018	CHOKE COIL RADIAL	1	
L1260	G0A220G00018	CHOKE COIL RADIAL	1	
L3002	G0C820JA0019	CHOKE COIL AXIAL	1	
L3003	G0C270JA0019	CHOKE COIL AXIAL	1	
L3004	G0C680JA0019	CHOKE COIL AXIAL	1	
L3005	G0C270JA0019	CHOKE COIL AXIAL	1	
L3006	G0C120JA0019	CHOKE COIL AXIAL	1	
L3010	G0C390JA0019	CHOKE COIL AXIAL	1	
L4002	G0C680JA0019	CHOKE COIL AXIAL	1	
L4501	G0C1R2J00004	CHOKE COIL AXIAL	1	
L4502	G0C1R2J00004	CHOKE COIL AXIAL	1	
L4901	G0CR22JA0019	CHOKE COIL AXIAL	1	
L4902	G0C330JA0019	CHOKE COIL AXIAL	1	
L4903	G0C330JA0019	CHOKE COIL AXIAL	1	
L5001	G0C680JA0019	CHOKE COIL AXIAL	1	
L6002	G0C330JA0019	CHOKE COIL AXIAL	1	
L6006	G0C680JA0019	CHOKE COIL AXIAL	1	NV-HV61EF-S
L7601	G0C270JA0019	CHOKE COIL AXIAL	1	
L7605	G0C2R2JA0019	CHOKE COIL AXIAL	1	
L7607	G0C2R2JA0019	CHOKE COIL AXIAL	1	
L7608	G0C1R0JA0019	CHOKE COIL AXIAL	1	
L8801	G0C100JA0019	CHOKE COIL AXIAL	1	
L8801	G0C100JA0019	CHOKE COIL AXIAL	1	
LB1213	J0JHC0000070	BEAD CORE	1	
LB4001	ERJ3GEY0R00V	CHIP RESISTOR	1	
LB4002	ERJ3GEY0R00V	CHIP RESISTOR	1	
LB4003	ERJ3GEY0R00V	CHIP RESISTOR	1	
LB4901	ERJ6GEYJ331V	CHIP RESISTOR	1	
LB4902	ERJ6GEYJ331V	CHIP RESISTOR	1	
LB4903	J0JBC0000041	BEAD CORE	1	
LB4904	J0JBC0000041	BEAD CORE	1	
LB4905	ERJ6GEYJ331V	CHIP RESISTOR	1	
LB4906	ERJ6GEYJ331V	CHIP RESISTOR	1	
LB4907	J0JBC0000041	BEAD CORE	1	
LB4908	J0JBC0000041	BEAD CORE	1	
LB4909	J0JBC0000041	BEAD CORE	1	NV-HV61EF-S

LB4910	J0JBC0000041	BEAD CORE	1	NV-HV61EF-S
LB4911	J0JBC0000011	BEAD CORE	1	
LB4912	ERJ3GEY0R00V	CHIP RESISTOR	1	
LB6001	J0JBC0000041	BEAD CORE	1	
LB7601	J0JCC0000080	BEAD CORE	1	
LB7603	J0JCC0000124	BEAD CORE	1	
LB7604	J0JCC0000124	BEAD CORE	1	
LB7610	J0JCC0000062	BEAD CORE	1	
LB7611	J0JCC0000062	BEAD CORE	1	
LR1150	J1ZZA0000001	BEAD CORE	1	
P1101	K2AA2H000007	AC INLET	1	
P1501	K1KA02A00375	CONNECTOR	1	
P2501	K1KA08A00290	CONNECTOR	1	
P2502	K1MN07A00030	CONNECTOR	1	
P4001	K1MZ02A00003	CONNECTOR	1	
P4002	K1MN06A00042	CONNECTOR	1	
P5001	K1MN09A00029	CONNECTOR	1	
PK0701	K1MR09A00028	CONNECTOR	1	
PP0701	K1KA04B00135	CONNECTOR	1	
Q0702	2SD0601ASL	TRANSISTOR	1	
Q0703	2SB0709ARL	TRANSISTOR	1	
Q1001	2SD0602ARL	TRANSISTOR	1	
Q1002	B1AAGD000006	TRANSISTOR	1	
Q1003	2SB0710ARL	TRANSISTOR	1	
Q1005	B1AAGD000006	TRANSISTOR	1	
Q1006	B1AAGD000006	TRANSISTOR	1	
Q1007	B1AAGD000006	TRANSISTOR	1	
Q1008	B1AAGD000006	TRANSISTOR	1	
Q1009	B1AAGD000006	TRANSISTOR	1	
Q1010	B1AAGD000006	TRANSISTOR	1	
Q1013	2SD0601ARN	TRANSISTOR	1	
Q1150	B1DEDR000003	TRANSISTOR	1	
Q1151	2SD1992ARA	TRANSISTOR	1	
Q1152	2SC3311ASA	TRANSISTOR	1	
Q1153	B1DEDQ000014	TRANSISTOR	1	
Q1200	B3PBA0000078	PHOTO COUPLER	1	
Q1501	PNB2302MF	PHOTO TRANSISTOR	1	

Q1502	PNB2302MF	PHOTO TRANSISTOR	1	
Q3001	2SD0601ARN	TRANSISTOR	1	
Q4003	2SD0601ARN	TRANSISTOR	1	
Q4004	2SD0601ARN	TRANSISTOR	1	
Q4005	2SD0602ARL	TRANSISTOR	1	
Q4006	2SB0710ARL	TRANSISTOR	1	
Q4905	2SD0601ARN	TRANSISTOR	1	
Q4906	2SD0601ARN	TRANSISTOR	1	
Q6003	2SB0709ARL	TRANSISTOR	1	
Q6008	2SD0601ARN	TRANSISTOR	1	
Q6009	2SD0601ARN	TRANSISTOR	1	
Q8801	2SD0601ARN	TRANSISTOR	1	
QR0702	B1GBHBHH0002	DIGITAL TRANSISTOR	1	
QR1003	UNR211200L	TRANSISTOR	1	
QR3006	UNR221200L	TRANSISTOR	1	
QR4001	UNR221100L	TRANSISTOR	1	
QR4002	B1GDCFJJ0002	TRANSISTOR	1	
QR4005	UNR221200L	TRANSISTOR	1	
QR4501	UNR211300L	TRANSISTOR	1	
QR4503	B1GBCFGA0002	TRANSISTOR	1	
QR4504	B1GBCFGA0002	TRANSISTOR	1	
QR4506	B1GBCFGA0002	TRANSISTOR	1	
QR4508	B1GBCFGA0002	TRANSISTOR	1	
QR4901	B1GBCFJA0002	TRANSISTOR	1	
QR4902	UNR221200L	TRANSISTOR	1	
QR4903	B1GBCFJA0002	TRANSISTOR	1	
QR4904	B1GBCFJA0002	TRANSISTOR	1	
QR6001	B1GBCFJA0002	TRANSISTOR	1	
QR6004	UNR221100L	TRANSISTOR	1	
QR8801	UNR221100L	TRANSISTOR	1	
QR8802	B1GDCFJJ0002	TRANSISTOR	1	
QR8803	B1GDCFJJ0002	TRANSISTOR	1	
QR8804	UNR221100L	TRANSISTOR	1	
R0706	ERJ3GEYJ223V	CHIP RESISTOR	1	
R0707	ERJ6GEYJ223V	CHIP RESISTOR	1	
R0708	ERJ6GEYJ562V	CHIP RESISTOR	1	
R0709	ERJ6GEYJ223V	CHIP RESISTOR	1	

R0710	ERJ6GEYJ223V	CHIP RESISTOR	1	
R0711	ERJ3GEYJ562V	CHIP RESISTOR	1	
R0713	ERJ3GEYG181V	CHIP RESISTOR	1	
R0717	ERJ3GEYG562V	CHIP RESISTOR	1	
R0722	ERJ3GEYJ562V	CHIP RESISTOR	1	
R0724	ERJ8GEYJ151V	CHIP RESISTOR	1	
R0726	ERJ3GEYJ561V	CHIP RESISTOR	1	
R0727	ERJ6GEYJ101Z	CHIP RESISTOR	1	
R0732	ERJ8GEYJ102V	CHIP RESISTOR	1	
R0733	ERJ3GEYG393V	CHIP RESISTOR	1	
R0734	ERJ3GEYG682V	CHIP RESISTOR	1	
R0735	ERJ3GEYJ101V	CHIP RESISTOR	1	
R0737	ERJ6GEYJ101Z	CHIP RESISTOR	1	
R0738	ERJ3GEY0R00V	CHIP RESISTOR	1	
R0741	ERJ6GEY0R00Z	CHIP RESISTOR	1	
R0750	ERJ6GEYG562V	CHIP RESISTOR	1	
R0755	ERJ6GEYJ101Z	CHIP RESISTOR	1	
R0756	ERJ6GEYJ101Z	CHIP RESISTOR	1	
R0757	ERJ3GEYJ752V	CHIP RESISTOR	1	
R1001	ERJ6GEYJ333V	CHIP RESISTOR	1	
R1002	ERJ6GEYJ220V	CHIP RESISTOR	1	
R1003	ERJ6GEYJ273V	CHIP RESISTOR	1	
R1005	ERJ6GEYJ562V	CHIP RESISTOR	1	
R1006	ERJ6GEYJ562V	CHIP RESISTOR	1	
R1008	ERDS2TJ471T	CARBON RESISTOR	1	
R1009	ERDS2TJ471T	CARBON RESISTOR	1	
R1013	ERDS2TJ103T	CARBON RESISTOR	1	
R1014	ERJ6GEYJ472V	CHIP RESISTOR	1	
R1015	ERDS2TJ103T	CARBON RESISTOR	1	
R1016	ERJ6GEYJ472V	CHIP RESISTOR	1	
R1017	ERJ6GEYJ103V	CHIP RESISTOR	1	
R1018	ERJ6GEYJ562V	CHIP RESISTOR	1	
R1022	ERDS2TJ151T	CARBON RESISTOR	1	
R1024	ERJ6GEYJ562V	CHIP RESISTOR	1	
R1025	ERDS2TJ151T	CARBON RESISTOR	1	
R1026	ERJ6GEYJ682V	CHIP RESISTOR	1	
R1028	ERDS2TJ682T	CARBON RESISTOR	1	

R1101	ERDS2FJ105T	CARBON RESISTOR	1	
R1102	ERDS2FJ105T	CARBON RESISTOR	1	
R1150	ERDS2TJ105T	CARBON RESISTOR	1	
R1153	ERG2SJ331E	METAL OXIDE RESISTOR	1	
R1154	ERDS2TJ105T	CARBON RESISTOR	1	
R1155	ERDS2TJ104T	CARBON RESISTOR	1	
R1156	ERDS2TJ330T	CARBON RESISTOR	1	
R1157	EROS2THF1801	METAL OXIDE RESISTOR	1	
R1158	ERDS2TJ331T	CARBON RESISTOR	1	
R1159	ERDS2TJ3R3T	CARBON RESISTOR	1	
R1160	ERX1SJR51E	METAL RESISTOR	1	
R1161	ERDS2TJ101T	CARBON RESISTOR	1	
R1162	ERDS2FJ102T	CARBON RESISTOR	1	
R1163	ERDS2FJ101T	CARBON RESISTOR	1	
R1200	ERJ6GEYG393V	CHIP RESISTOR	1	
R1202	ERJ6GEYG222V	CHIP RESISTOR	1	
R1203	ERJ6GEYG333V	CHIP RESISTOR	1	
R1204	ERJ6GEYJ123V	CHIP RESISTOR	1	
R1205	ERJ6GEYJ222V	CHIP RESISTOR	1	
R1206	ERJ6GEYJ271V	CHIP RESISTOR	1	
R1207	ERJ6GEYG333V	CHIP RESISTOR	1	
R1208	ERJ6GEYG822V	CHIP RESISTOR	1	
R1209	ERJ6GEYG563V	CHIP RESISTOR	1	
R1501	ERDS2TJ151T	CARBON RESISTOR	1	
R1502	ERJ6GEYJ121V	CHIP RESISTOR	1	
R1503	ERJ6GEYJ273V	CHIP RESISTOR	1	
R1504	ERJ6GEYJ273V	CHIP RESISTOR	1	
R1505	ERJ6GEY0R00Z	CHIP RESISTOR	1	
R1506	ERJ6GEYJ103V	CHIP RESISTOR	1	
R2501	ERJ6GEYJ102V	CHIP RESISTOR	1	
R2502	ERJ6GEYJ102V	CHIP RESISTOR	1	
R2503	ERJ6GEYJ103V	CHIP RESISTOR	1	
R2504	ERJ6GEYJ103V	CHIP RESISTOR	1	
R2505	ERJ6GEYJ392V	CHIP RESISTOR	1	
R2506	ERJ6GEYJ105V	CHIP RESISTOR	1	
R2508	ERJ6GEYJ473V	CHIP RESISTOR	1	
R2509	ERJ6GEYJ1R2V	CHIP RESISTOR	1	


R2510	ERJ6GEYJ1R5V	CHIP RESISTOR	1	
R2511	ERJ6GEYJ101Z	CHIP RESISTOR	1	
R2512	ERJ6GEYJ221V	CHIP RESISTOR	1	
R2513	ERJ6GEYJ221V	CHIP RESISTOR	1	
R2514	ERJ6GEYJ221V	CHIP RESISTOR	1	
R2515	ERJ6GEYJ183V	CHIP RESISTOR	1	
R2516	ERJ6GEYJ102V	CHIP RESISTOR	1	
R2517	ERJ6GEYJ101Z	CHIP RESISTOR	1	
R3001	ERJ6GEYJ152V	CHIP RESISTOR	1	
R3002	ERJ6GEYJ622V	CHIP RESISTOR	1	
R3004	ERJ6GEYJ562V	CHIP RESISTOR	1	
R3005	ERJ6GEY0R00Z	CHIP RESISTOR	1	
R3006	ERJ6GEYJ101Z	CHIP RESISTOR	1	
R3007	ERJ6GEYJ182V	CHIP RESISTOR	1	
R3009	ERJ6GEYJ153V	CHIP RESISTOR	1	
R3010	ERJ6GEYJ103V	CHIP RESISTOR	1	
R3011	ERJ6GEYJ101Z	CHIP RESISTOR	1	
R3012	ERJ6GEYJ101Z	CHIP RESISTOR	1	
R3013	ERJ6GEYJ273V	CHIP RESISTOR	1	
R3014	ERJ6GEYJ471V	CHIP RESISTOR	1	
R3017	ERJ6GEYJ102V	CHIP RESISTOR	1	
R3027	ERJ6GEYJ332V	CHIP RESISTOR	1	
R3028	ERJ6GEY0R00Z	CHIP RESISTOR	1	
R3030	ERJ6GEYJ825V	CHIP RESISTOR	1	
R3033	ERJ6GEY0R00Z	CHIP RESISTOR	1	
R3035	ERJ6GEY0R00Z	CHIP RESISTOR	1	
R3037	ERJ6GEYJ122V	CHIP RESISTOR	1	
R3038	ERJ6GEY0R00Z	CHIP RESISTOR	1	
R3039	ERJ6GEYJ471V	CHIP RESISTOR	1	
R4001	ERJ6GEYJ332V	CHIP RESISTOR	1	
R4002	ERJ6GEYJ104V	CHIP RESISTOR	1	
R4003	ERJ6GEYJ223V	CHIP RESISTOR	1	
R4004	ERJ6GEYJ221V	CHIP RESISTOR	1	
R4006	ERJ6GEYJ223V	CHIP RESISTOR	1	
R4007	ERJ6GEYJ103V	CHIP RESISTOR	1	
R4008	ERJ6GEYJ334V	CHIP RESISTOR	1	
R4009	ERJ6GEYJ223V	CHIP RESISTOR	1	

R4010	ERJ6GEYJ103V	CHIP RESISTOR	1	
R4011	ERJ6GEYJ183V	CHIP RESISTOR	1	
R4012	ERJ6GEYJ821V	CHIP RESISTOR	1	
R4013	ERJ6GEYJ101Z	CHIP RESISTOR	1	
R4014	ERJ6GEYJ163V	CHIP RESISTOR	1	
R4015	ERJ6GEYJ822V	CHIP RESISTOR	1	
R4016	ERJ6GEYJ822V	CHIP RESISTOR	1	
R4017	ERJ6GEYJ332V	CHIP RESISTOR	1	
R4018	ERJ6GEYJ472V	CHIP RESISTOR	1	
R4019	ERJ6GEYJ682V	CHIP RESISTOR	1	
R4503	ERJ6GEYJ303V	CHIP RESISTOR	1	
R4504	ERJ6GEYJ303V	CHIP RESISTOR	1	
R4507	ERJ6GEYJ153V	CHIP RESISTOR	1	
R4508	ERJ6GEYJ472V	CHIP RESISTOR	1	
R4509	ERJ6GEYJ472V	CHIP RESISTOR	1	
R4510	ERJ6GEYJ153V	CHIP RESISTOR	1	
R4511	ERJ6GEYJ472V	CHIP RESISTOR	1	
R4512	ERJ6GEYJ472V	CHIP RESISTOR	1	
R4513	ERJ6GEYJ563V	CHIP RESISTOR	1	
R4514	ERJ6GEYJ563V	CHIP RESISTOR	1	
R4515	ERJ6GEYJ563V	CHIP RESISTOR	1	
R4516	ERJ6GEYJ563V	CHIP RESISTOR	1	
R4517	ERJ6GEYJ511V	CHIP RESISTOR	1	
R4518	ERJ6GEYJ472V	CHIP RESISTOR	1	
R4519	ERJ6GEYJ821V	CHIP RESISTOR	1	
R4520	ERJ6GEYJ124V	CHIP RESISTOR	1	
R4521	ERJ6GEYJ472V	CHIP RESISTOR	1	
R4522	ERJ6GEYJ511V	CHIP RESISTOR	1	
R4523	ERJ6GEYJ102V	CHIP RESISTOR	1	
R4524	ERJ6GEYJ303V	CHIP RESISTOR	1	
R4525	ERJ6GEYJ102V	CHIP RESISTOR	1	
R4526	ERJ6GEYJ102V	CHIP RESISTOR	1	
R4527	ERJ6GEYJ223V	CHIP RESISTOR	1	
R4531	ERJ6GEYJ221V	CHIP RESISTOR	1	
R4533	ERJ6GEYJ221V	CHIP RESISTOR	1	
R4535	ERJ6GEYJ221V	CHIP RESISTOR	1	
R4538	ERJ6GEYJ221V	CHIP RESISTOR	1	

R4539	ERJ6GEYJ362V	CHIP RESISTOR	1	
R4540	ERJ6GEYJ223V	CHIP RESISTOR	1	
R4906	ERJ6GEYJ750V	CHIP RESISTOR	1	
R4907	ERJ6GEYJ750V	CHIP RESISTOR	1	
R4909	ERJ6GEYJ750V	CHIP RESISTOR	1	
R4911	ERJ6GEYJ750V	CHIP RESISTOR	1	
R4914	ERJ6GEYJ223V	CHIP RESISTOR	1	NV-HV61EF-S
R4914	ERJ6GEYJ223V	CHIP RESISTOR	1	NV-HV51EF-S
R4915	ERJ6GEYJ183V	CHIP RESISTOR	1	
R4916	ERDS2TJ471T	CARBON RESISTOR	1	
R4917	ERJ6GEYJ223V	CHIP RESISTOR	1	
R4918	ERJ6GEYJ153V	CHIP RESISTOR	1	
R4919	ERJ6GEYJ474V	CHIP RESISTOR	1	
R4920	ERJ6GEYJ472V	CHIP RESISTOR	1	
R4921	ERJ6GEYJ472V	CHIP RESISTOR	1	
R4922	ERJ6GEYJ472V	CHIP RESISTOR	1	
R4923	ERJ6GEYJ681V	CHIP RESISTOR	1	
R4924	ERJ6GEYJ681V	CHIP RESISTOR	1	
R4925	ERJ6GEYJ472V	CHIP RESISTOR	1	
R4926	ERJ6GEYJ393V	CHIP RESISTOR	1	
R4935	ERJ6GEY0R00Z	CHIP RESISTOR	1	
R4938	ERJ6GEY0R00Z	CHIP RESISTOR	1	
R6001	ERJ6GEYJ472V	CHIP RESISTOR	1	
R6002	ERJ6GEYJ102V	CHIP RESISTOR	1	
R6003	ERJ6GEYJ181V	CHIP RESISTOR	1	
R6004	ERJ6GEY0R00Z	CHIP RESISTOR	1	
R6005	ERJ6GEYJ224V	CHIP RESISTOR	1	
R6006	ERJ6GEYJ152V	CHIP RESISTOR	1	
R6008	ERJ6GEYJ101Z	CHIP RESISTOR	1	
R6009	ERJ6GEYJ223V	CHIP RESISTOR	1	
R6010	ERJ6GEYJ101Z	CHIP RESISTOR	1	
R6011	ERJ6GEYJ471V	CHIP RESISTOR	1	
R6012	ERJ6GEYJ471V	CHIP RESISTOR	1	
R6013	ERJ6GEYJ221V	CHIP RESISTOR	1	
R6014	ERJ6GEYJ102V	CHIP RESISTOR	1	
R6017	ERJ6GEYJ102V	CHIP RESISTOR	1	
R6019	ERJ6GEYJ103V	CHIP RESISTOR	1	

R6020	ERJ6GEYJ273V	CHIP RESISTOR	1	
R6021	ERJ6GEYJ273V	CHIP RESISTOR	1	
R6022	ERJ6GEYJ101Z	CHIP RESISTOR	1	
R6023	ERJ6GEYJ273V	CHIP RESISTOR	1	
R6025	ERJ6GEYJ433V	CHIP RESISTOR	1	
R6026	ERJ6GEYJ393V	CHIP RESISTOR	1	
R6028	ERJ6GEYJ181V	CHIP RESISTOR	1	
R6031	ERJ6GEYJ682V	CHIP RESISTOR	1	
R6033	ERJ6GEYJ472V	CHIP RESISTOR	1	
R6035	ERJ6GEYJ681V	CHIP RESISTOR	1	
R6036	ERJ6GEYJ681V	CHIP RESISTOR	1	
R6039	ERJ6GEYJ102V	CHIP RESISTOR	1	
R6040	ERJ6GEYJ102V	CHIP RESISTOR	1	
R6041	ERJ6GEYJ102V	CHIP RESISTOR	1	
R6046	ERJ6GEYJ472V	CHIP RESISTOR	1	
R6047	ERJ6GEYJ472V	CHIP RESISTOR	1	
R6048	ERJ6GEYJ472V	CHIP RESISTOR	1	
R6049	ERJ6GEYJ221V	CHIP RESISTOR	1	
R6051	ERJ6GEYJ564V	CHIP RESISTOR	1	NV-HV61EF-S
R6052	ERJ6GEYJ221V	CHIP RESISTOR	1	NV-HV61EF-S
R6053	ERJ6GEYJ682V	CHIP RESISTOR	1	NV-HV61EF-S
R6054	ERJ6GEYJ125V	CHIP RESISTOR	1	NV-HV61EF-S
R6055	ERJ6GEYJ682V	CHIP RESISTOR	1	NV-HV61EF-S
R6056	ERJ6GEYJ125V	CHIP RESISTOR	1	NV-HV61EF-S
R6057	ERJ6GEYJ104V	CHIP RESISTOR	1	NV-HV61EF-S
R6058	ERJ6GEYJ222V	CHIP RESISTOR	1	NV-HV61EF-S
R6071	ERJ6GEYJ183V	CHIP RESISTOR	1	
R6072	ERJ6GEYJ223V	CHIP RESISTOR	1	
R6073	ERJ6GEYJ474V	CHIP RESISTOR	1	
R6074	ERDS2TJ471T	CARBON RESISTOR	1	
R6075	ERJ6GEYJ223V	CHIP RESISTOR	1	
R6076	ERJ6GEYJ153V	CHIP RESISTOR	1	
R6077	ERJ6GEYJ105V	CHIP RESISTOR	1	
R6078	ERJ6GEYJ471V	CHIP RESISTOR	1	
R6083	ERJ6GEYJ222V	CHIP RESISTOR	1	
R7501	ERJ6GEYJ822V	CHIP RESISTOR	1	
R7502	ERJ6GEYJ562V	CHIP RESISTOR	1	

R7503	ERJ6GEYJ432V	CHIP RESISTOR	1	
R7504	ERJ6GEYJ822V	CHIP RESISTOR	1	
R7505	ERJ6GEYJ562V	CHIP RESISTOR	1	
R7506	ERJ6GEYJ432V	CHIP RESISTOR	1	
R7507	ERDS2TJ120T	CARBON RESISTOR	1	
R7509	ERJ6GEYJ101Z	CHIP RESISTOR	1	
R7510	ERDS2TJ821T	CARBON RESISTOR	1	
R7511	ERDS2TJ821T	CARBON RESISTOR	1	
R7513	ERJ6GEYJ303V	CHIP RESISTOR	1	
R7514	ERJ6GEYJ303V	CHIP RESISTOR	1	
R7515	ERJ6GEYJ303V	CHIP RESISTOR	1	
R7516	ERJ6GEYJ303V	CHIP RESISTOR	1	
R7517	ERJ6GEYJ103V	CHIP RESISTOR	1	
R7518	ERJ6GEYJ103V	CHIP RESISTOR	1	
R7519	ERJ6GEYJ432V	CHIP RESISTOR	1	
R7521	ERJ6GEYJ223V	CHIP RESISTOR	1	
R7522	ERJ6GEY0R00Z	CHIP RESISTOR	1	
R7523	ERJ6GEY0R00Z	CHIP RESISTOR	1	
R7534	ERJ6GEYJ181V	CHIP RESISTOR	1	
R7535	ERJ6GEYJ103V	CHIP RESISTOR	1	
R7536	ERJ6GEYJ562V	CHIP RESISTOR	1	
R7537	ERJ6GEYJ123V	CHIP RESISTOR	1	
R7538	ERJ6GEYJ123V	CHIP RESISTOR	1	
R7607	ERJ6GEYJ101Z	CHIP RESISTOR	1	
R7608	ERJ6GEYJ101Z	CHIP RESISTOR	1	
R7611	ERDS2TJ331T	CARBON RESISTOR	1	
R7612	ERDS2TJ331T	CARBON RESISTOR	1	
R7613	ERJ6GEYJ151V	CHIP RESISTOR	1	
R7614	ERJ6GEYJ151V	CHIP RESISTOR	1	
R7615	ERJ6GEY0R00Z	CHIP RESISTOR	1	
R7619	ERJ6GEYJ101Z	CHIP RESISTOR	1	
R7620	ERJ6GEYJ101Z	CHIP RESISTOR	1	
R7621	ERJ6GEY0R00Z	CHIP RESISTOR	1	
R7622	ERJ6GEY0R00Z	CHIP RESISTOR	1	
R7623	ERJ6GEY0R00Z	CHIP RESISTOR	1	
R7626	ERJ6GEY0R00Z	CHIP RESISTOR	1	
R7628	ERJ6GEYJ103V	CHIP RESISTOR	1	

R7630	ERJ6GEYJ221V	CHIP RESISTOR	1	
R7631	ERJ6GEYJ221V	CHIP RESISTOR	1	
R7632	ERJ6GEYJ221V	CHIP RESISTOR	1	
R7637	ERJ6GEYJ221V	CHIP RESISTOR	1	
R8801	ERJ6GEYJ103V	CHIP RESISTOR	1	
R8802	ERJ6GEYJ102V	CHIP RESISTOR	1	
R8803	ERJ6GEYJ124V	CHIP RESISTOR	1	
R8804	ERJ6GEYJ223V	CHIP RESISTOR	1	
R8805	ERJ6GEYJ562V	CHIP RESISTOR	1	
S1501	K0ZZ00000598	MODE SWITCH	1	
S7501	EVQ11G09K	TOUCH SWITCH	1	
S7502	EVQ11G09K	TOUCH SWITCH	1	
S7504	EVQ11L09B	TOUCH SWITCH	1	
S7505	EVQ11G09K	TOUCH SWITCH	1	
S7506	EVQ11G09K	TOUCH SWITCH	1	
S7507	K0C111A00006	SAFETY TAB SWITCH	1	
S7510	EVQ11G09K	TOUCH SWITCH	1	
S7511	EVQ11G09K	TOUCH SWITCH	1	
S7512	EVQ11G09K	TOUCH SWITCH	1	
S7513	EVQ11G09K	TOUCH SWITCH	1	
S7514	EVQ11G09K	TOUCH SWITCH	1	
S7515	EVQ11G09K	TOUCH SWITCH	1	
S7517	EVQ11L09B	TOUCH SWITCH	1	
T1150	ETS29AZ2C6AC	TRANSFORMER	1	
T4001	EQQ7QF024P	HIGH FREQUENCY COIL	1	
VR0701	EVNCYAA03B14	VARIABLE RESISTOR	1	
W1	ERJ6GEY0R00Z	CHIP RESISTOR	1	
W10	ERJ8GEY0R00V	CHIP RESISTOR	1	
W11	ERJ8GEY0R00V	CHIP RESISTOR	1	
W12	ERJ8GEY0R00V	CHIP RESISTOR	1	
W13	ERJ6GEY0R00Z	CHIP RESISTOR	1	
W14	ERJ8GEY0R00V	CHIP RESISTOR	1	
W15	ERJ8GEY0R00V	CHIP RESISTOR	1	
W16	ERJ6GEY0R00Z	CHIP RESISTOR	1	
W17	ERJ6GEY0R00Z	CHIP RESISTOR	1	
W18	ERJ8GEY0R00V	CHIP RESISTOR	1	
W19	ERJ8GEY0R00V	CHIP RESISTOR	1	

W2	ERJ6GEY0R00Z	CHIP RESISTOR	1	
W3	ERJ3GEY0R00V	CHIP RESISTOR	1	
W4	ERJ3GEY0R00V	CHIP RESISTOR	1	
W5	ERJ8GEY0R00V	CHIP RESISTOR	1	
W501	ERJ6GEY0R00Z	CHIP RESISTOR	1	
W502	ERJ6GEY0R00Z	CHIP RESISTOR	1	
W503	ERJ6GEY0R00Z	CHIP RESISTOR	1	
W504	ERJ6GEY0R00Z	CHIP RESISTOR	1	
W505	ERJ6GEY0R00Z	CHIP RESISTOR	1	
W506	ERJ6GEY0R00Z	CHIP RESISTOR	1	
W507	ERJ6GEY0R00Z	CHIP RESISTOR	1	
W508	ERJ6GEY0R00Z	CHIP RESISTOR	1	
W509	ERJ6GEY0R00Z	CHIP RESISTOR	1	
W510	ERJ6GEY0R00Z	CHIP RESISTOR	1	
W511	ERJ6GEY0R00Z	CHIP RESISTOR	1	
W512	ERJ6GEY0R00Z	CHIP RESISTOR	1	
W513	ERJ6GEY0R00Z	CHIP RESISTOR	1	
W514	ERJ6GEY0R00Z	CHIP RESISTOR	1	
W515	ERJ6GEY0R00Z	CHIP RESISTOR	1	
W516	ERJ6GEY0R00Z	CHIP RESISTOR	1	
W517	ERJ6GEY0R00Z	CHIP RESISTOR	1	
W518	ERJ6GEY0R00Z	CHIP RESISTOR	1	
W519	ERJ6GEY0R00Z	CHIP RESISTOR	1	
W520	ERJ6GEY0R00Z	CHIP RESISTOR	1	
W521	ERJ6GEY0R00Z	CHIP RESISTOR	1	
W522	ERJ6GEY0R00Z	CHIP RESISTOR	1	
W523	ERJ6GEY0R00Z	CHIP RESISTOR	1	
W524	ERJ6GEY0R00Z	CHIP RESISTOR	1	
W525	ERJ6GEY0R00Z	CHIP RESISTOR	1	
W526	ERJ6GEY0R00Z	CHIP RESISTOR	1	
W527	ERJ6GEY0R00Z	CHIP RESISTOR	1	
W528	ERJ6GEY0R00Z	CHIP RESISTOR	1	
W529	ERJ6GEY0R00Z	CHIP RESISTOR	1	
W530	ERJ6GEY0R00Z	CHIP RESISTOR	1	
W531	ERJ6GEY0R00Z	CHIP RESISTOR	1	
W532	ERJ6GEY0R00Z	CHIP RESISTOR	1	
W533	ERJ6GEY0R00Z	CHIP RESISTOR	1	

W534	ERJ6GEY0R00Z	CHIP RESISTOR	1	
W535	ERJ6GEY0R00Z	CHIP RESISTOR	1	
W536	ERJ6GEY0R00Z	CHIP RESISTOR	1	
W537	ERJ6GEY0R00Z	CHIP RESISTOR	1	
W538	ERJ6GEY0R00Z	CHIP RESISTOR	1	
W539	ERJ6GEY0R00Z	CHIP RESISTOR	1	
W540	ERJ6GEY0R00Z	CHIP RESISTOR	1	
W6	ERJ8GEY0R00V	CHIP RESISTOR	1	
W7	ERJ8GEY0R00V	CHIP RESISTOR	1	
W8	ERJ6GEY0R00Z	CHIP RESISTOR	1	
W9	ERJ6GEY0R00Z	CHIP RESISTOR	1	
X0704	J0B4045A0002	CRYSTAL OSCILLATOR	1	
X0706	EFCKK9453D	CAPACITOR	1	
X0707	EFCKG3958M	CAPACITOR	1	
X3001	H0D443400039	CRYSTAL OSCILLATOR	1	
X6001	H0A120500002	CRYSTAL OSCILLATOR	1	
X6002	VSX1022	CRYSTAL OSCILLATOR	1	
X7601	H0D245500011	CRYSTAL OSCILLATOR	1	
ZA1101	EYF52BC	FUSE HOLDER	1	
ZA1102	EYF52BC	FUSE HOLDER	1	
ZJ1001	K9ZZ00000424	EARTH ANGLE	1	
ZJ1002	K9ZZ00000424	EARTH ANGLE	1	
	RJFV0002	FIP HOLDER	1	
	VMP4471-1	ANGLE	1	

[TOP](#) [PREVIOUS](#) [NEXT](#)

17 DIAGRAMS FOR PRINTING A4 SIZE

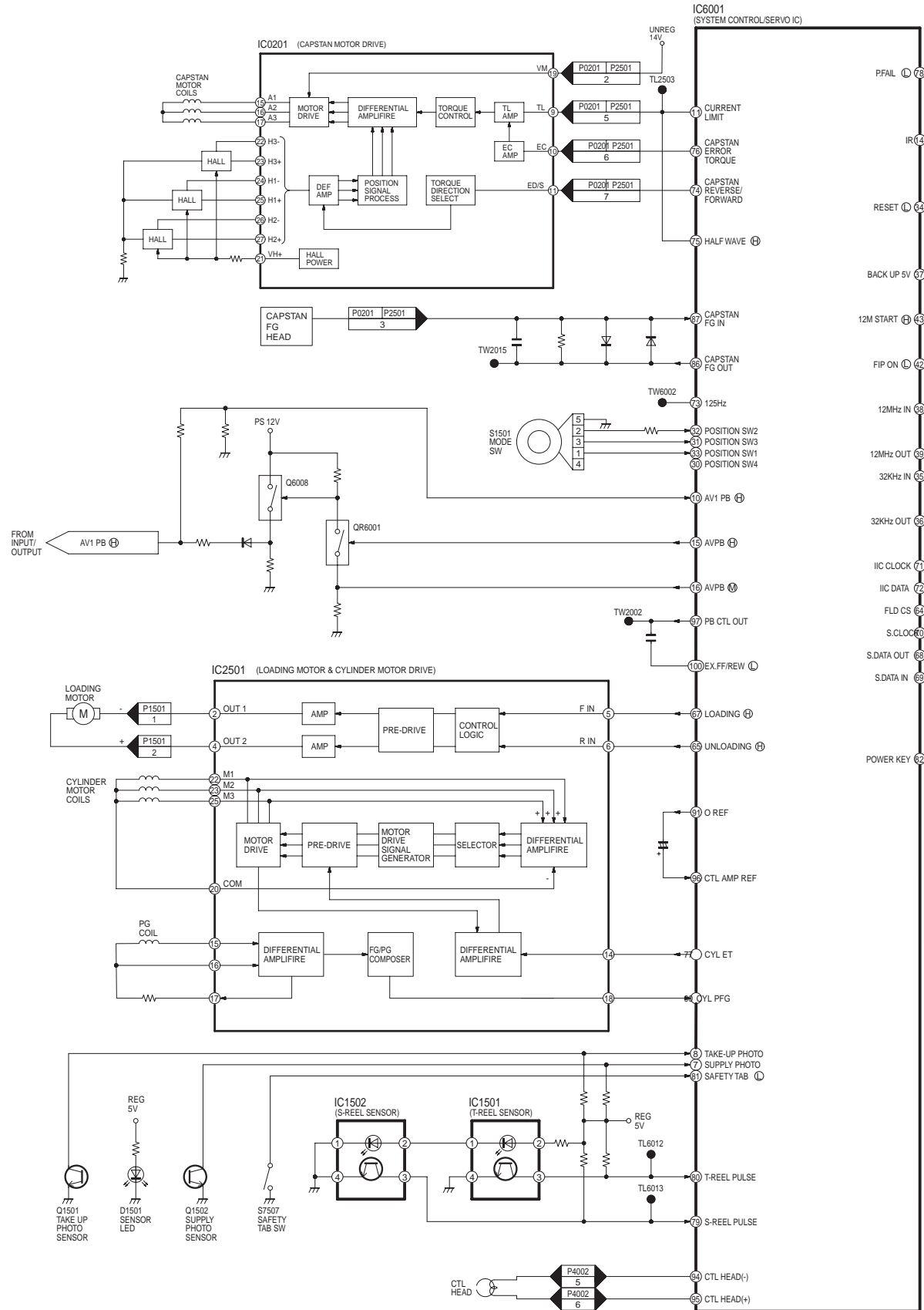
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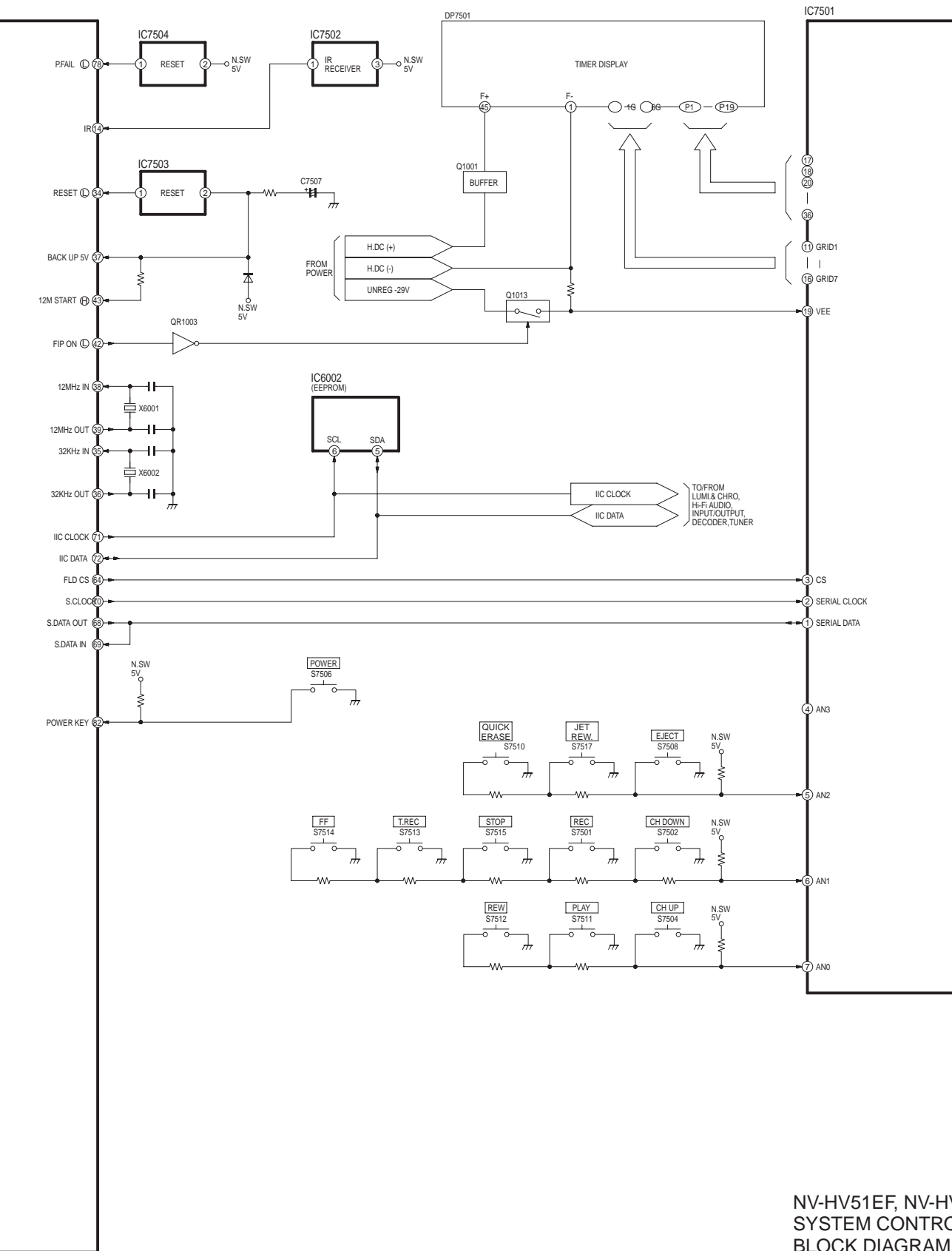


[TOP PREVIOUS](#)

12 BLOCK DIAGRAM

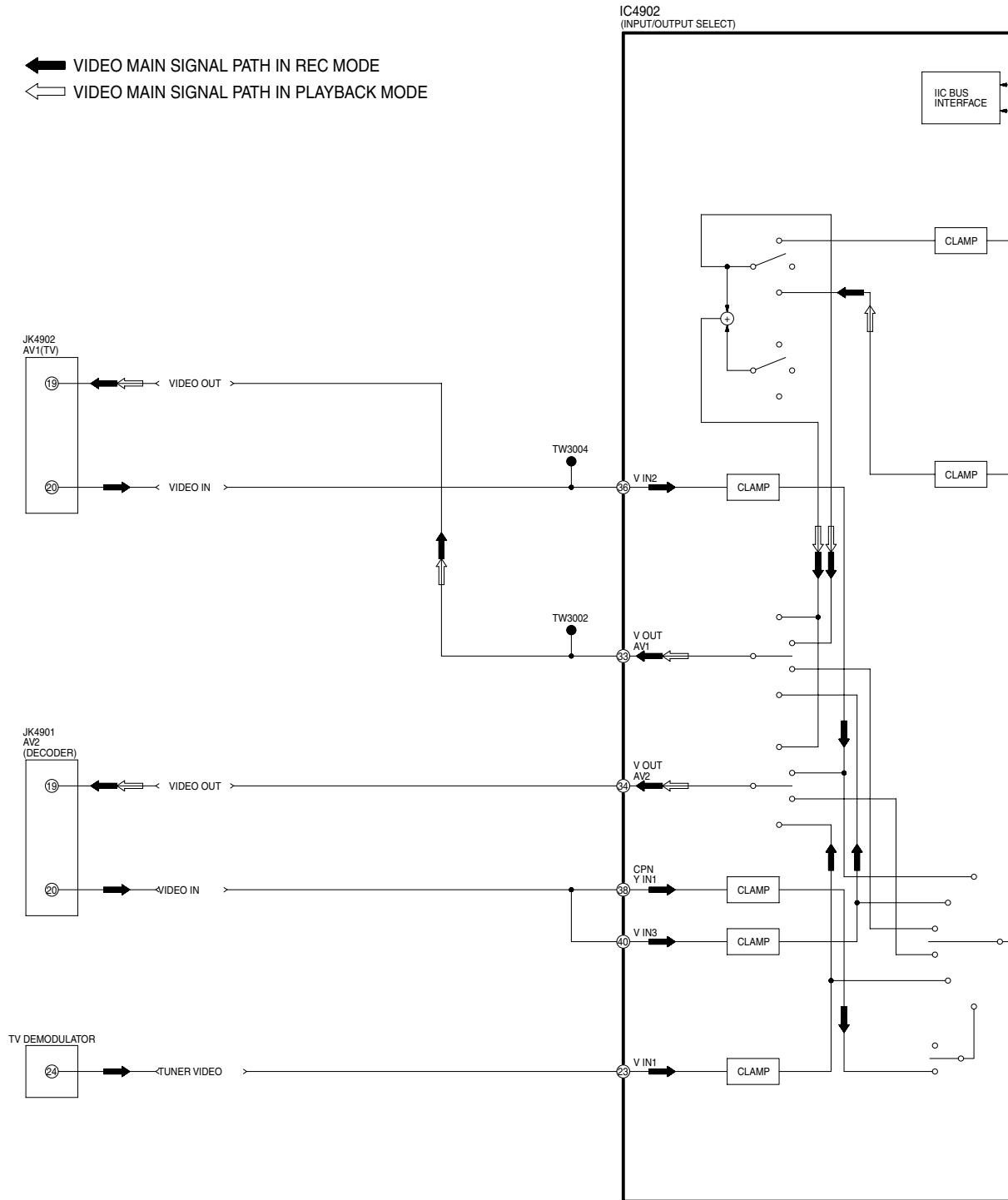
12.1. SYSCON & SERVO BLOCK DIAGRAM

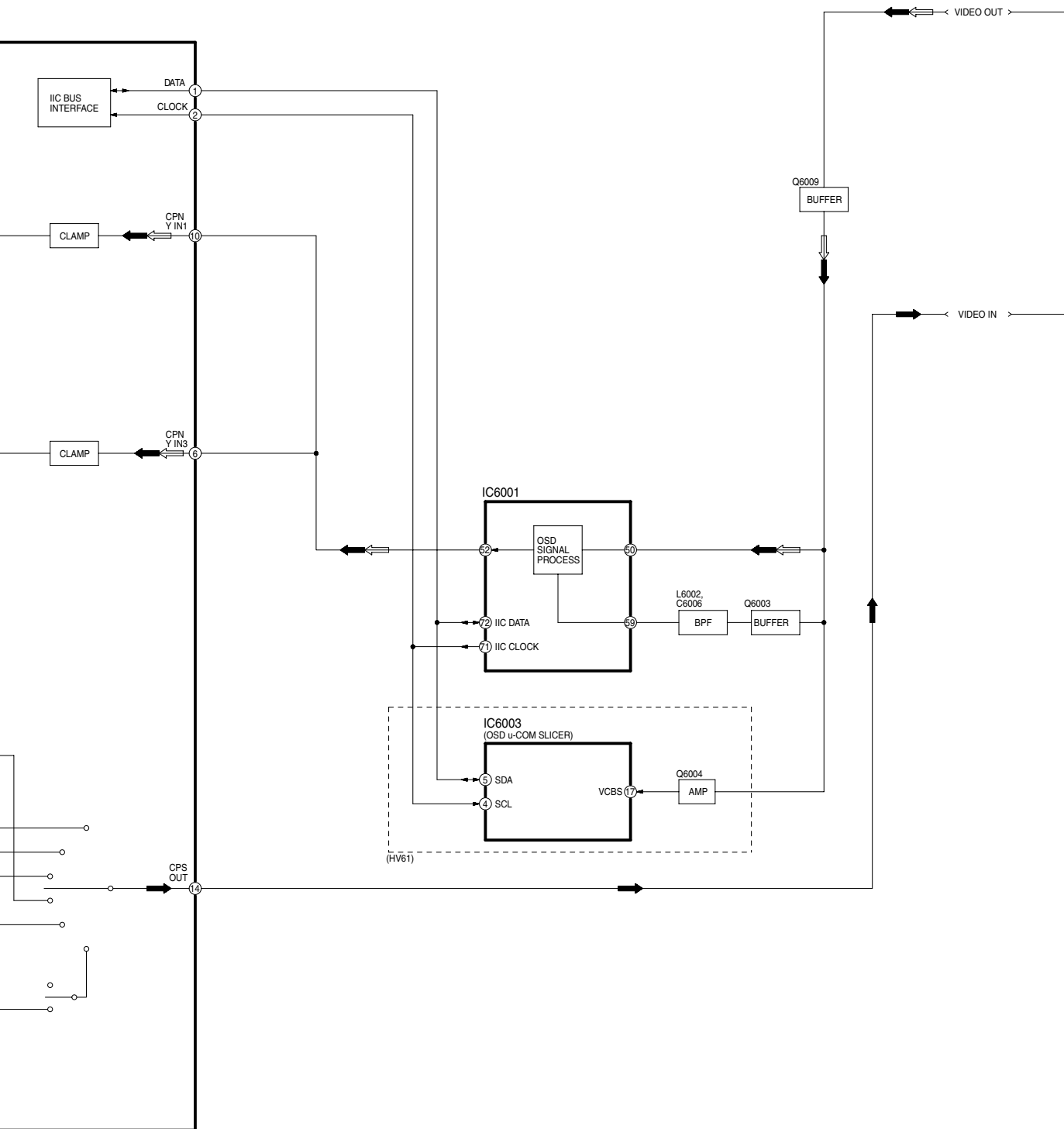




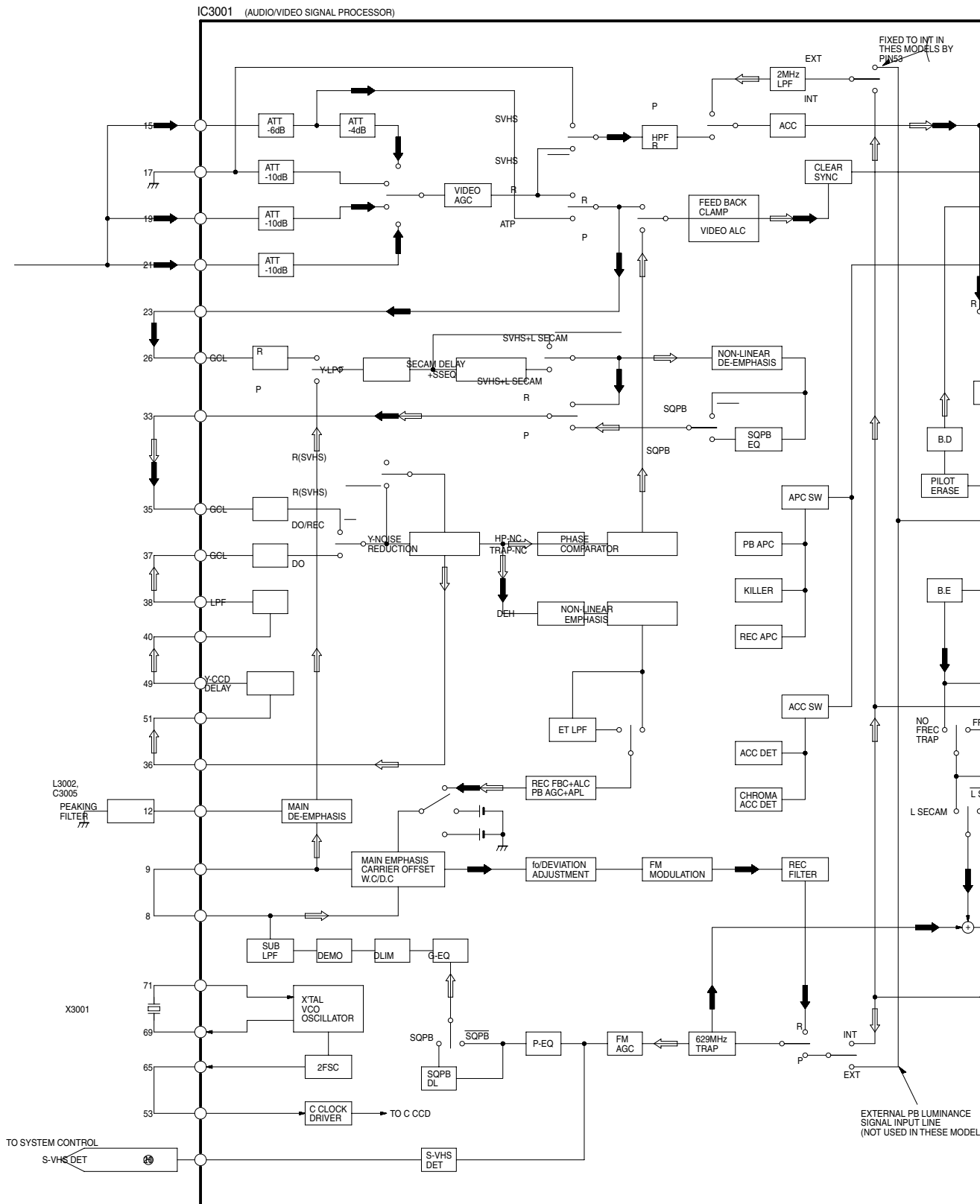
NV-HV51EF, NV-HV61EF
SYSTEM CONTROL & SERVO
BLOCK DIAGRAM

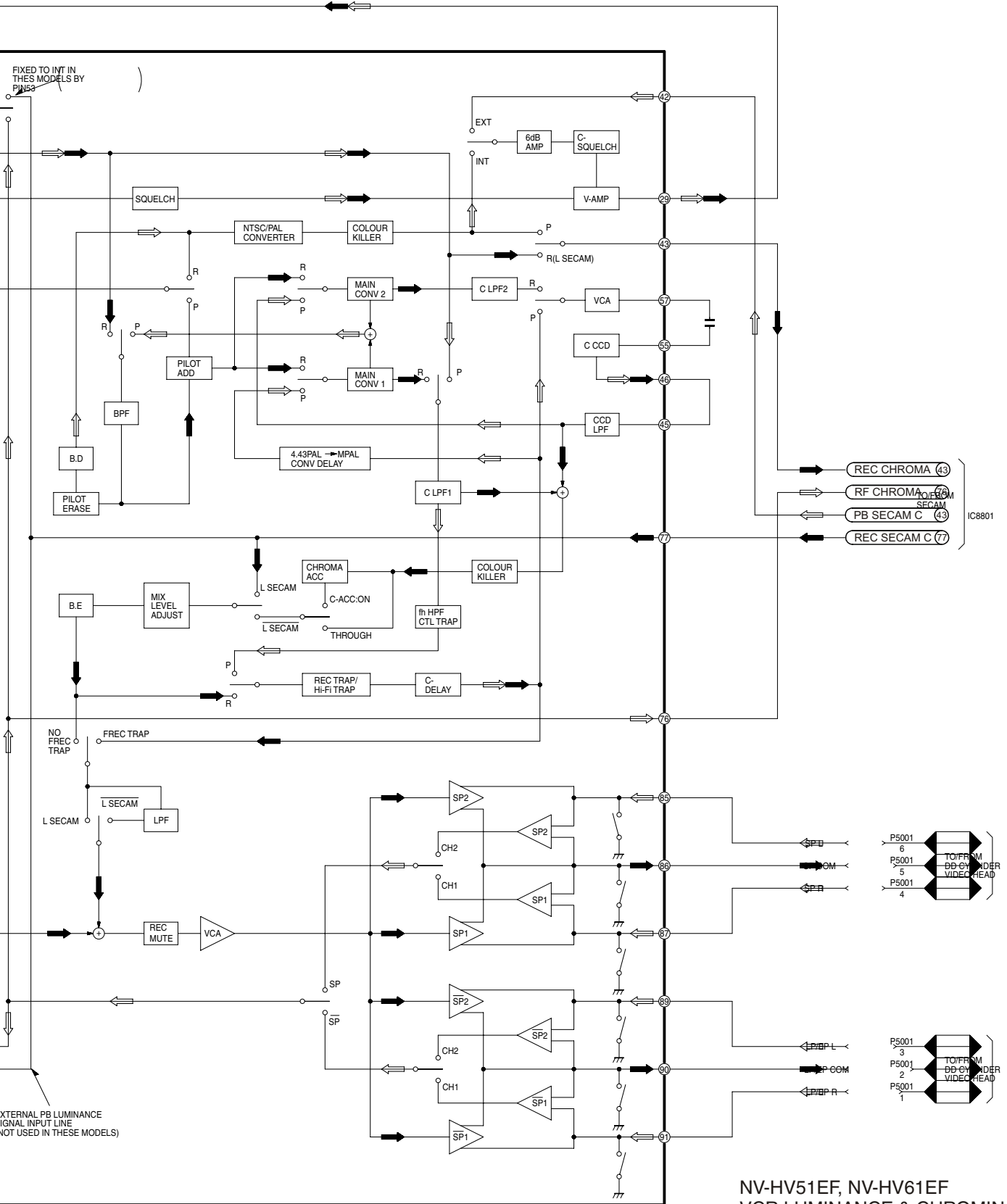
12.2. VCR LUMINANCE & CHROMINANCE BLOCK DIAGRAM





NV-HV51EF, NV-HV61EF
 VCR LUMINANCE & CHROMINANCE 1/2
 BLOCK DIAGRAM





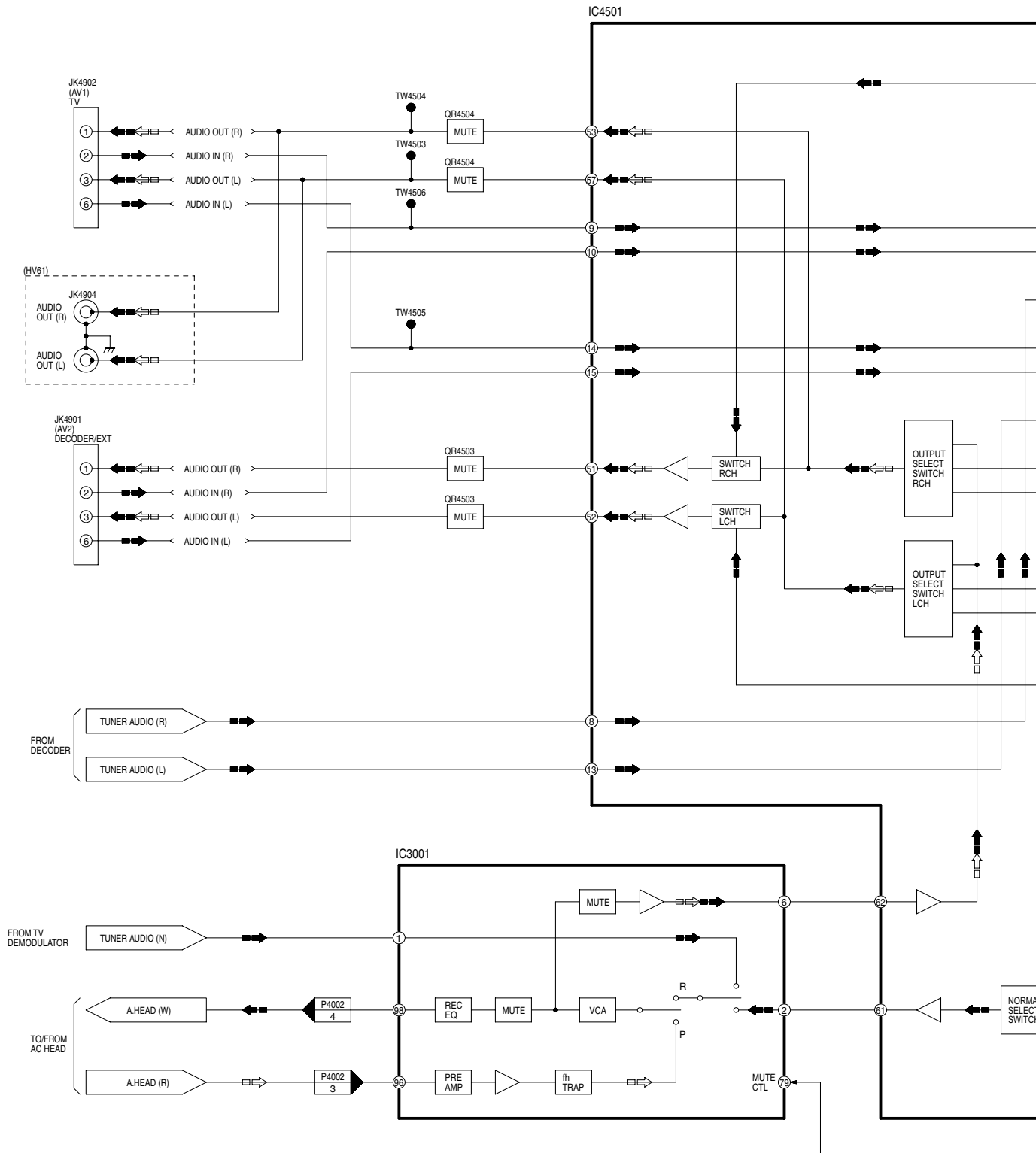
NV-HV51EF, NV-HV61EF
 VCR LUMINANCE & CHROMINANCE 2/2
 BLOCK DIAGRAM

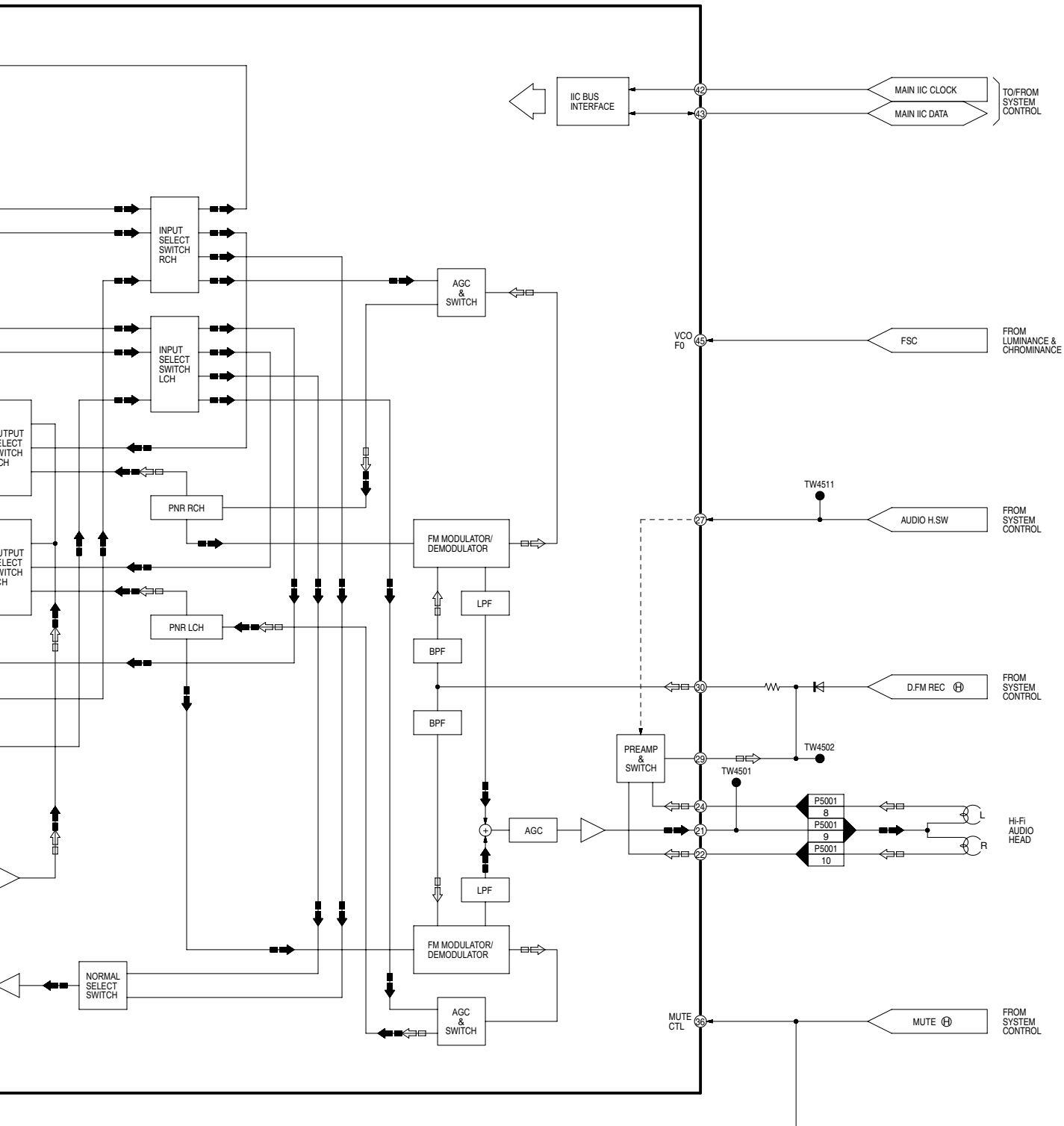
12.3. VCR AUDIO BLOCK DIAGRAM



← MAIN SIGNAL PATH IN REC MODE

⇐ MAIN SIGNAL PATH IN PLAYBACK MODE



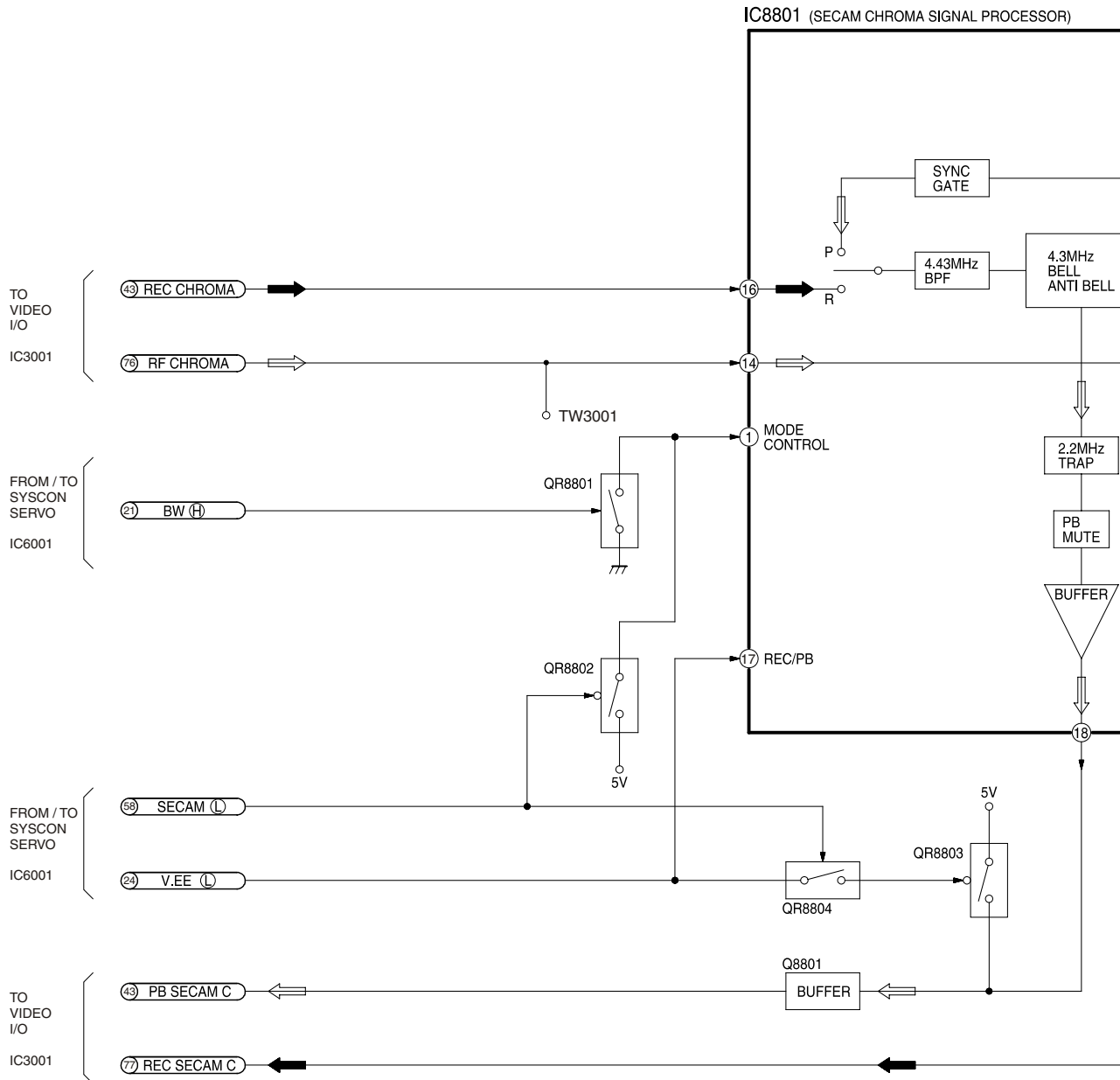


NV-HV51EF, NV-HV61EF
VCR AUDIO
BLOCK DIAGRAM

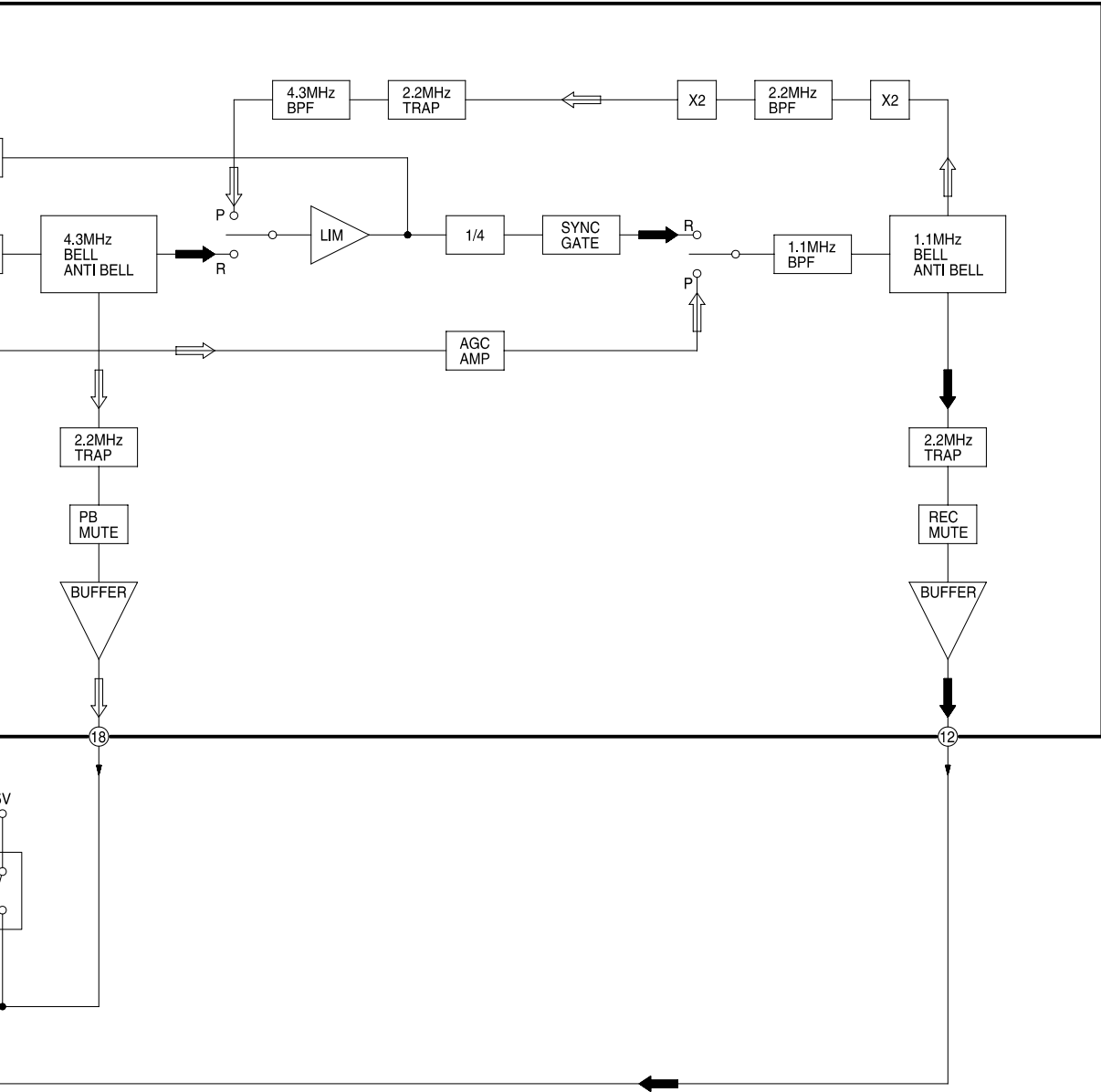
12.4. SECAM BLOCK DIAGRAM



VIDEO MAIN SIGNAL PATH IN REC MODE
 VIDEO MAIN SIGNAL PATH IN PLAYBACK MODE



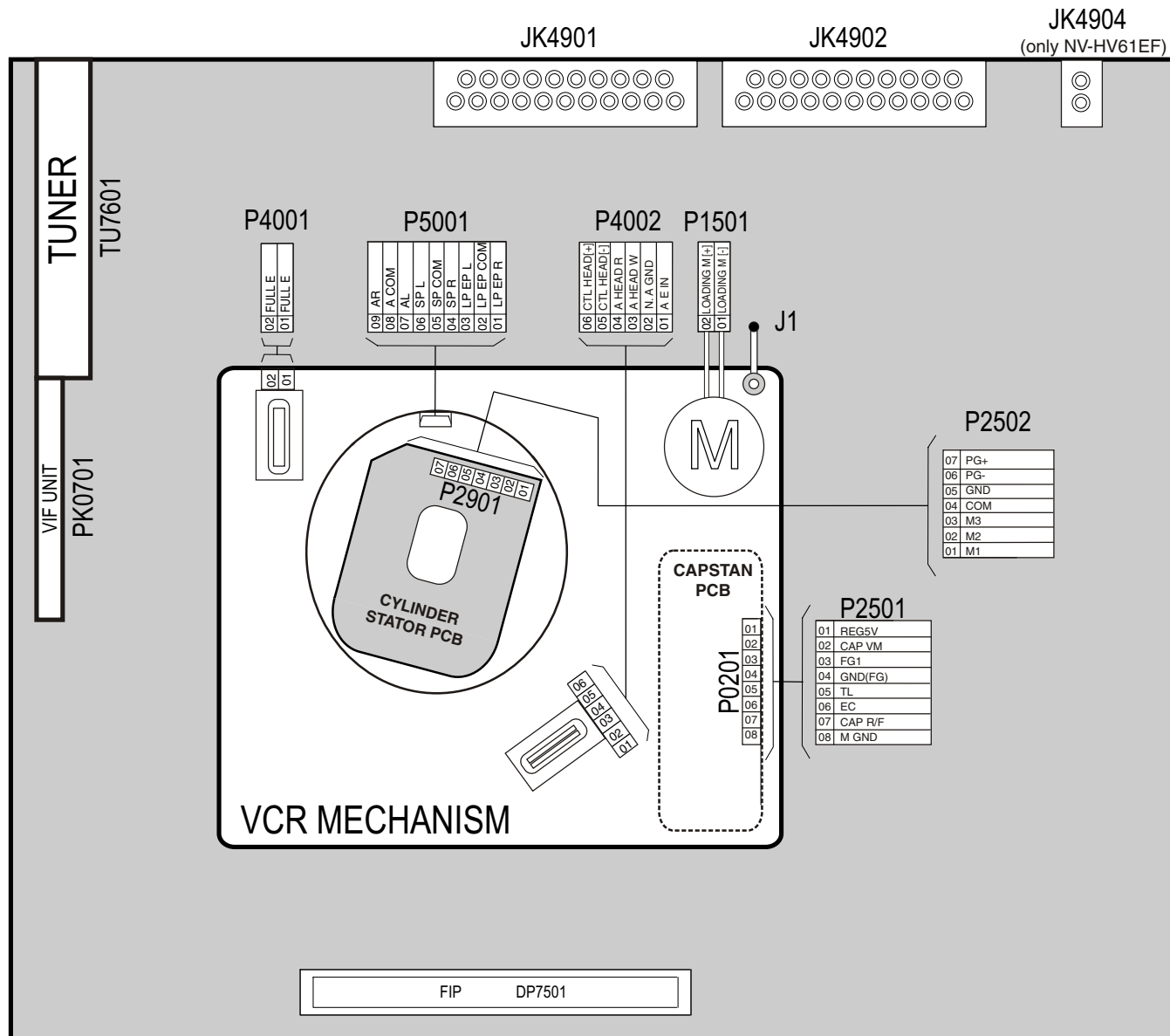
PROCESSOR)



NV-HV51EF, NV-HV61EF
SECAM
BLOCK DIAGRAM

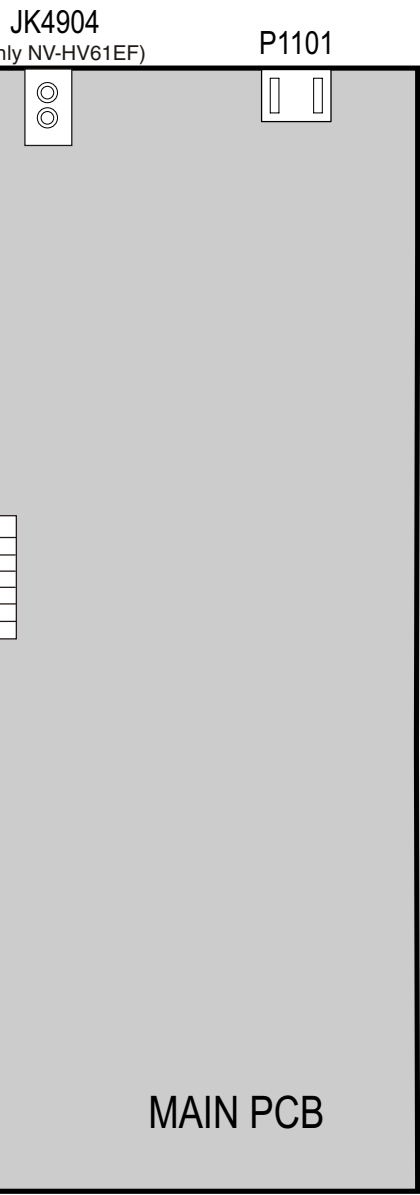
13 SCHEMATIC DIAGRAM

13.1. INTERCONNECTION DIAGRAM





NAVIGATION
MAIN POWER PCB
MAIN PCB - TIMER
MAIN PCB - SYSCON-SERVO
MAIN PCB - VIDEO I/O 1/2
MAIN PCB - VIDEO I/O 2/2
MAIN PCB - AUDIO/RF/NICAM
VIF-UNIT



NV-HV51EF, NV-HV61EF
INTERCONNECTION
DIAGRAM



13.2. MAIN PCB - POWER SCHEMATIC DIAGRAM



VIDEO MAIN SIGNAL PATH IN REC MODE AUDIO MAIN SIGNAL PATH IN REC MODE
 VIDEO MAIN SIGNAL PATH IN PLAYBACK MODE AUDIO MAIN SIGNAL PATH IN PLAYBACK MODE

G

F

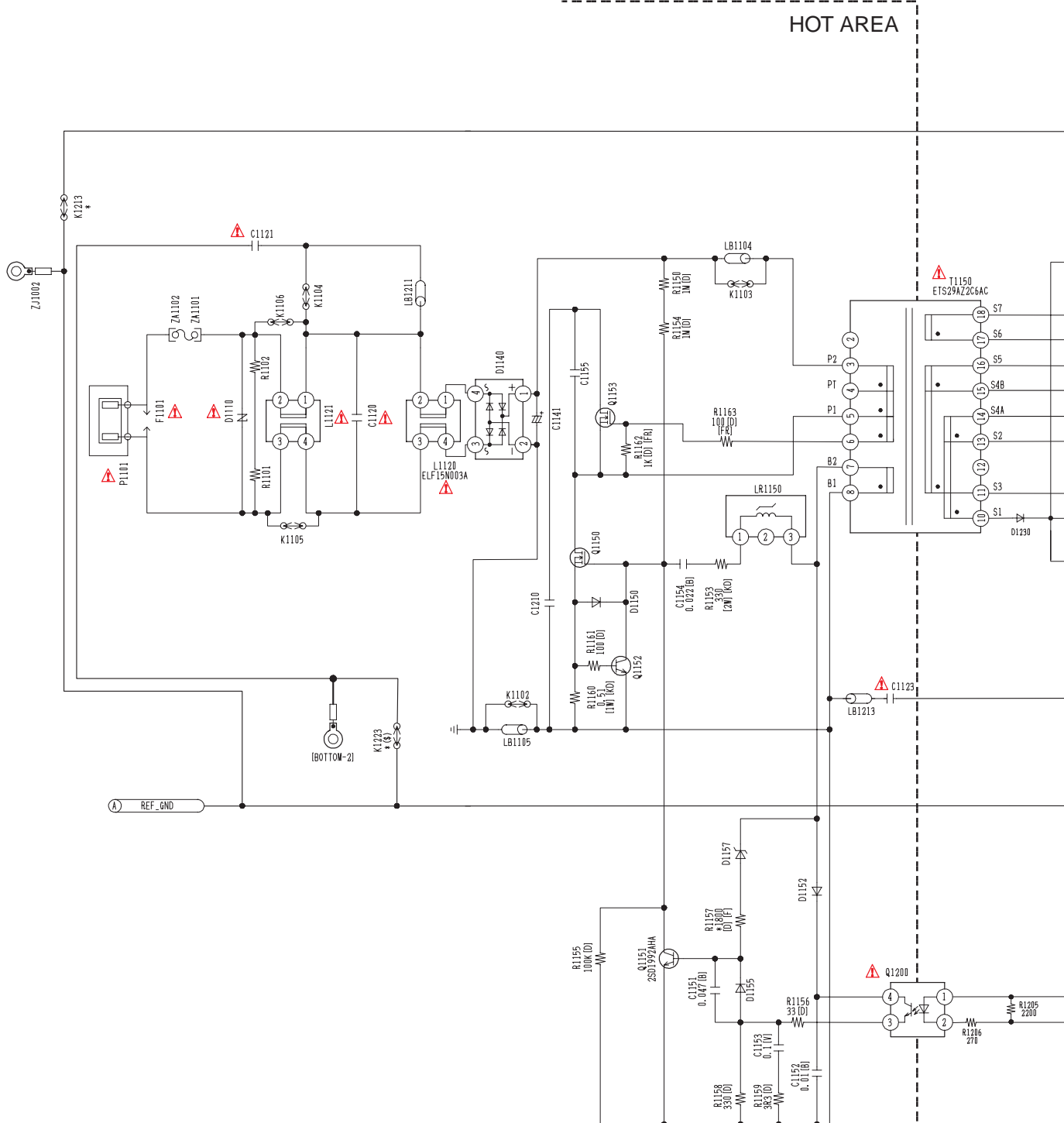
E

D

C

B

A



Note:
Marked *(spare) parts are not assembled

Important Safety Notice: Components identified with the mark have the special characteristics for safety. When replacing any of these components use only the same type.

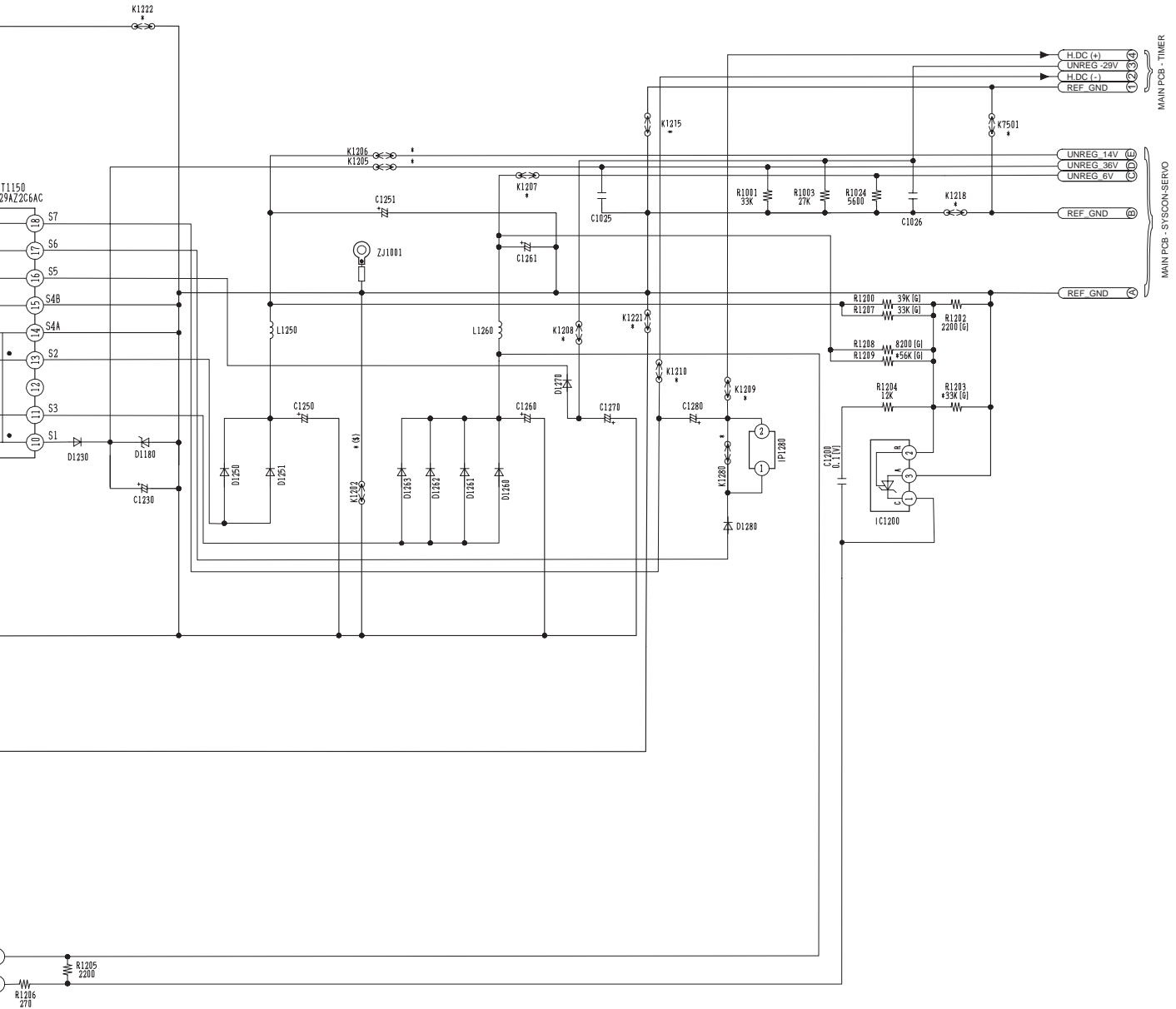
HOT AREA

HOT AREA

1 2 3 4 5 6



NAVIGATION
INTERCONNECTION



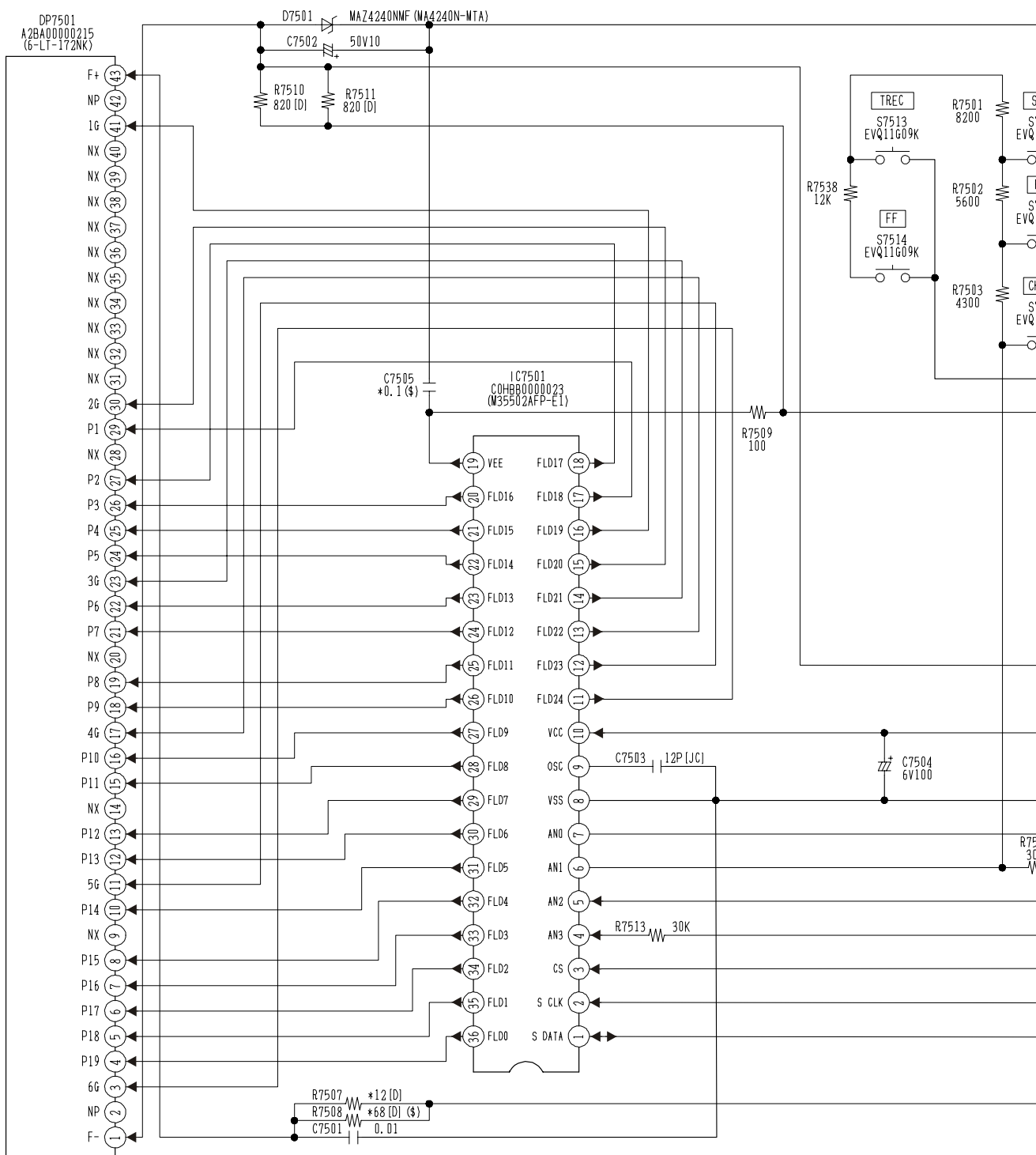
NV-HV51EF, NV-HV61EF
MAIN POWER PCB
SCHEMATIC DIAGRAM

13.3. MAIN PCB - TIMER SCHEMATIC DIAGRAM



VIDEO MAIN SIGNAL PATH IN REC MODE
 VIDEO MAIN SIGNAL PATH IN PLAYBACK MODE
 AUDIO MAIN SIGNAL PATH IN REC MODE
 AUDIO MAIN SIGNAL PATH IN PLAYBACK MODE

G
F
E
D
C
B
A



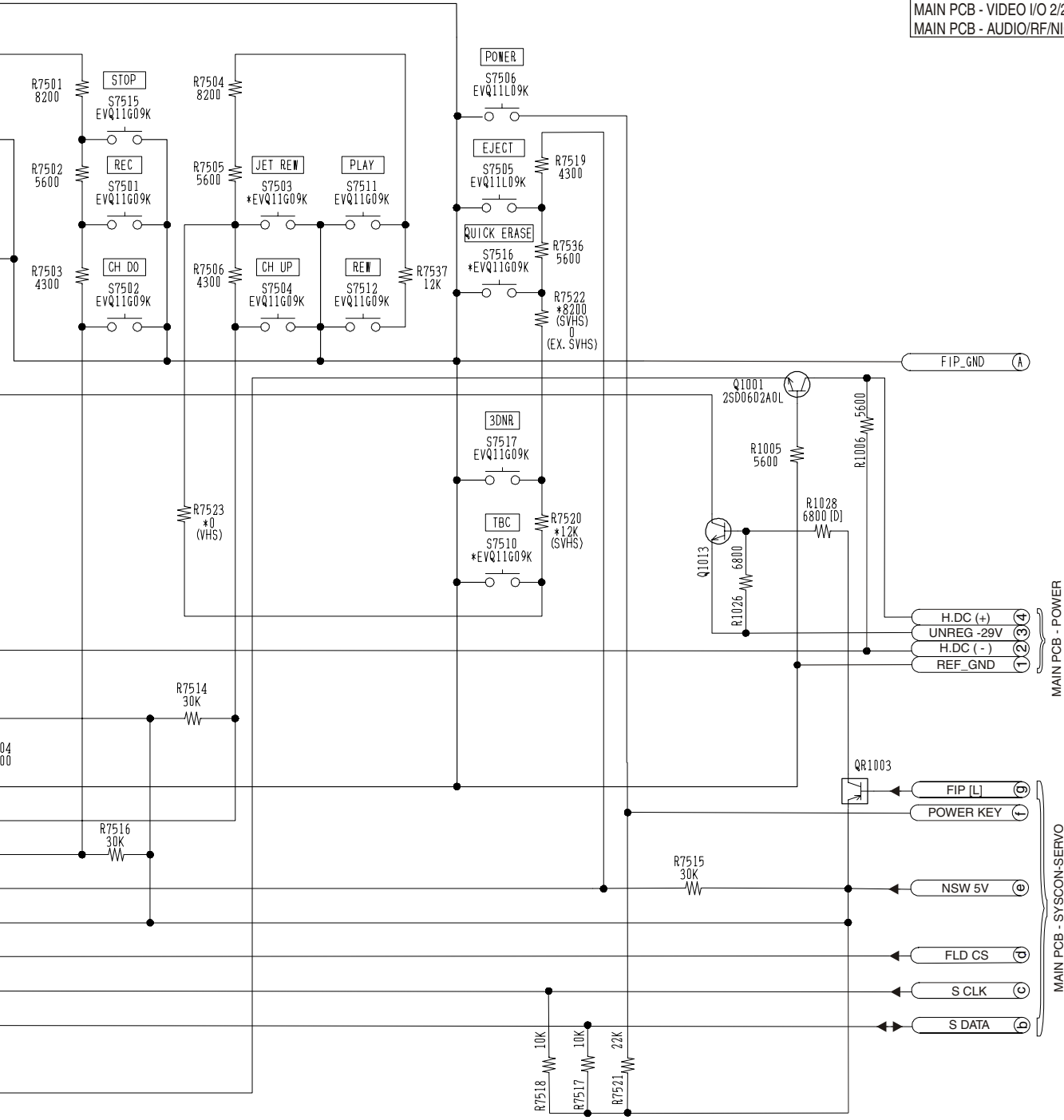
Note:
Marked *(spare) parts are not assembled

Important Safety Notice: Components identified with the mark have the special characteristics for safety. When replacing any of these components use only the same type.

1 2 3 4 5 6

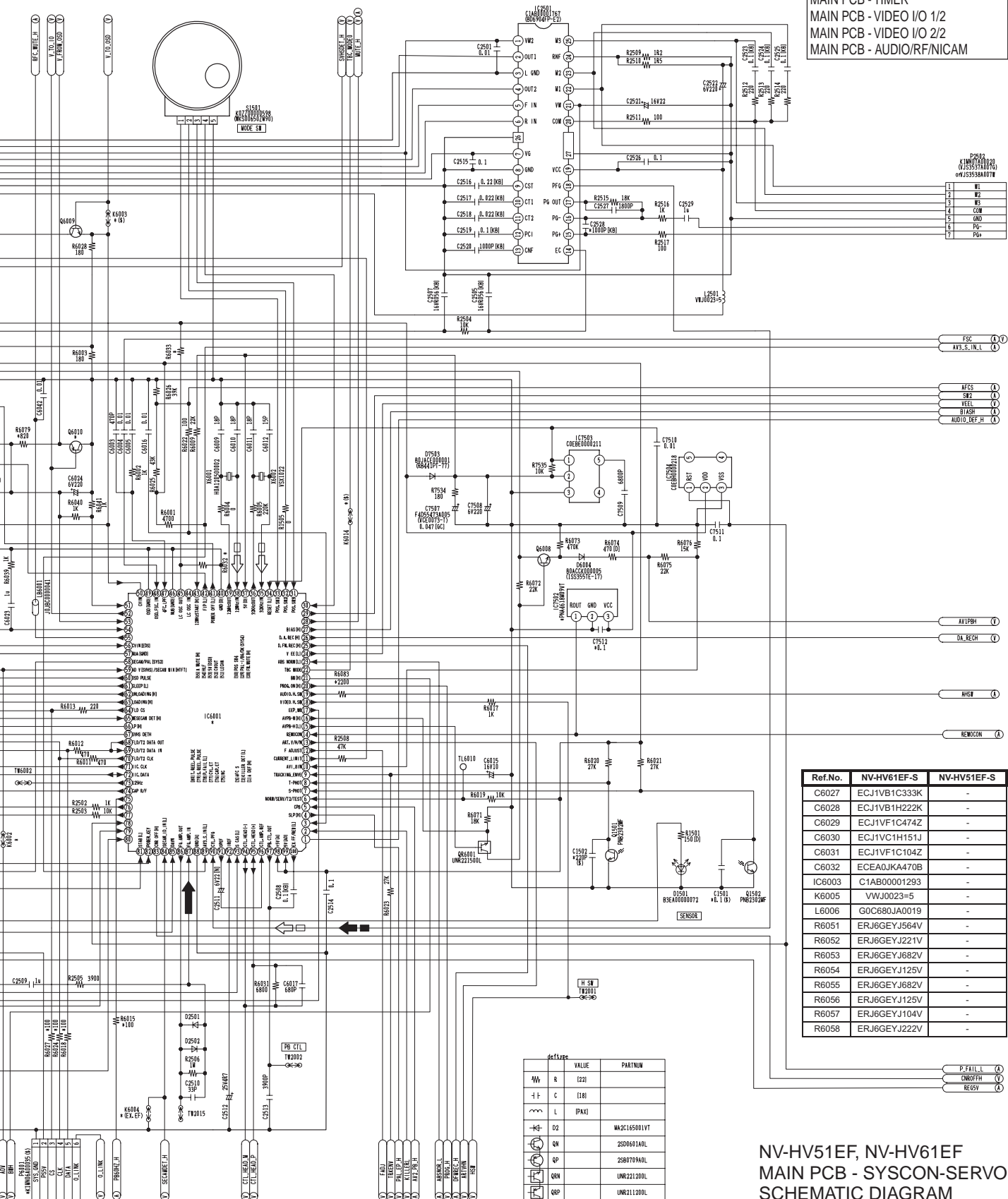


NAVIGATION
INTERCONNECTION
MAIN PCB - SYSCON-SERVO
MAIN PCB - VIDEO I/O 1/2
MAIN PCB - VIDEO I/O 2/2
MAIN PCB - AUDIO/RF/NICAM



NV-HV51EF, NV-HV61EF
 MAIN PCB - TIMER
 SCHEMATIC DIAGRAM

NAVIGATION
 INTERCONNECTION
 MAIN PCB - TIMER
 MAIN PCB - VIDEO I/O 1/2
 MAIN PCB - VIDEO I/O 2/2
 MAIN PCB - AUDIO/RF/NICAM



1	W1
2	W2
3	W3
4	COM
5	GND
6	PG-
7	PG+

ESL
 AVS_S_IN_L

AFSS
 SMD
 VREFL
 BLASH
 AUDIO_DEF_H

AVT_PPH
 DA_REGH

MSER

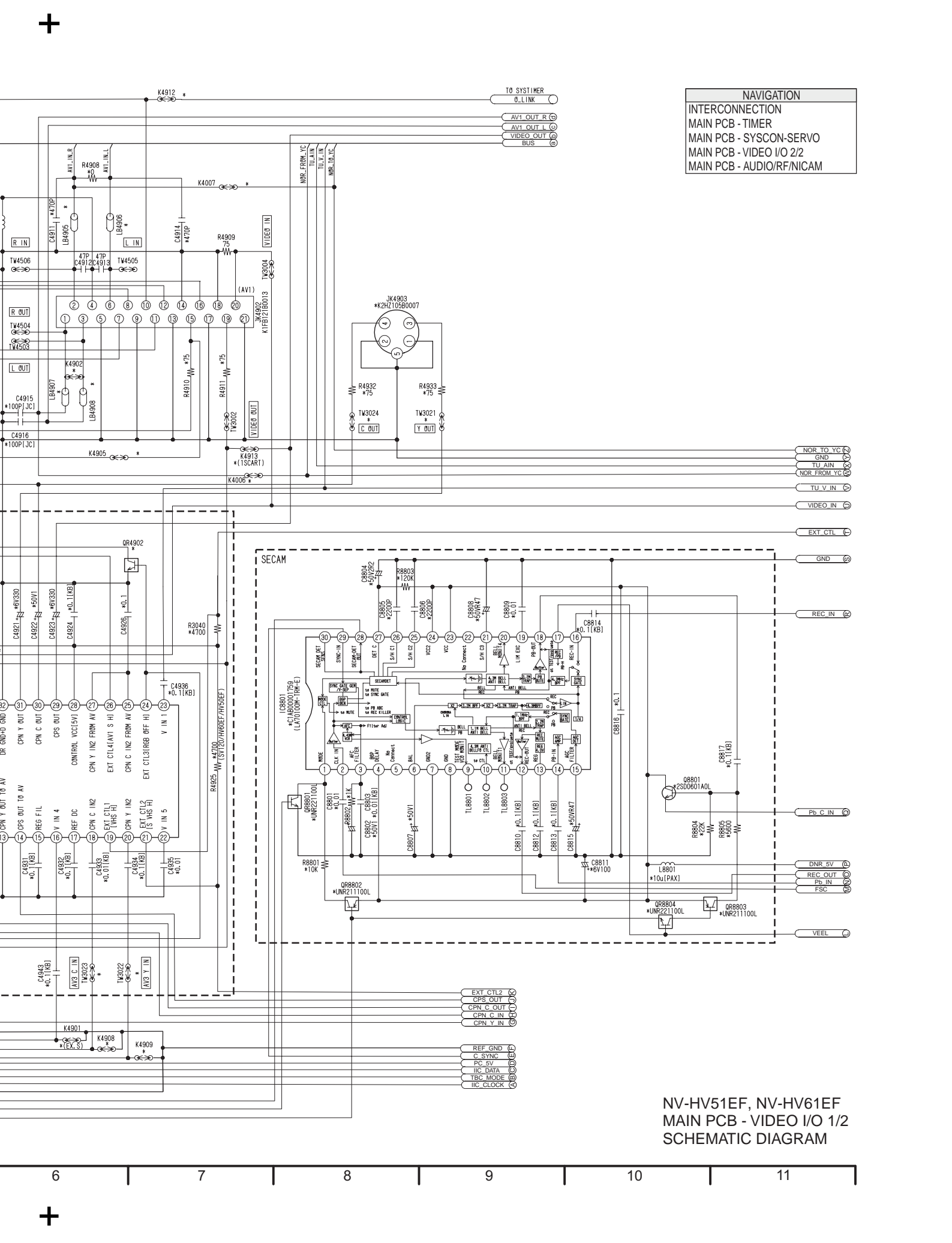
REMOCON

Ref.No.	NV-HV61EF-S	NV-HV51EF-S
C6027	ECJ1VB1C333K	-
C6028	ECJ1VB1H222K	-
C6029	ECJ1VF1C474Z	-
C6030	ECJ1VC1H151J	-
C6031	ECJ1VF1C104Z	-
C6032	ECEA0JKA470B	-
IC6003	C1AB00001293	-
K6005	VWJ0023=5	-
L6006	G0C680JA0019	-
R6051	ERJ6GEYJ564V	-
R6052	ERJ6GEYJ221V	-
R6053	ERJ6GEYJ682V	-
R6054	ERJ6GEYJ125V	-
R6055	ERJ6GEYJ682V	-
R6056	ERJ6GEYJ125V	-
R6057	ERJ6GEYJ104V	-
R6058	ERJ6GEYJ222V	-

P_FAIL_L
 CNOFFH
 REGSV

Symbol	Value	Part No.
W	R	(22)
+	C	(18)
L	L	(PA)
DZ	DZ	MA2C16500LVT
QN	QN	2S0601A0L
QP	QP	2S0709A0L
QEN	QEN	UNR221200L
QEP	QEP	UNR211200L

NV-HV51EF, NV-HV61EF
 MAIN PCB - SYSCON-SERVO
 SCHEMATIC DIAGRAM



NAVIGATION	
INTERCONNECTION	
MAIN PCB - TIMER	
MAIN PCB - SYSCON-SERVO	
MAIN PCB - VIDEO I/O 2/2	
MAIN PCB - AUDIO/RF/NICAM	

NV-HV51EF, NV-HV61EF
 MAIN PCB - VIDEO I/O 1/2
 SCHEMATIC DIAGRAM

← VIDEO MAIN SIGNAL PATH IN REC MODE
 ← VIDEO MAIN SIGNAL PATH IN PLAYBACK MODE

← AUDIO MAIN SIGNAL PATH IN REC MODE
 ← AUDIO MAIN SIGNAL PATH IN PLAYBACK MODE

G

F

E

D

C

B

A


- ① TR SYS1/RES
- ② TR HEAD1
- ③ TR HEAD2
- ④ TR HEAD3
- ⑤ TR HEAD4
- ⑥ TR HEAD5
- ⑦ TR HEAD6
- ⑧ TR HEAD7
- ⑨ TR HEAD8
- ⑩ TR HEAD9
- ⑪ TR HEAD10
- ⑫ TR HEAD11
- ⑬ TR HEAD12
- ⑭ TR HEAD13
- ⑮ TR HEAD14
- ⑯ TR HEAD15
- ⑰ TR HEAD16
- ⑱ TR HEAD17
- ⑲ TR HEAD18
- ⑳ TR HEAD19
- ㉑ TR HEAD20
- ㉒ TR HEAD21
- ㉓ TR HEAD22
- ㉔ TR HEAD23
- ㉕ TR HEAD24
- ㉖ TR HEAD25
- ㉗ TR HEAD26
- ㉘ TR HEAD27
- ㉙ TR HEAD28
- ㉚ TR HEAD29
- ㉛ TR HEAD30
- ㉜ TR HEAD31
- ㉝ TR HEAD32
- ㉞ TR HEAD33
- ㉟ TR HEAD34
- ㊱ TR HEAD35
- ㊲ TR HEAD36
- ㊳ TR HEAD37
- ㊴ TR HEAD38
- ㊵ TR HEAD39
- ㊶ TR HEAD40
- ㊷ TR HEAD41
- ㊸ TR HEAD42
- ㊹ TR HEAD43
- ㊺ TR HEAD44
- ㊻ TR HEAD45
- ㊼ TR HEAD46
- ㊽ TR HEAD47
- ㊾ TR HEAD48
- ㊿ TR HEAD49
- ⓪ TR HEAD50

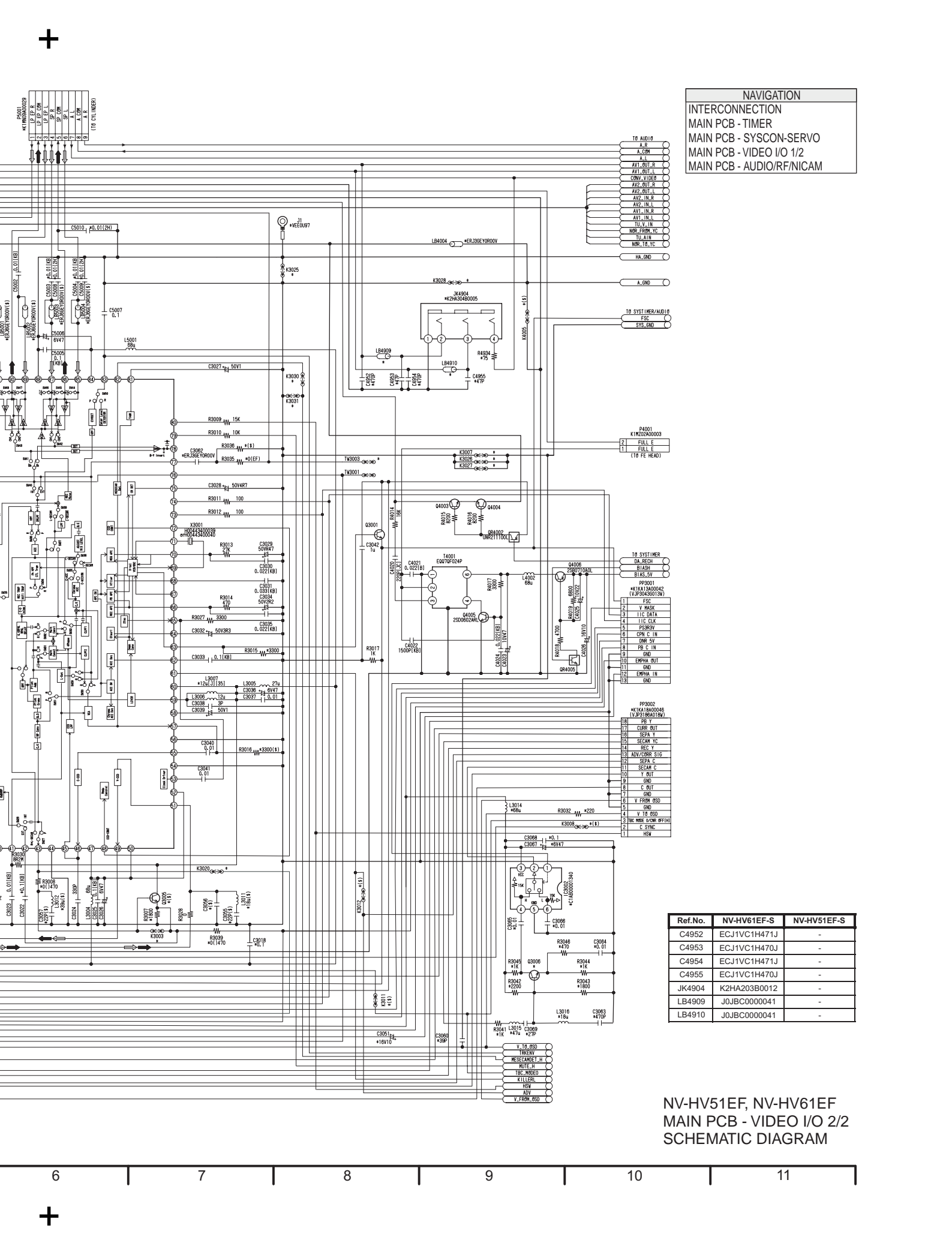
BUS

- ① DCR TO YC
- ② GND
- ③ TU AIN
- ④ DCR FROM YC
- ⑤ TU V IN
- ⑥ VIDEO IN
- ⑦ EX-CH1

- ① GND
- ② REC IN
- ③ R-V IN
- ④ RND-V
- ⑤ REC-OUT
- ⑥ P-V IN
- ⑦ REC
- ⑧ V-EEL
- ⑨ EXT-CH1
- ⑩ SPK-CH1
- ⑪ CPN-C-IN
- ⑫ CPN-C-OUT
- ⑬ CPN-V-IN
- ⑭ REF-GND
- ⑮ C-SVNC
- ⑯ PS-V
- ⑰ IC-DATA
- ⑱ CNROFFH
- ⑲ IC-CLOCK

Note:
Marked *(spare) parts are not assembled

Important Safety Notice: 
Components identified with the mark have the special characteristics for safety.
When replacing any of these components use only the same type.



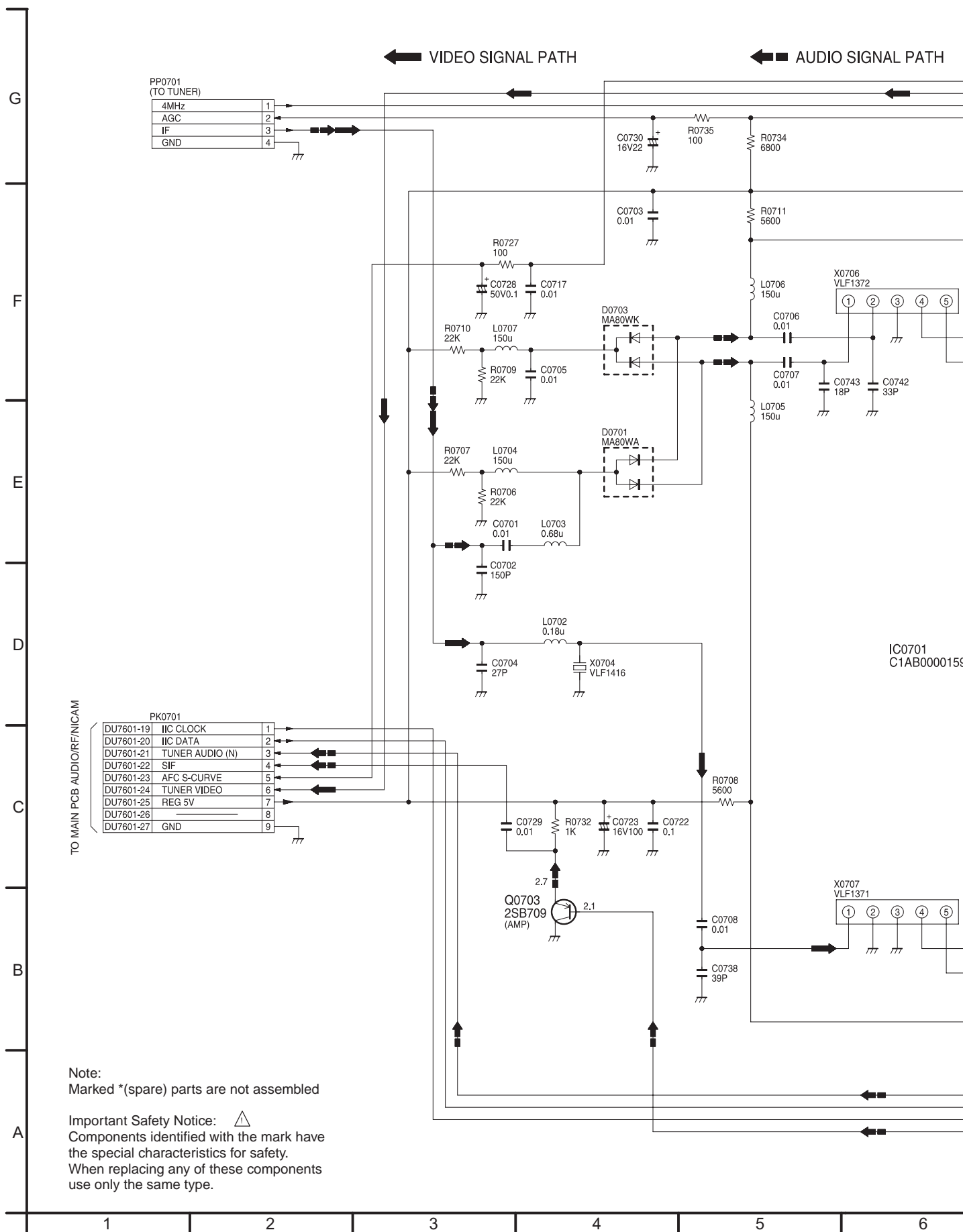
NAVIGATION	
INTERCONNECTION	
MAIN PCB - TIMER	
MAIN PCB - SYSCON-SERVO	
MAIN PCB - VIDEO I/O 1/2	
MAIN PCB - AUDIO/RF/NICAM	

TO AUDIO	
A.L	
A.LRM	
A.L	
AV1_OUT_R	
AV1_OUT_L	
CMV_VIDEO	
AV2_OUT_R	
AV2_OUT_L	
AV2_IN_R	
AV2_IN_L	
AV1_IN_R	
AV1_IN_L	
TU_V_IN	
NKR_FROM_IC	
TU_AIN	
NKR_TO_IC	
HA_GND	
A_GND	
TO SYSTEM/AUDIO	
FSC	
STS_GND	
P4001	
2	FULL E
1	(TO FE HEAD)
TO SYSTEM	
DA_RECH	
BIAS1	
BIAS_SV	
FSC	
1	V MASK
2	IIC DATA
3	IIC CLK
4	PS32V
5	CPN_C_IN
6	DMV_SV
7	PB_C_IN
8	PB_C_IN
9	GND
10	EMPHA_OUT
11	GND
12	EMPHA_IN
13	GND
PP3002	
18	PB_Y
17	CLRP_OUT
16	SEPA_Y
15	SEPAR_YC
14	REC_Y
13	ADV/CSER_SIG
12	SEPA_C
11	SEPAR_C
10	Y_OUT
9	GND
8	C_OUT
7	GND
6	Y_FRON OSD
5	GND
4	V_TO OSD
3	TRC_MDE_S/DM OFF/HS
2	C_SYNC
1	HSV
V_TO OSD	
TRISEV	
MISC_CAMEL_H	
MUTE_H	
TRC_MDE3	
KILLER	
HSV	
ADV	
Y_FRON OSD	

Ref.No.	NV-HV61EF-S	NV-HV51EF-S
C4952	ECJ1VC1H471J	-
C4953	ECJ1VC1H470J	-
C4954	ECJ1VC1H471J	-
C4955	ECJ1VC1H470J	-
JK4904	K2HA203B0012	-
LB4909	JOJBC0000041	-
LB4910	JOJBC0000041	-

NV-HV51EF, NV-HV61EF
MAIN PCB - VIDEO I/O 2/2
SCHEMATIC DIAGRAM

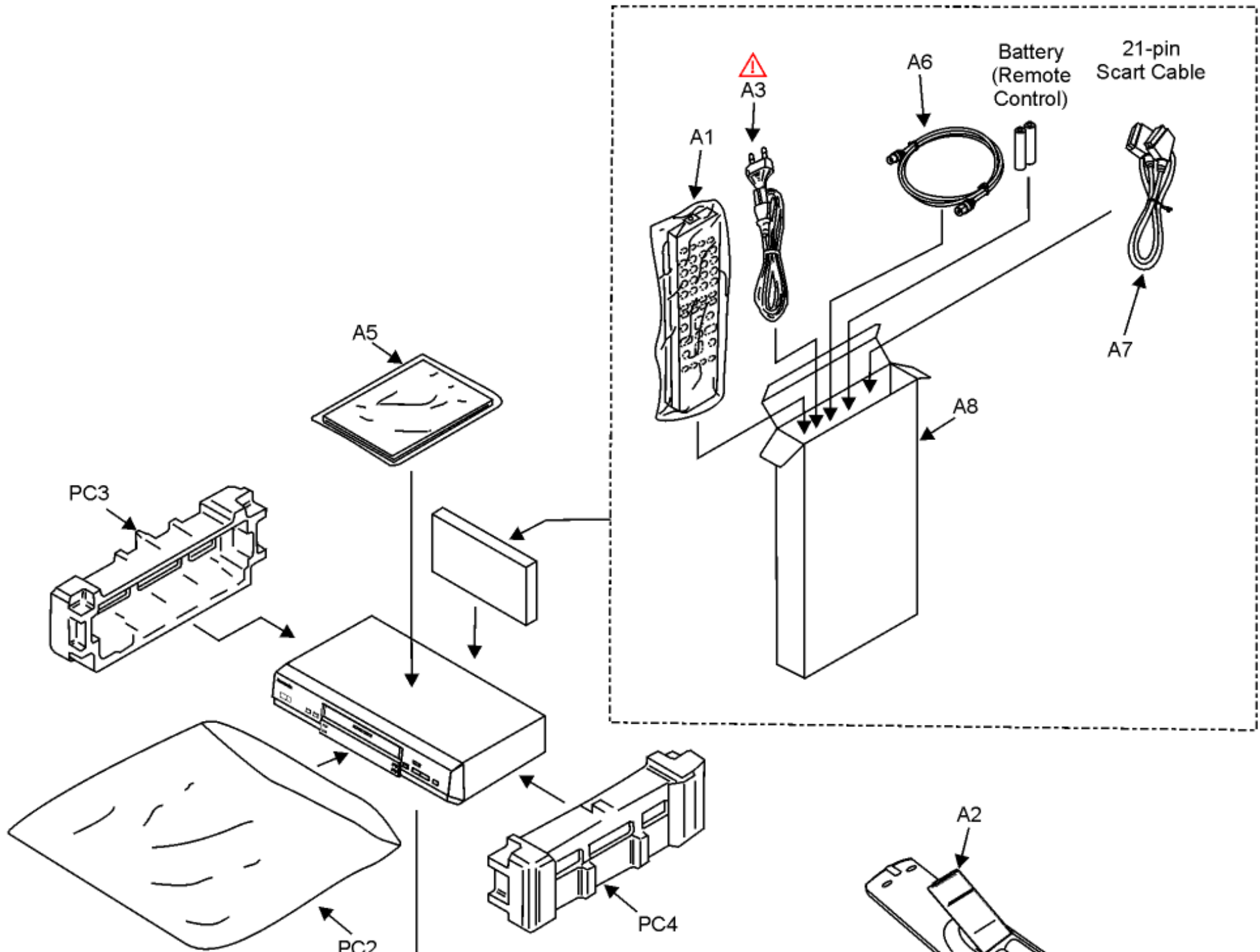
13.7. VIF-UNIT - SCHEMATIC DIAGRAM

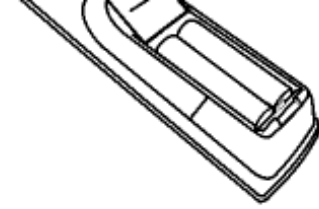
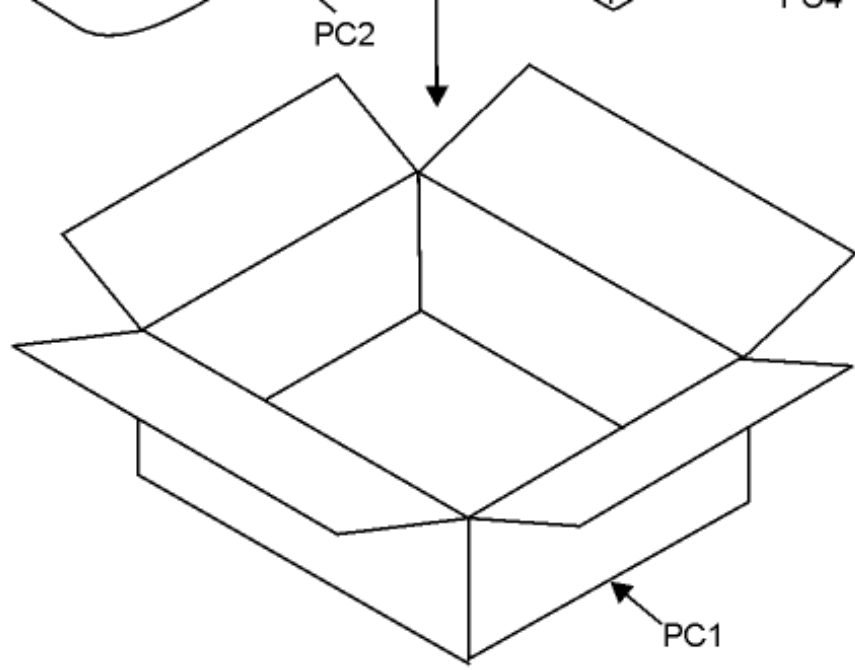


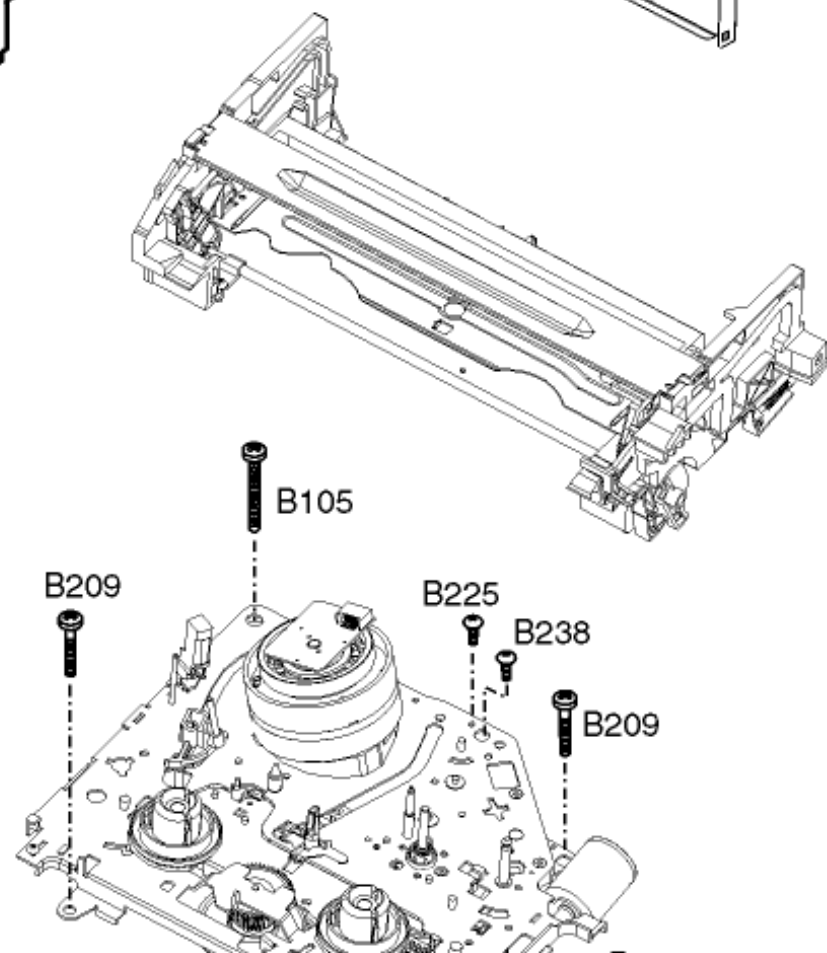
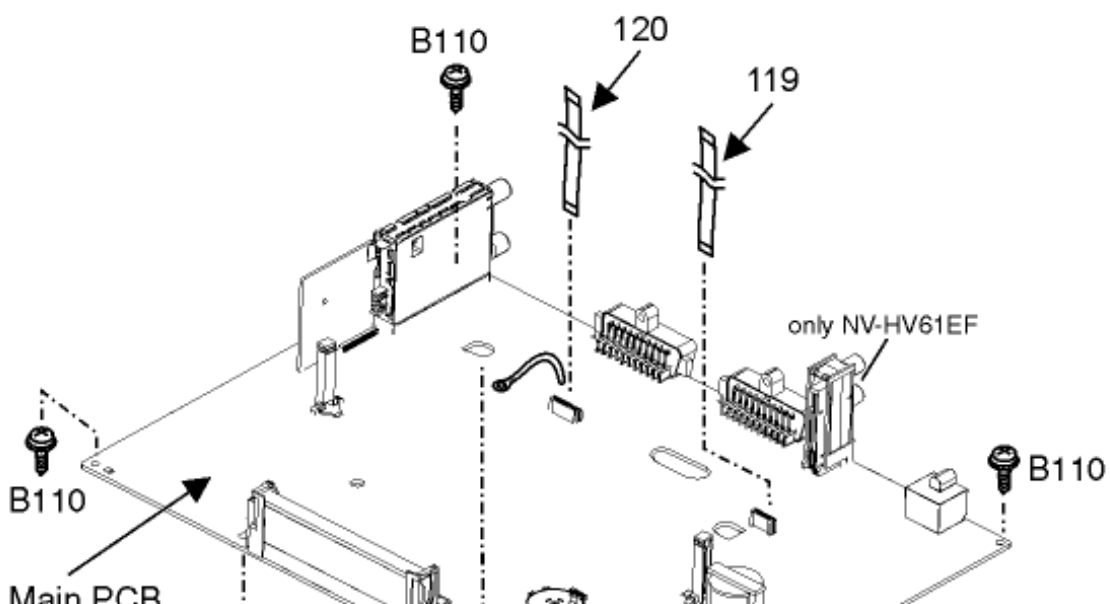
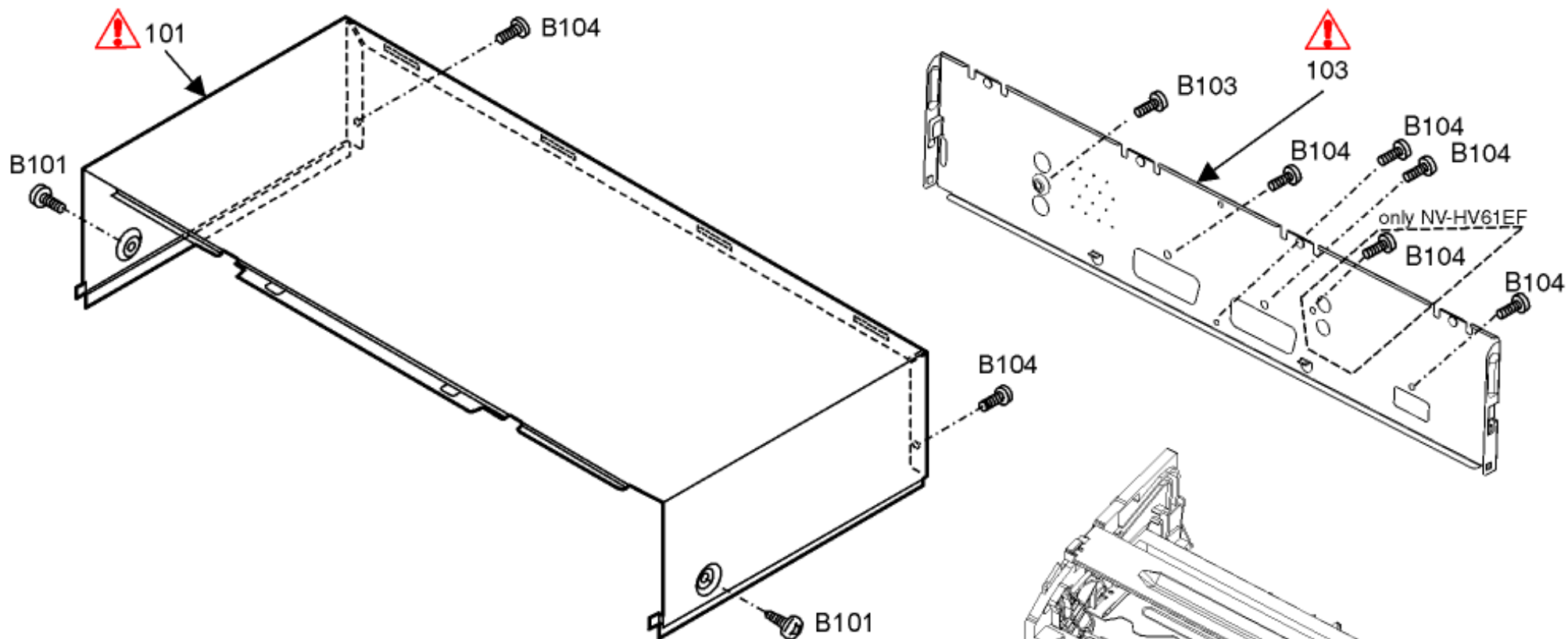
Note:
 Marked *(spare) parts are not assembled

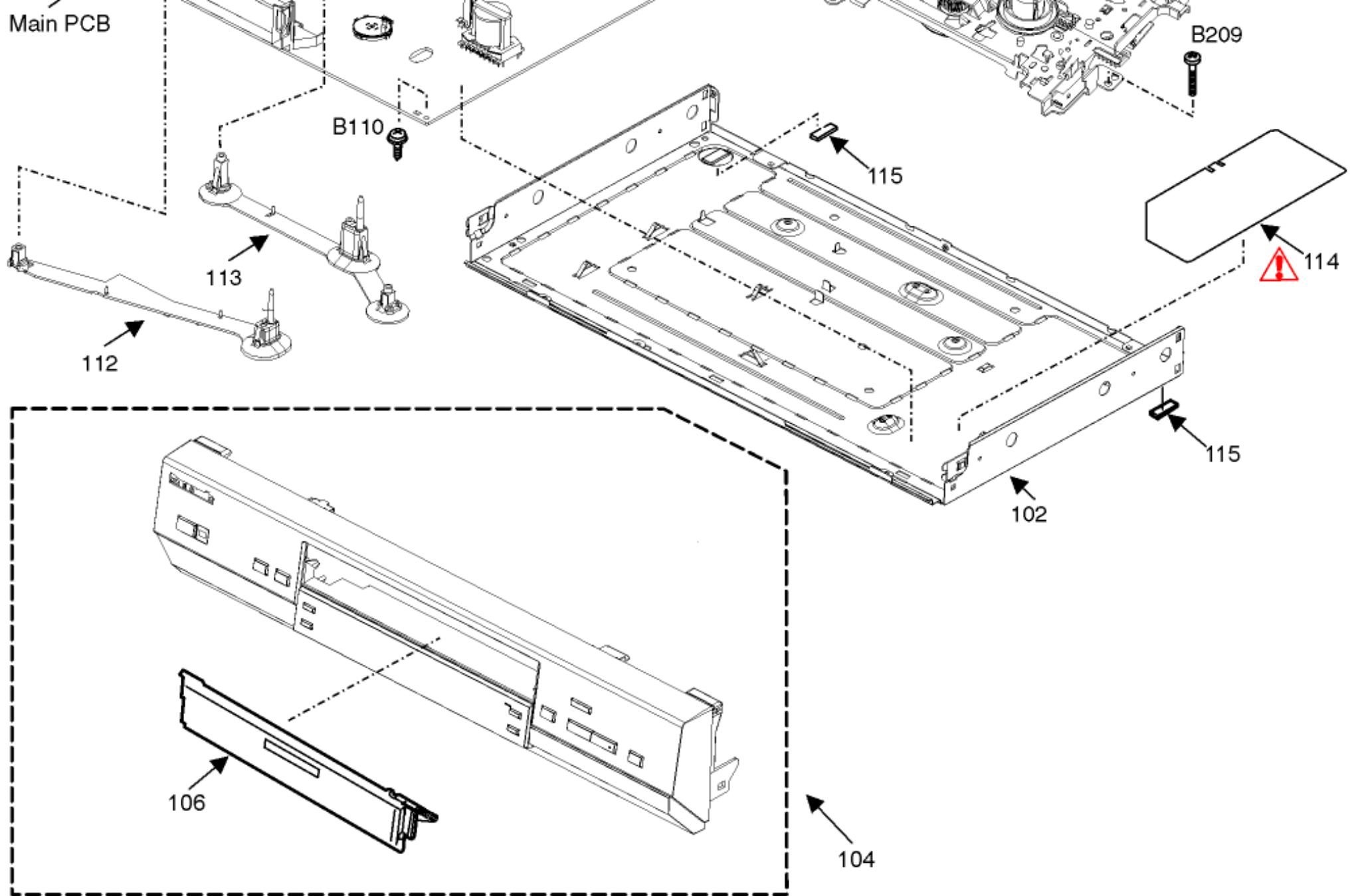
Important Safety Notice: Components identified with the mark have the special characteristics for safety. When replacing any of these components use only the same type.

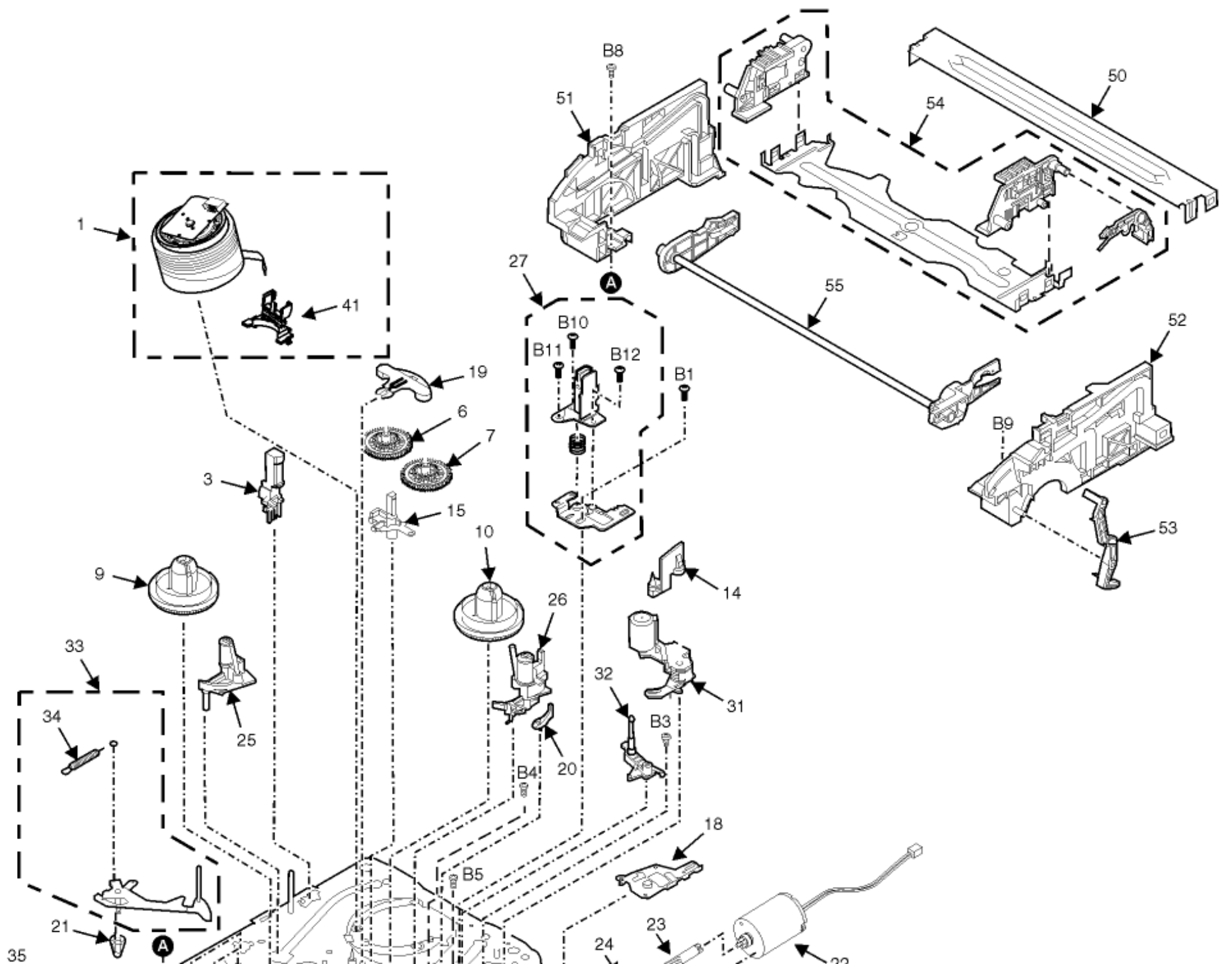


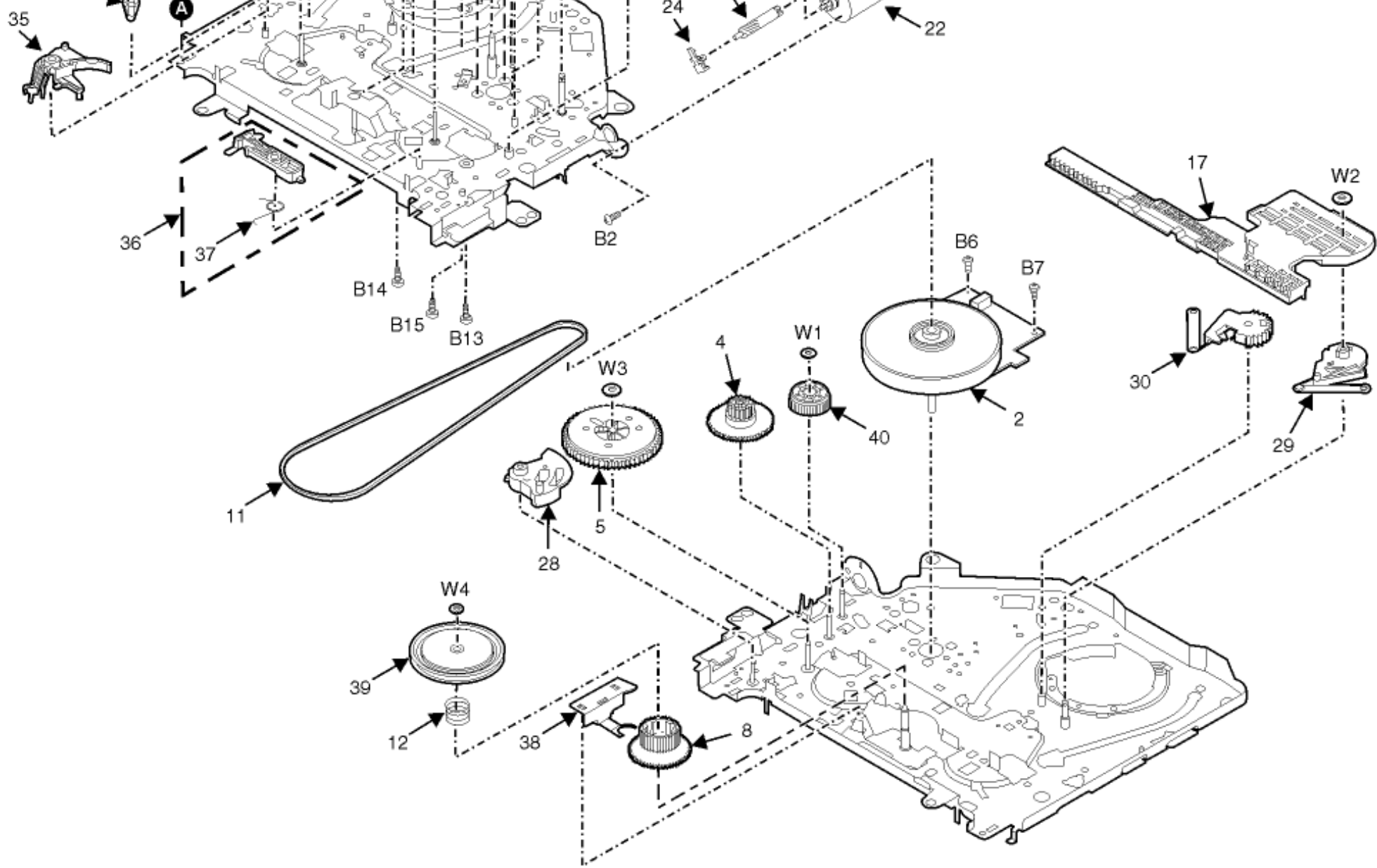




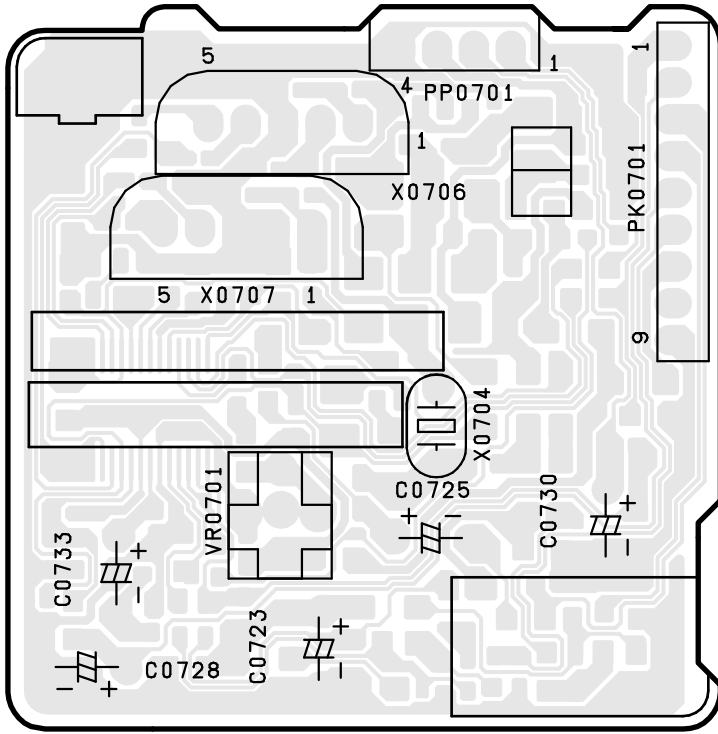








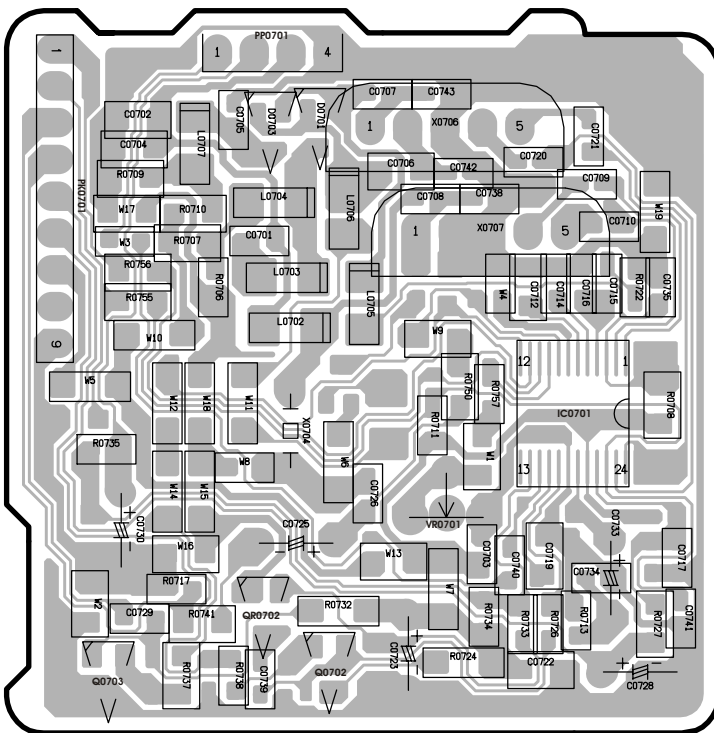
COMPONENT SIDE



VIF PCB	
X0704	B-2 / E-3
X0706	G-2
X0707	F-2
Q0702	A-2
Q0703	A-1
QR0702	A-2
IC0701	B-3
PP0701	C-2 / G-3
PK0701	C-1 / F-3
VR0701	B-2 / E-2

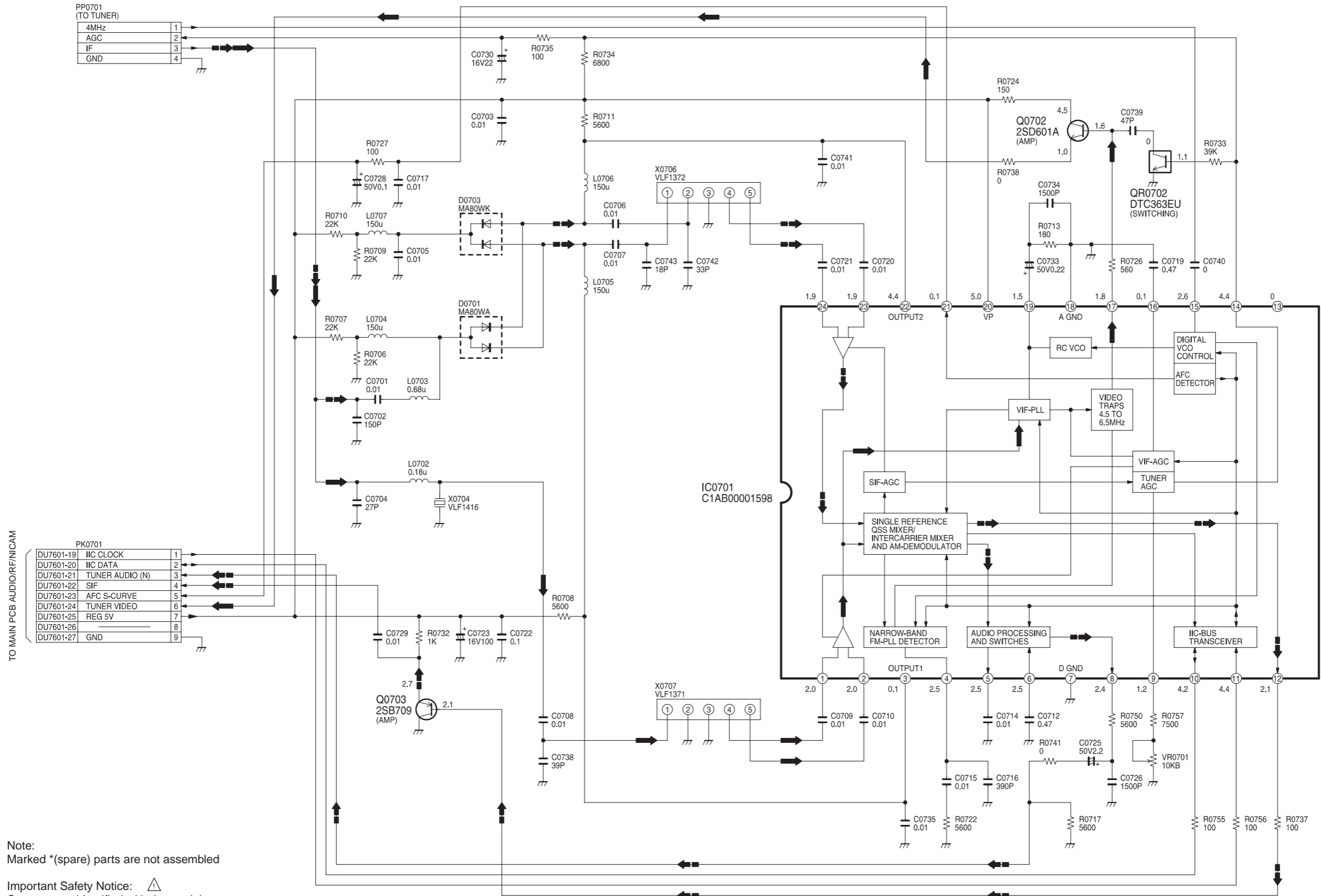
ADDRESS INFORMATION

SOLDER SIDE



NV-HV51EF, NV-HV61EF
VIF PCB
COMPONENT / SOLDER SIDE

← VIDEO SIGNAL PATH ← AUDIO SIGNAL PATH



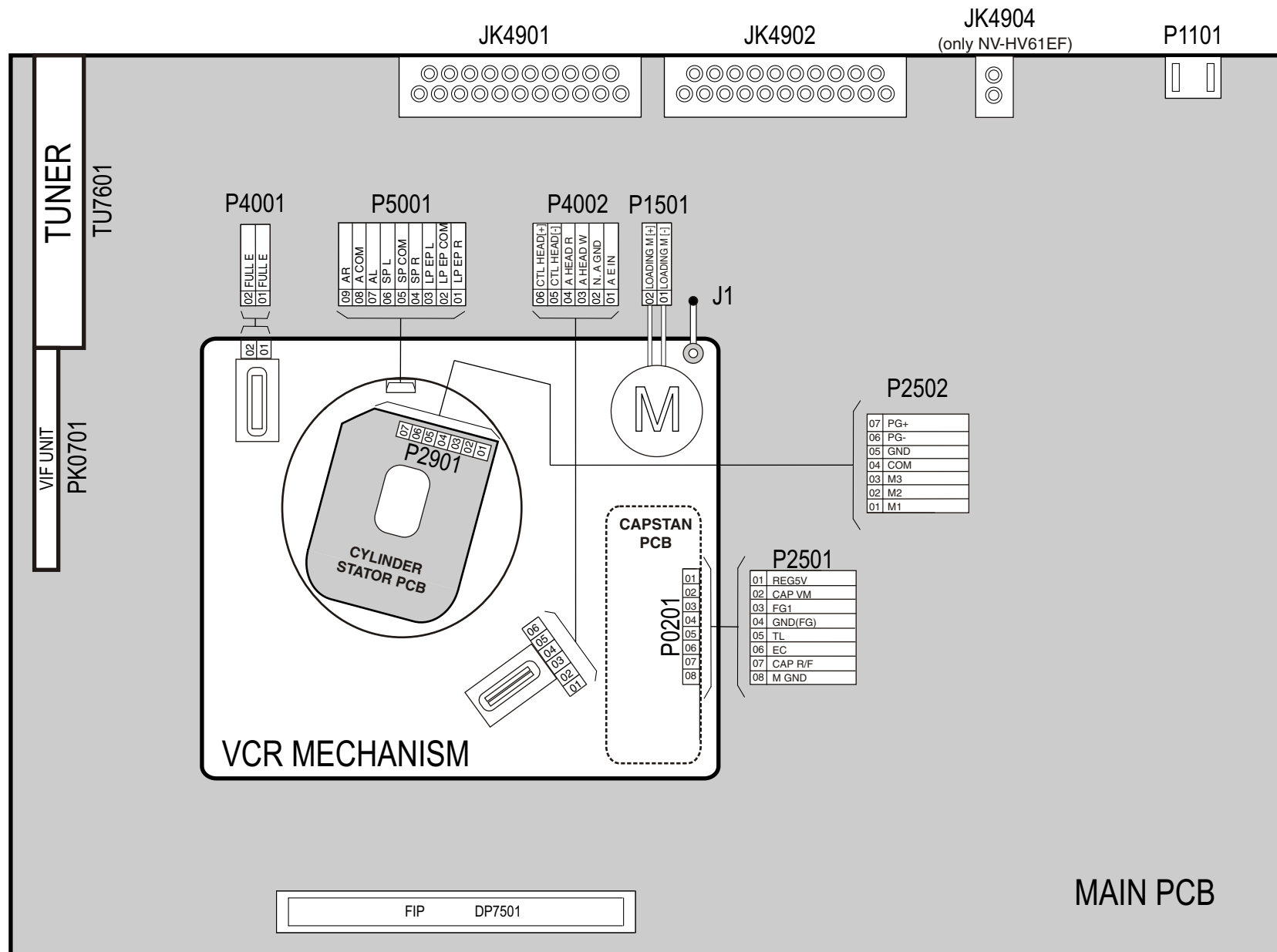
TO MAIN PCB AUDIO/R/IN/CAM

PK0701	
DU7601-19	IIC CLOCK
DU7601-20	IIC DATA
DU7601-21	TUNER AUDIO (N)
DU7601-22	SIF
DU7601-23	AFC S-CURVE
DU7601-24	TUNER VIDEO
DU7601-25	REG 5V
DU7601-26	
DU7601-27	GND

Note:
Marked *(spare) parts are not assembled

Important Safety Notice: ⚠
Components identified with the mark have the special characteristics for safety. When replacing any of these components use only the same type.

NAVIGATION
MAIN POWER PCB
MAIN PCB - TIMER
MAIN PCB - SYSCON-SERVO
MAIN PCB - VIDEO I/O 1/2
MAIN PCB - VIDEO I/O 2/2
MAIN PCB - AUDIO/RF/NICAM
VIF-UNIT

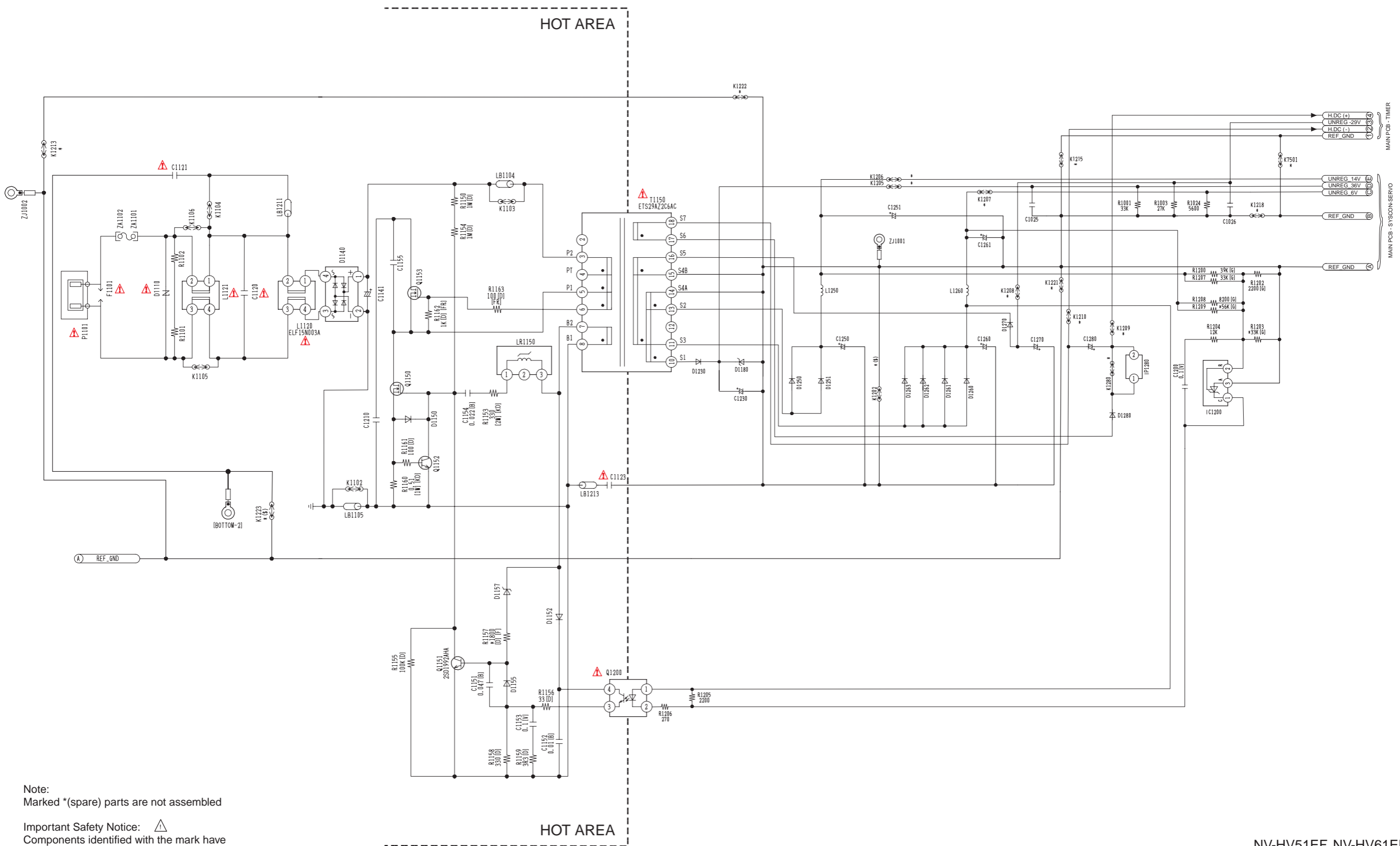


VIDEO MAIN SIGNAL PATH IN REC MODE
 VIDEO MAIN SIGNAL PATH IN PLAYBACK MODE

AUDIO MAIN SIGNAL PATH IN REC MODE
 AUDIO MAIN SIGNAL PATH IN PLAYBACK MODE

NAVIGATION
 INTERCONNECTION

G
F
E
D
C
B
A



Note: Marked *(spare) parts are not assembled

Important Safety Notice: Components identified with the mark have the special characteristics for safety. When replacing any of these components use only the same type.

NV-HV51EF, NV-HV61EF
MAIN POWER PCB
SCHEMATIC DIAGRAM

1 2 3 4 5 6 7 8 9 10 11

Ref.no.		IC7602																			
Mode	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
Stop	2,50	2,50	5,10	0,00	0,00	5,10	0,00	0,00	0,00	0,40	0,00	0,40	0,00	1,60	1,50	0,00	0,00	2,00	0,00	0,00	
Play	2,50	2,50	5,10	0,00	0,00	5,10	0,00	0,00	0,00	0,95	0,00	1,00	0,00	1,60	1,50	0,00	0,00	2,00	0,00	0,00	
REC	2,50	2,50	5,10	0,00	0,00	5,10	0,00	0,00	0,00	0,40	0,00	0,30	0,00	1,60	1,50	0,00	0,00	2,00	0,00	0,00	
F.F	2,50	2,50	5,10	0,00	0,00	5,10	0,00	0,00	0,00	1,20	0,00	1,00	0,00	1,60	1,50	0,00	0,00	2,00	0,00	0,00	
REW	2,50	2,50	5,10	0,00	0,00	5,10	0,00	0,00	0,00	1,40	0,00	1,40	0,00	1,60	1,50	0,00	0,00	2,00	0,00	0,00	
Ref.no.																					
Mode	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	
Stop	3,20	0,00	1,90	1,90	1,90	5,00	0,00	5,00	2,80	2,70	0,64	0,66	0,70	0,60	5,00	0,00	5,00	2,50	2,50	2,50	
Play	3,20	0,00	1,90	1,90	1,90	5,00	0,00	5,00	2,80	2,70	1,00	1,00	1,00	1,00	5,00	0,00	5,00	2,50	2,50	2,50	
REC	3,20	0,00	1,90	1,90	1,90	5,00	0,00	5,00	2,40	2,30	0,34	0,34	0,36	1,00	5,00	0,00	5,00	2,50	2,50	2,50	
F.F	3,20	0,00	1,90	1,90	1,90	5,00	0,00	5,00	2,40	2,40	0,70	0,70	0,60	0,30	5,00	0,00	5,00	2,50	2,50	2,50	
REW	3,20	0,00	1,90	1,90	1,90	5,00	0,00	5,00	2,60	2,40	0,50	0,50	0,70	0,20	5,00	0,00	5,00	2,50	2,50	2,50	
Ref.no.																					
Mode	41	42	43	44																	
Stop	2,50	5,00	2,50	0,00																	
Play	2,50	5,00	2,50	0,00																	
REC	2,50	5,00	2,50	0,00																	
F.F	2,50	5,00	2,50	0,00																	
REW	2,50	5,00	2,50	0,00																	

Ref.no.		IC1501																			
Mode	1	2	3	4																	
Stop	1,2	2,4	0 / 5	0																	
Play	1,2	2,4	0 / 5	0																	
REC	1,2	2,4	0 / 5	0																	
F.F	1,2	2,4	0 / 5	0																	
REW	1,2	2,4	0 / 5	0																	

Ref.no.		IC1502																			
Mode	1	2	3	4																	
Stop	0	1,2	0 / 5	0																	
Play	0	1,2	0 / 5	0																	
REC	0	1,2	0 / 5	0																	
F.F	0	1,2	0 / 5	0																	
REW	0	1,2	0 / 5	0																	

Ref.no.		Q1002			Q1003			Q1005			Q1006			Q1007			Q1012					
Mode	E	B	C	E	B	C	E	B	C	E	B	C	E	B	C	E	B	C				
Stop	5,2	6	6	37,3	36,6	37,3	12,5	13,2	14,4	5,6	5,9	6	5,1	5,8	5,9	3,3	4	4,4				
Play	5,2	6	6	37,3	36,6	37,3	12,5	13,2	14,4	5,6	5,9	6	5,1	5,8	5,9	3,3	4	4,4				
REC	5,2	6	6	37,3	36,6	37,3	12,5	13,2	14,4	5,6	5,9	6	5,1	5,8	5,9	3,3	4	4,4				
F.F	5,2	6	6	37,3	36,6	37,3	12,5	13,2	14,4	5,6	5,9	6	5,1	5,8	5,9	3,3	4	4,4				
REW	5,2	6	6	37,3	36,6	37,3	12,5	13,2	14,4	5,6	5,9	6	5,1	5,8	5,9	3,3	4	4,4				

Ref.no.		Q1008			Q1009			Q1010			Q1001			Q1013			QR1003					
Mode	E	B	C	E	B	C	E	B	C	E	B	C	E	B	C	E	B	C				
Stop	5,1	5,8	5,9	5,1	5,8	5,8	5,1	5,8	5,8	-19,3	-18,5	-19,3	-29,6	-30	-30	5,2	0	5,1				
Play	5,1	5,8	5,9	5,1	5,8	5,8	5,1	5,8	5,8	-19,3	-18,5	-19,3	-29,6	-30	-30	5,2	0	5,1				
REC	5,1	5,8	5,9	5,1	5,8	5,8	5,1	5,8	5,8	-19,3	-18,5	-19,3	-29,6	-30	-30	5,2	0	5,1				
F.F	5,1	5,8	5,9	5,1	5,8	5,8	5,1	5,8	5,8	-19,3	-18,5	-19,3	-29,6	-30	-30	5,2	0	5,1				
REW	5,1	5,8	5,9	5,1	5,8	5,8	5,1	5,8	5,8	-19,3	-18,5	-19,3	-29,6	-30	-30	5,2	0	5,1				

Ref.no.		Q1153			Q1150			Q1151			Q1152			Q1200			
Mode	D	G	S	D	G	S	E	B	C	E	B	C	E	C	A	K	
Stop	311	310	387	0	1,25	310	0	0,38	1,20	0	0	1,20	0,7	15,5	6,0	5,0	
Play	309	310	389	0	2,35	309	0	0,27	2,38	0	0,02	2,38	0,7	15,5	6,0	5,0	
REC	309	310	389	0	2,35	309	0	0,27	2,38	0	0,02	2,38	0,7	15,5	6,0	5,0	
F.F	309	310	389	0	2,35	309	0	0,27	2,38	0	0,02	2,38	0,7	15,5	6,2	5,0	
REW	309	310	389	0	2,35	309	0	0,27	2,38	0	0,02	2,38	0,7	15,5	6,2	5,0	

Ref.no.		QR6001			QR6004			Q6010			Q6009		
Mode	E	B	C	E	B	C	E	B	C	E	B	C	
Stop	0	4,8	0	0	4,8	0	2,2	1,5	0	1,5	2,1	5,1	
Play	0	0	12	0	4,8	0	2,2	1,5	0	1,5	2,1	5,1	
REC	0	4,8	0	0	4,8	0	2,2	1,5	0	1,5	2,1	5,1	
F.F	0	4,8	0	0	4,8	0	2,2	1,5	0	1,5	2,1	5,1	
REW	0	4,8	0	0	4,8	0	2,2	1,5	0	1,5	2,1	5,1	

Ref.no.		Q4901			Q4902			Q4905			Q4906			QR4903			QR4904					
Mode	E	B	C	E	B	C	E	B	C	E	B	C	E	B	C	E	B	C				
Stop	1,4	2	4,2	4,9	4,3	2,4	0	0	12,5	2,5	0	2,5	1,9	0	2,4	1,9	0	2,3				
Play	1,4	2	4,2	4,9	4,3	2,4	11,9	12,5	12,5	2,5	0	2,5	1,9	0	2,4	1,9	0	2,3				
REC	1,4	2	4,2	4,9	4,3	2,4	0	0	12,5	2,5	0	2,5	1,9	0	2,4	1,9	0	2,3				
F.F	1,4	2	4,2	4,9	4,3	2,4	0	0	12,5	2,5	0	2,5	1,9	0	2,4	1,9	0	2,3				
REW	1,4	2	4,2	4,9	4,3	2,4	0	0	12,5	2,5	0	2,5	1,9	0	2,4	1,9	0	2,3				

Ref.no.	QR4901			QR4902			Q3001			Q3006			QR3003			QR3006						
	E	B	C	E	B	C	E	B	C	E	B	C	E	B	C	E	B	C				
Mode																						
Stop	0	2,7	0	0	4,5	0	1,5	2,1	5	1,6	2,3	3,4	0	2,7	0	0	4,1	0				
Play	0	0	12,5	0	4,5	0	1,5	2,1	5	1,6	2,3	3,4	0	4,5	0	0	2,1	0				
REC	0	2,7	0	0	4,5	0	1,5	2,1	5	1,6	2,3	3,4	0	3,7	0	0	4,1	0				
F.F	0	2,7	0	0	4,5	0	1,5	2,1	5	1,6	2,3	3,4	0	3,7	0	0	4,1	0				
REW	0	2,7	0	0	4,5	0	1,5	2,1	5	1,6	2,3	3,4	0	3,2	0	0	4,1	0				

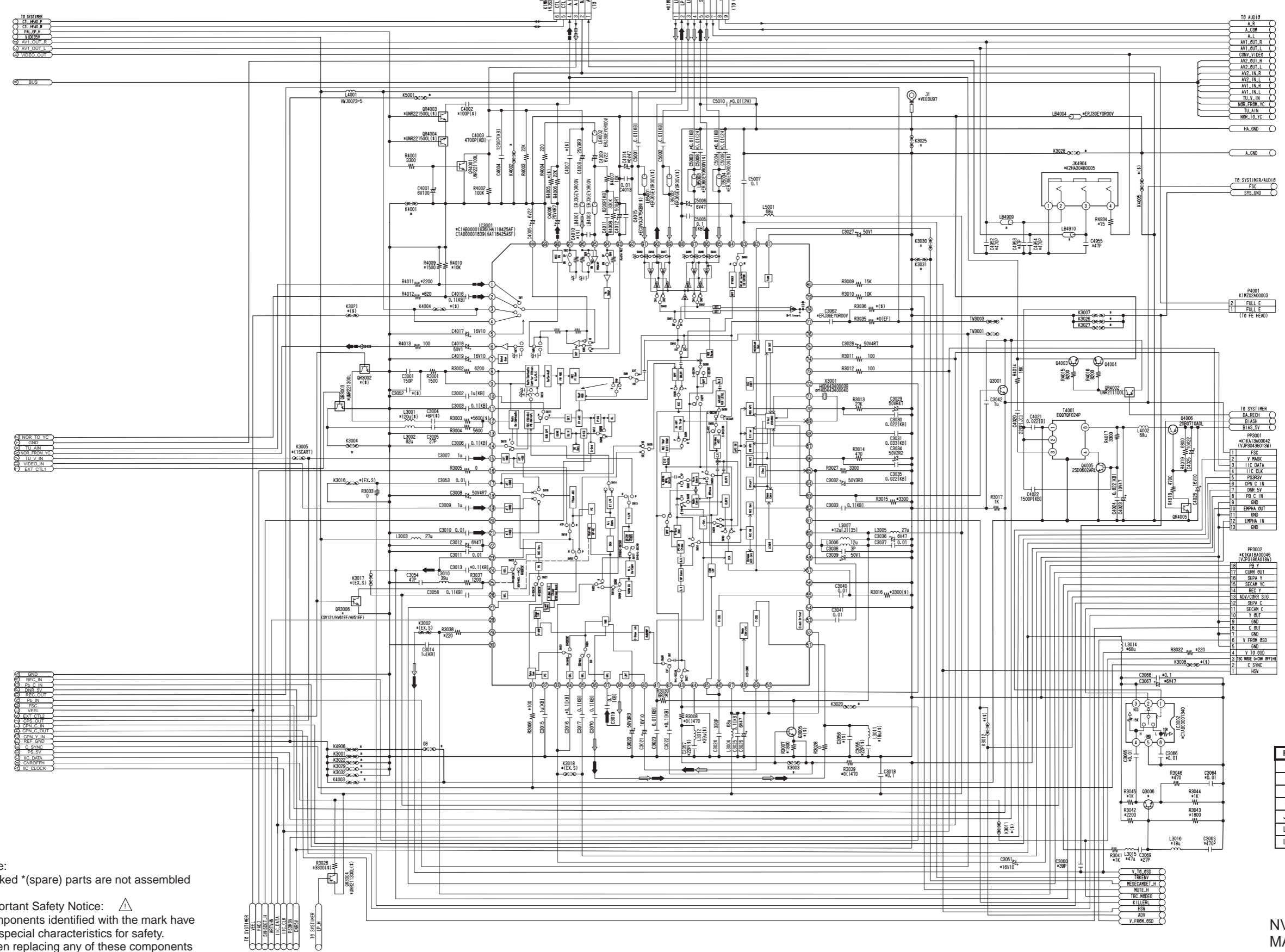
Ref.no.	QR4001			QR4002			QR4005			Q4003			Q4004			Q4005			Q4006				
	E	B	C	E	B	C	E	B	C	E	B	C	E	B	C	E	B	C	E	B	C		
Mode																							
Stop	0	0	0	5	0	5,1	0	0	5,6	0	0,6	0	0	0,6	0	0,3	0	0,3	5,5	5,5	0		
Play	0	0	0	4,8	5	-24	0	0	5,6	0	0,6	0	0	0,6	0	0,3	0	0,3	5,5	5,5	0		
REC	0	0	0	5	0	5	0	4,8	0	-16	0	-24,2	-16	0	-24	-0,6	0	4,6	4,4	5,1	5		
F.F	0	0	0	5	0	5	0	0	5,6	0	0,6	0	0	0,6	0	0,3	0	0,3	5,5	5,5	0		
REW	0	0	0	5	0	5	0	0	5,6	0	0,6	0	0	0,6	0	0,3	0	0,3	5,5	5,5	0		

Ref.no.	QR4501			QR4502			QR4503			QR4504			QR4506			QR4507			QR4508			
	E	B	C	E	B	C	E	B	C	E	B	C	E	B	C	E	B	C	E	B	C	
Mode																						
Stop	4,6	0	4,5	5	0	4,9	0	4,5	0	0	4,5	0	0	4,5	0	0	4,9	0	0	4,5	0	
Play	0	0	-2,3	0	0	-2,3	0	-2,3	0	0	-2,3	0	0	-2,3	0	0	-2,3	0	0	-2,3	0	
REC	0	0	-2,3	0	0	-2,3	0	-2,3	0	0	-2,3	0	0	-2,3	0	0	-2,3	0	0	-2,3	0	
F.F	0	0	4,5	5	0	4,9	0	4,5	0	0	4,5	0	0	4,5	0	0	5	0	0	4,5	0	
REW	0	0	4,5	5	0	4,9	0	4,5	0	0	4,5	0	0	4,5	0	0	5	0	0	4,5	0	

VIDEO MAIN SIGNAL PATH IN REC MODE
 VIDEO MAIN SIGNAL PATH IN PLAYBACK MODE

AUDIO MAIN SIGNAL PATH IN REC MODE
 AUDIO MAIN SIGNAL PATH IN PLAYBACK MODE

NAVIGATION
 INTERCONNECTION
 MAIN PCB - TIMER
 MAIN PCB - SYSCON-SERVO
 MAIN PCB - VIDEO I/O 1/2
 MAIN PCB - AUDIO/RF/NICAM



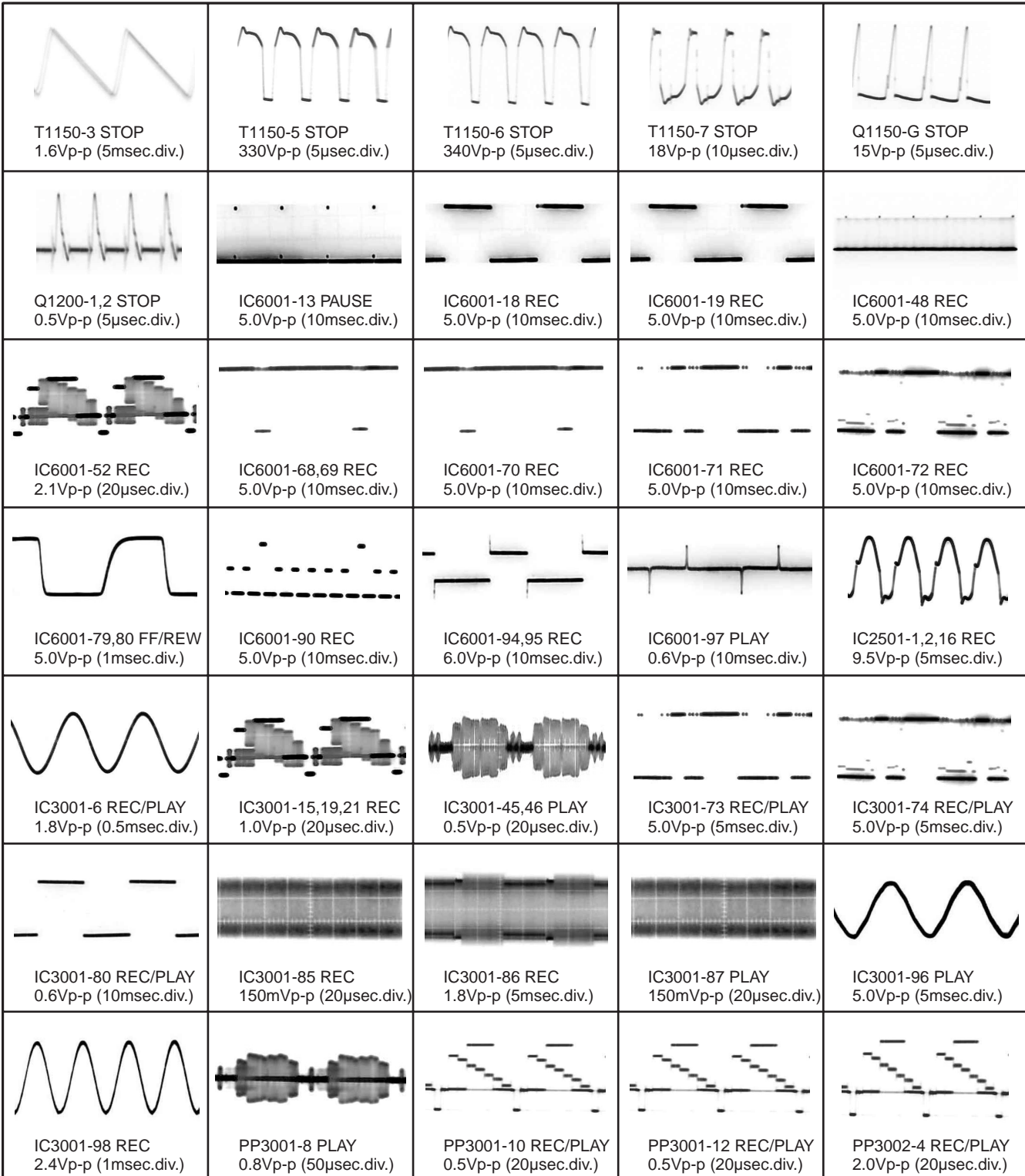
- 1 GND
- 2 V16_RSD
- 3 TRKENV
- 4 MESSCAN1_H
- 5 NUTE_H
- 6 TRC_INXED
- 7 KILLERL
- 8 HSW
- 9 ADV
- 10 V16_FRM_RSD

Ref.No.	NV-HV61EF-S	NV-HV51EF-S
C4952	ECJ1VC1H471J	-
C4953	ECJ1VC1H470J	-
C4954	ECJ1VC1H471J	-
C4955	ECJ1VC1H470J	-
JK4904	K2HA203B0012	-
LB4909	JOJBC0000041	-
LB4910	JOJBC0000041	-

Note: Marked *(spare) parts are not assembled

Important Safety Notice: Components identified with the mark have the special characteristics for safety. When replacing any of these components use only the same type.

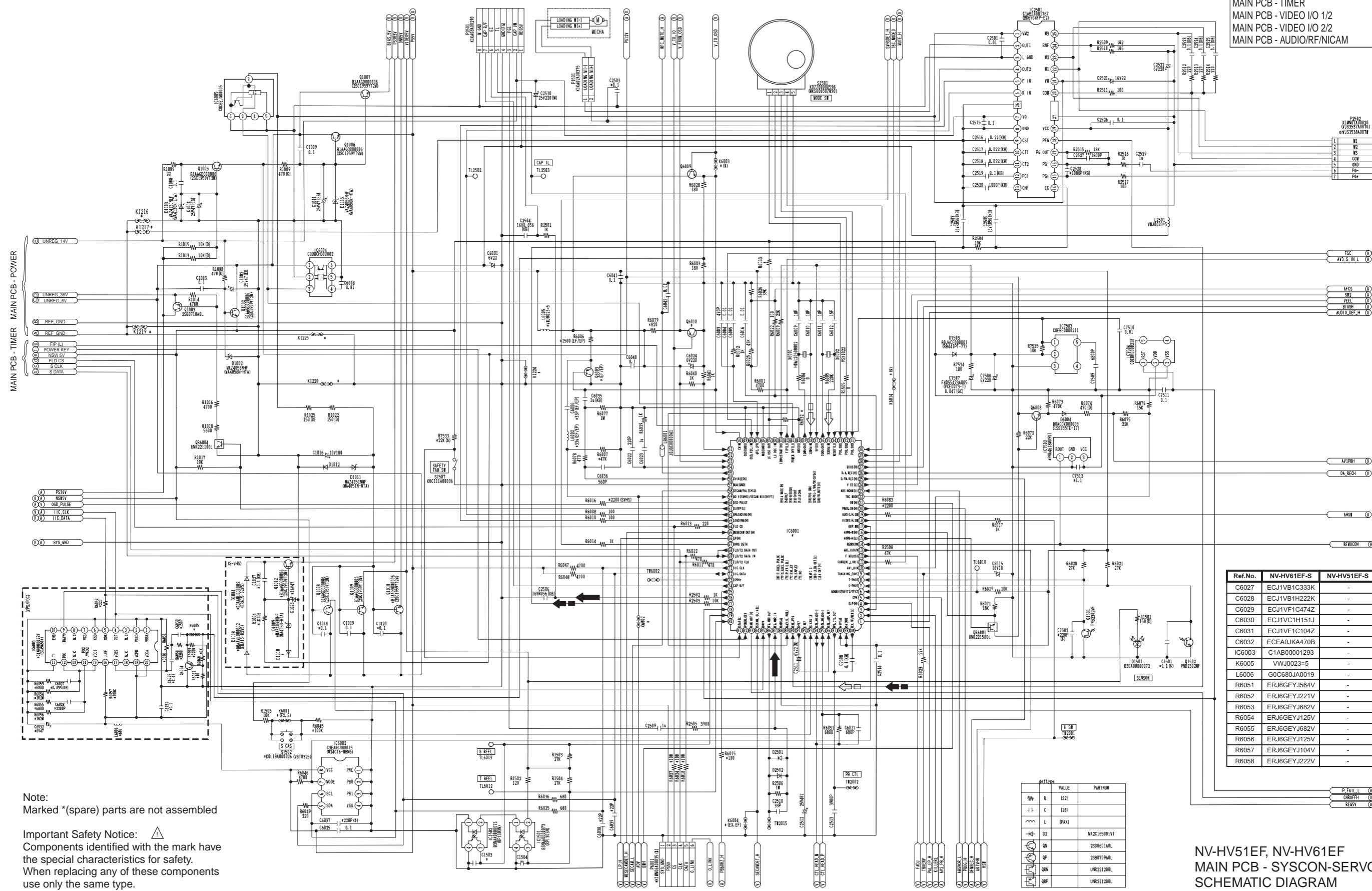
NV-HV51EF, NV-HV61EF MAIN PCB - VIDEO I/O 2/2 SCHEMATIC DIAGRAM



VIDEO MAIN SIGNAL PATH IN REC MODE
 VIDEO MAIN SIGNAL PATH IN PLAYBACK MODE

AUDIO MAIN SIGNAL PATH IN REC MODE
 AUDIO MAIN SIGNAL PATH IN PLAYBACK MODE

NAVIGATION
 INTERCONNECTION
 MAIN PCB - TIMER
 MAIN PCB - VIDEO I/O 1/2
 MAIN PCB - VIDEO I/O 2/2
 MAIN PCB - AUDIO/RF/NICAM



MAIN PCB - TIMER MAIN PCB - POWER

PIP (L)
 POWER KEY
 NSW 5V
 FLD CS
 S_CLK
 S_DATA
 SYS_GND

UNREG 1.4V
 UNREG 3.6V
 UNREG 5V
 REF_GND
 REF_VDD
 PIP (L)
 POWER KEY
 NSW 5V
 FLD CS
 S_CLK
 S_DATA
 SYS_GND

Note:
 Marked *(spare) parts are not assembled

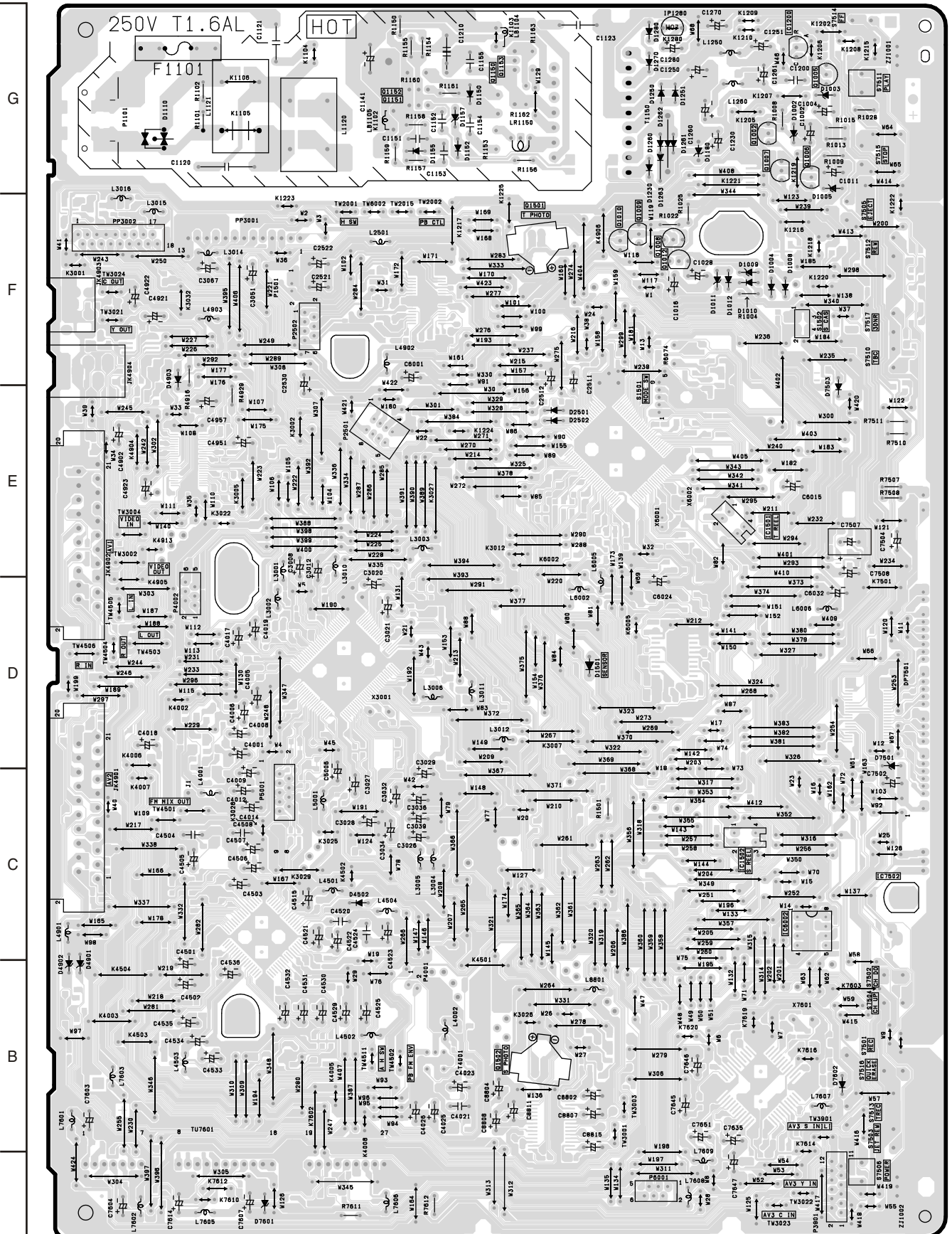
Important Safety Notice: Components identified with the mark have the special characteristics for safety. When replacing any of these components use only the same type.

Ref.No.	NV-HV61EF-S	NV-HV51EF-S
C6027	ECJ1VB1C333K	-
C6028	ECJ1VB1H222K	-
C6029	ECJ1VF1C474Z	-
C6030	ECJ1VC1H151J	-
C6031	ECJ1VF1C104Z	-
C6032	ECEA0JKA470B	-
IC6003	C1A800001293	-
K6005	VWJ0023=5	-
L6006	G0C680JA0019	-
R6051	ERJ6GEYJ564V	-
R6052	ERJ6GEYJ221V	-
R6053	ERJ6GEYJ682V	-
R6054	ERJ6GEYJ125V	-
R6055	ERJ6GEYJ682V	-
R6056	ERJ6GEYJ125V	-
R6057	ERJ6GEYJ104V	-
R6058	ERJ6GEYJ222V	-

RefType	VALUE	PARTNUM
W	R	(22)
+ C	(18)	
L	(PAK)	
DZ		WAC165001V1
DN		2504601A0L
DP		2580709A0L
QFN		UMR21200L
QFP		UMR211200L

P FAIL L
 CMBOTH
 RE5V

NV-HV51EF, NV-HV61EF
 MAIN PCB - SYSCON-SERVO
 SCHEMATIC DIAGRAM



NV-HV51EF, NV-HV61EF
 MAIN PCB
 COMPONENT SIDE

DP7501	D5	JK4901	CT	P1101	G1	Q1002	G4	Q1150	G3	TW3002	E1	TW4501	C1	TW4511	B2
CI1200	G5	JK4902	E1	PF1501	F2	Q1006	G5	Q1151	G2	TW3003	E2	TW4502	B2	TW3001	B4
CI1501	G5	JK4903	F1	P2501	E2	Q1007	G5	Q1152	G2	TW3004	E4	TW4503	D1	TW3002	E1
CI1502	C4	JK4904	F1	PP3002	F2	Q1008	F4	Q1153	C3	TW3021	F1	TW4504	D1	TW3003	E2
CI5002	G5	PP3001	F2	PF301	A5	Q1009	F4	Q11501	F3	TW3022	A5	TW4505	D1	T4001	B3
CI6002	C5	PP3002	F2	PA401	B3	Q1010	F4	Q11502	B3	TW3024	F1	TW4506	D1	X3001	D2
IP1280	G4			PA402	D1	Q1012	F4			TW3901	B5	TU7601	B1	X6001	E4
				PF501	C2									X6002	E4
				PF601	A4									X7601	B5

1

2

3

4

5

VIDEO MAIN SIGNAL PATH IN REC MODE
 VIDEO MAIN SIGNAL PATH IN PLAYBACK MODE

AUDIO MAIN SIGNAL PATH IN REC MODE
 AUDIO MAIN SIGNAL PATH IN PLAYBACK MODE


NAVIGATION
 INTERCONNECTION
 MAIN PCB - TIMER
 MAIN PCB - SYSCON-SERVO
 MAIN PCB - VIDEO I/O 2/2
 MAIN PCB - AUDIO/RF/NICAM

defType	VALUE	PARTNUM
W	R [22]	
+	C [18]	
L	[PAX]	
D2		MA2C165001VT
QN		2SD0601AOL
QP		2SB0709AOL
QRN		UNR221200L
QRP		UNR211200L
LFB		JOJBC0000041

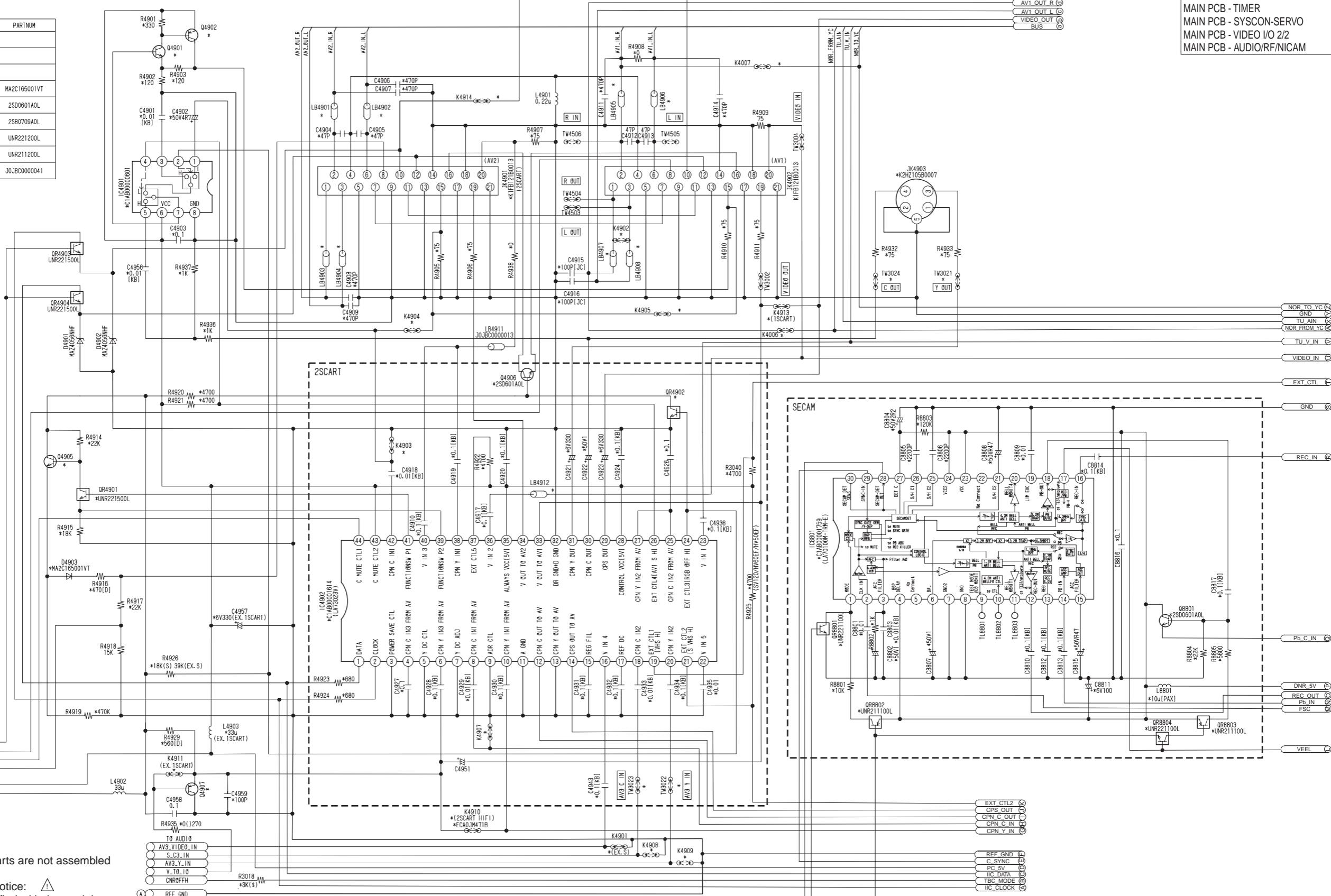
AUD10_OUT_CH2[R]	1
AUD10_IN_CH2[R]	2
AUD10_OUT_CH1[L]	3
GND[A]	4
GND[BLUE]	5
AUD10_IN_CH1[L]	6
BLUE	7
AV2 +12V	8
GND[GREEN]	9
-/CONTROL	10
GREEN	11
-/DATA	12
GND[RED]	13
GND[BLANK]	14
RED/C IN	15
BLANKING	16
GND[V_OUT]	17
GND[V_IN]	18
VIDEO_OUT	19
VIDEO_IN/Y IN	20
GND	21

TO SYSTEMER	
PROG_H	
AV1PBH	
8SD_PULSE	
AV2_PB_H	
PS5V	
PS12V	

Note:
 Marked *(spare) parts are not assembled

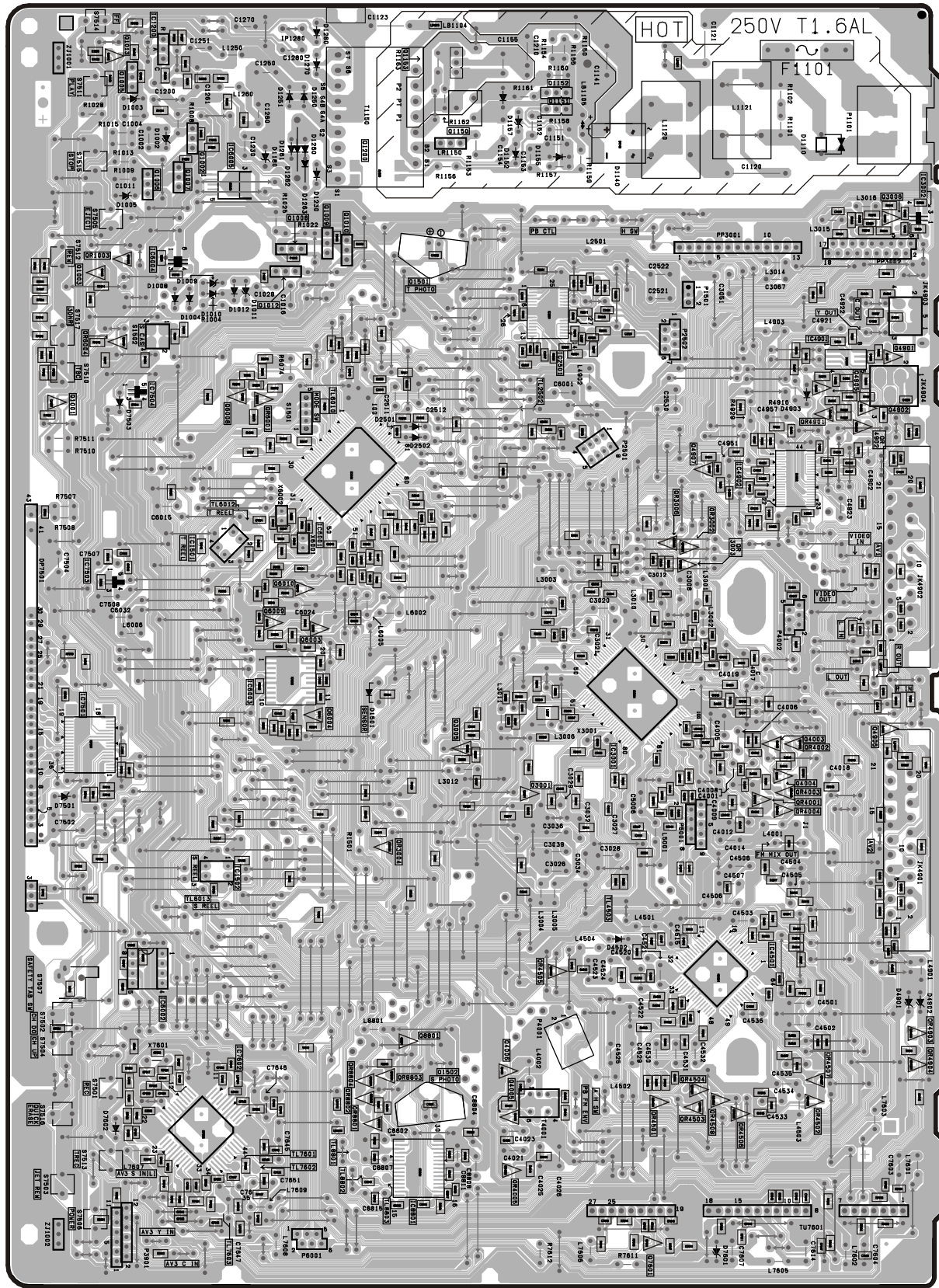
Important Safety Notice: 
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TO AUD10	
AV3_VIDEO_IN	
S_C3_IN	
AV3_Y_IN	
V_TO_I0	
CNR0FFH	
REF_GND	
SECAMDET_H	
BWH	
SECAM_L	



NV-HV51EF, NV-HV61EF
 MAIN PCB - VIDEO I/O 1/2
 SCHEMATIC DIAGRAM

G
F
E
D
C
B
A



HOT 250V T1.6AL

F1101

IC1200	C2	C6004	F2	JK4902	E5	P1501	F4	Q1003	F1	Q1151	G4	Q4502	B5	Q8801	C3	QR4505	C4	QR8801	B3	TL6013	C2	X6002	E2
IC1501	E2	IC6005	G2	JK4903	F5	P2501	F4	Q1005	G2	Q1152	G4	Q4507	B5	QR1003	F1	QR4506	B4	QR8802	B3	TL7601	B2	X6003	E2
IC1502	C2	IC7503	E1	JK4904	F5	P2502	F4	Q1006	G2	Q1153	G3	Q4901	F5	QR3002	E4	QR4508	B4	QR8803	B3	TL7602	B2	X7601	C2
IC2501	F4	IC7504	F1	L1120	G4	P3901	A2	Q1007	G2	Q1200	G3	Q4902	F5	QR3003	C4	QR4901	E5	QR8804	B3	TL7603	B2	ZJ1002	B1
IC3002	G5	IC7602	B2	L1121	G4	P4001	A2	Q1008	F2	Q1501	F3	Q4905	F5	QR3004	C3	QR4902	F5	T1150	G3	TL8801	B2	ZJ1002	B1
IC4501	C5	IC8801	B3	LB1104	G3	P4002	E5	Q1009	F2	Q1502	G4	Q4907	E4	QR3006	C4	QR4902	E5	T4001	B3	TL8802	B2		
IC4901	F5	IP1280	G2	LR1150	G3	PP3001	F4	Q1010	F3	Q3006	G5	Q6008	F2	QR4005	B3	QR4903	C5	TL2502	F3	TL8803	B3		
IC4902	E4	DP7501	E1	P1	G3	PP3002	F5	Q1012	F2	Q4005	B3	Q6009	E2	QR4501	B4	QR4904	B5	TL4503	C4	TU7601	B5		
IC6001	E2	F1101	G5	P2	G3	Q1001	F1	Q1013	G1	Q4006	B3	Q6010	E2	QR4503	B4	QR6001	F2	TL6010	F2				
IC6002	C2	JK4901	C5	PT101	G5	Q1002	G2	Q1150	G3	Q4006	C3	Q7601	B4	QR4504	B4	QR6004	F1	TL6012	E2				

NV-HV51EF, NV-HV61EF
MAIN PCB
SOLDER SIDE

1

2

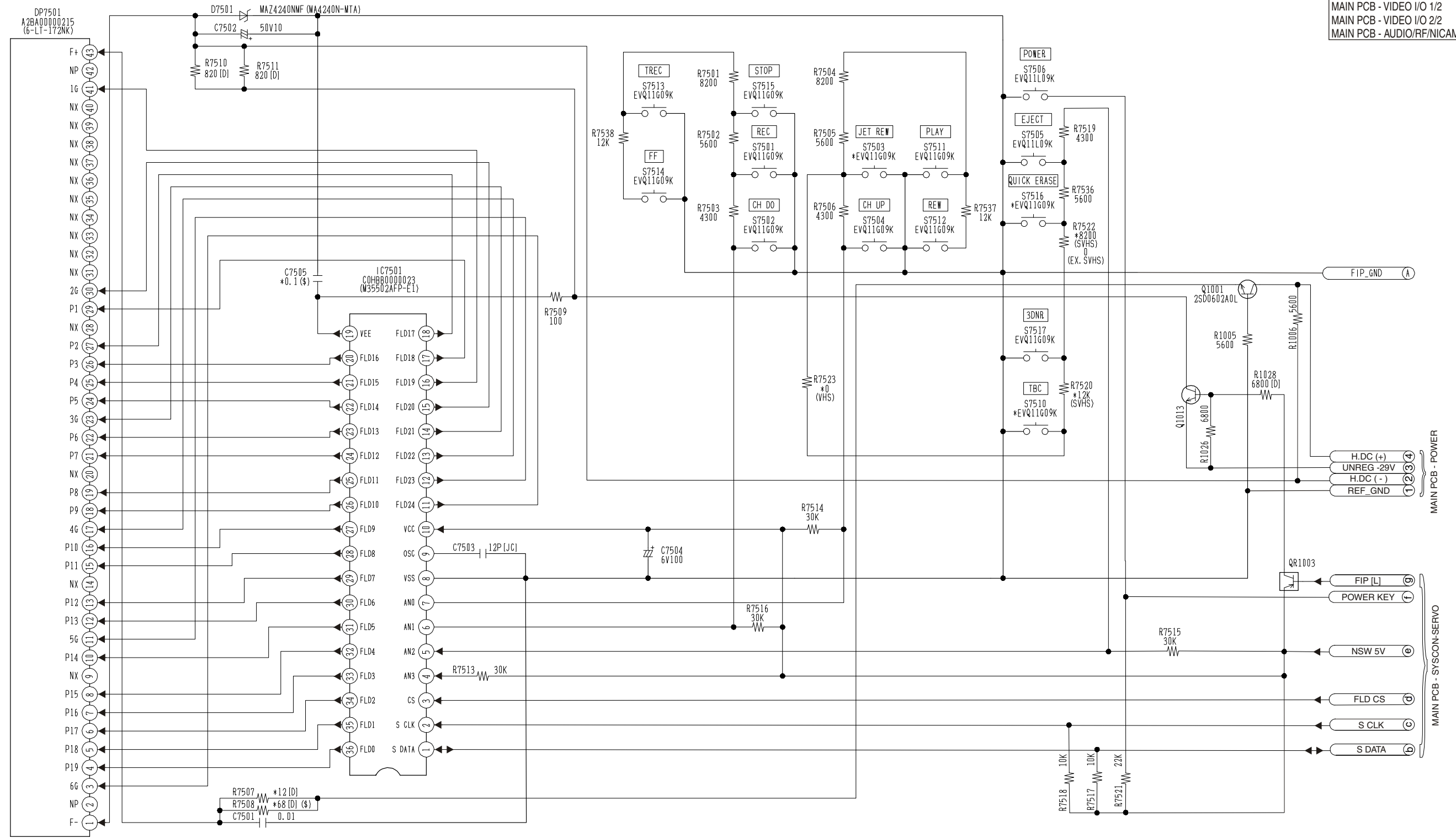
3

4

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← VIDEO MAIN SIGNAL PATH IN REC MODE ← AUDIO MAIN SIGNAL PATH IN REC MODE
 ← VIDEO MAIN SIGNAL PATH IN PLAYBACK MODE ← AUDIO MAIN SIGNAL PATH IN PLAYBACK MODE

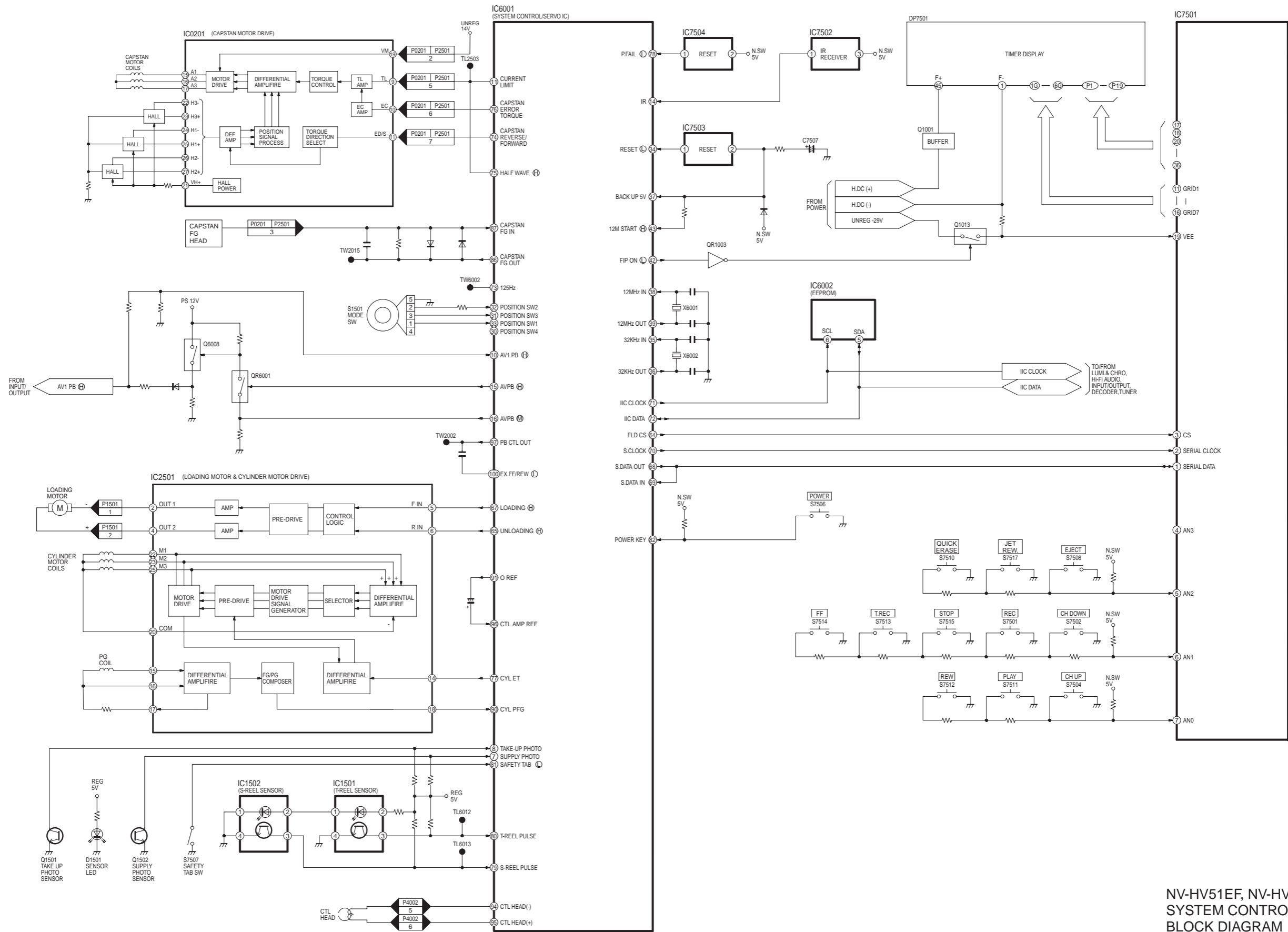
NAVIGATION
 MAIN PCB - SYSCON-SERVO
 MAIN PCB - VIDEO I/O 1/2
 MAIN PCB - VIDEO I/O 2/2
 MAIN PCB - AUDIO/RF/NICAM



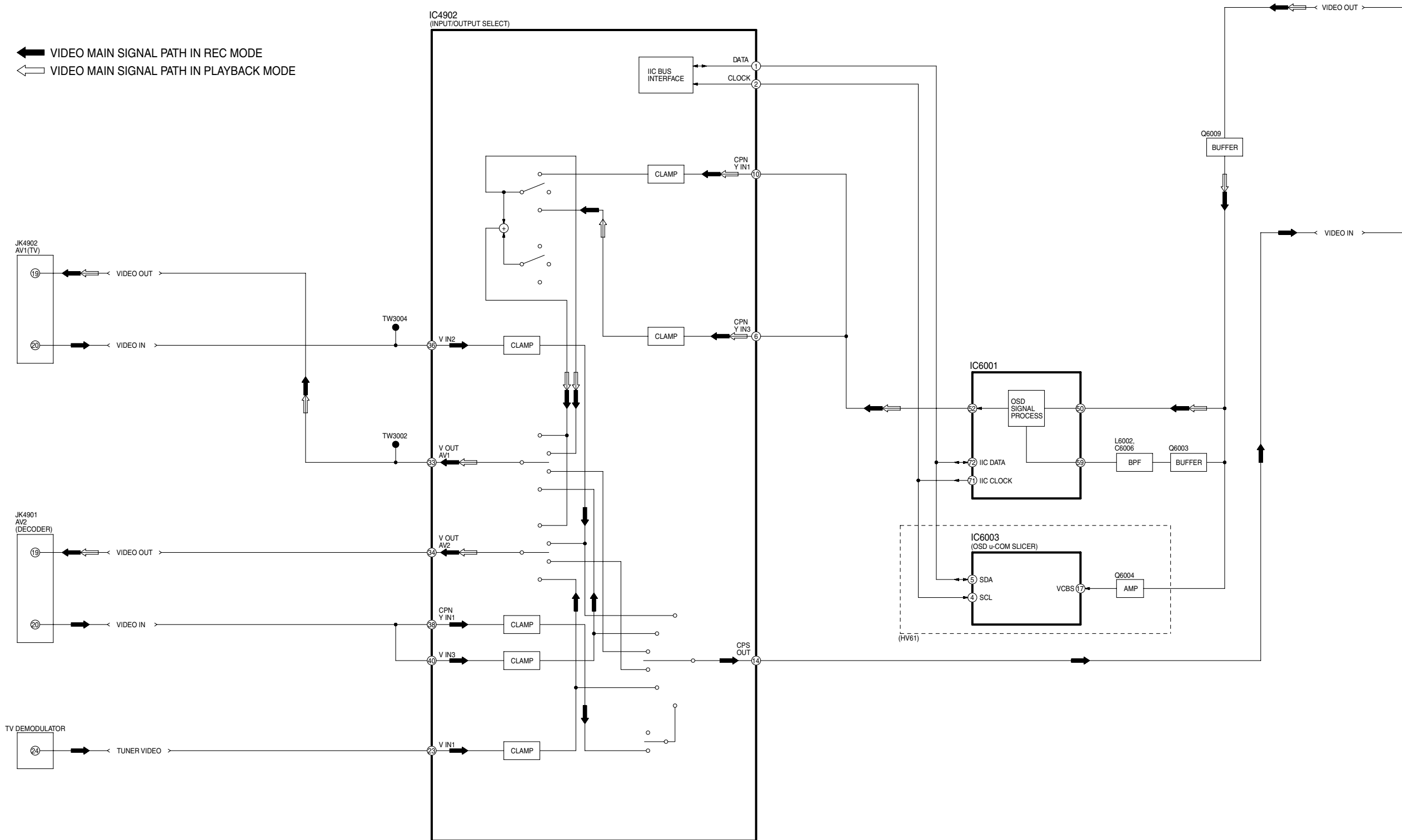
Note:
 Marked *(spare) parts are not assembled

Important Safety Notice: ⚠️
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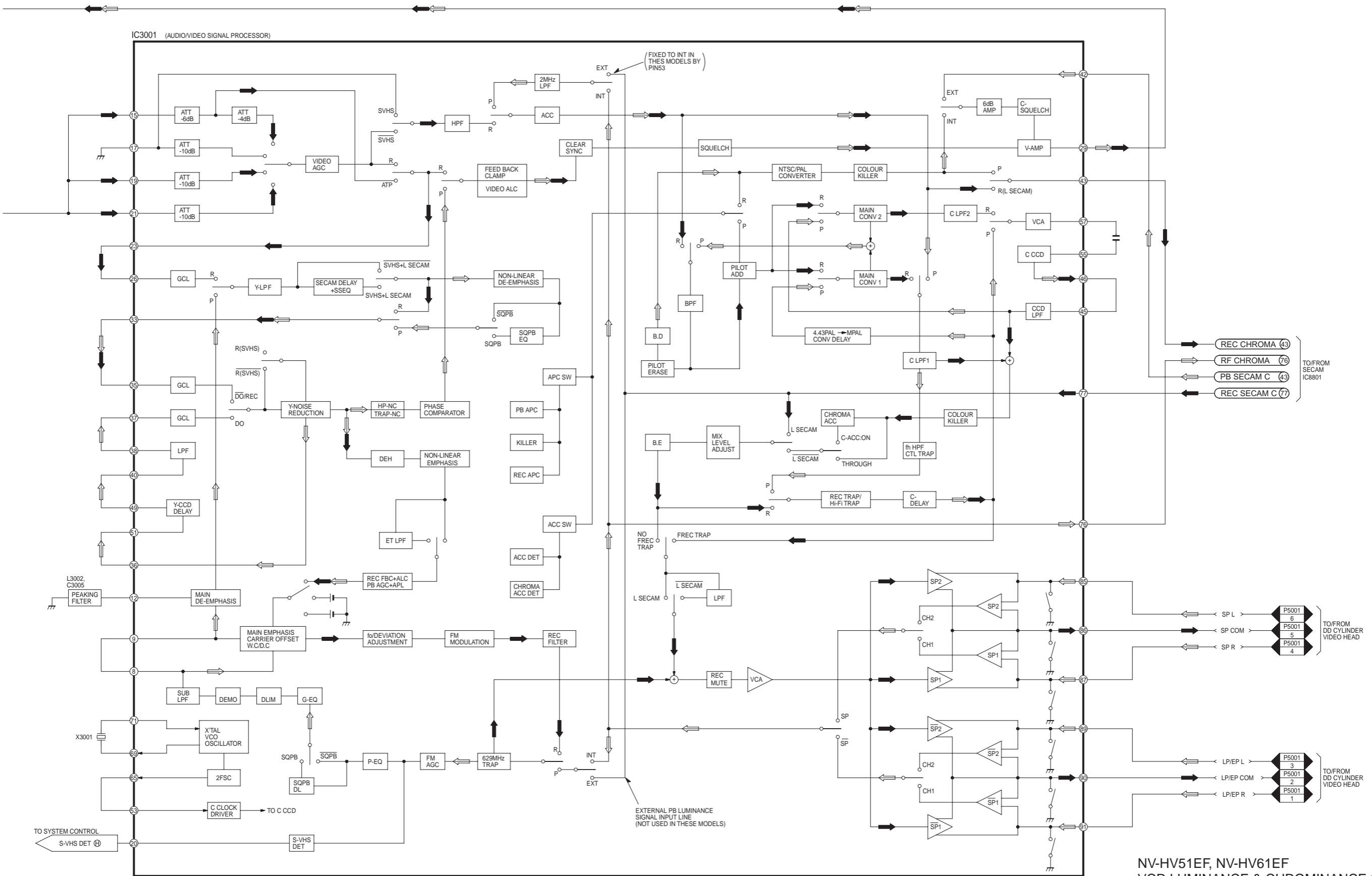
NV-HV51EF, NV-HV61EF
 MAIN PCB - TIMER
 SCHEMATIC DIAGRAM



NV-HV51EF, NV-HV61EF
SYSTEM CONTROL & SERVO
BLOCK DIAGRAM

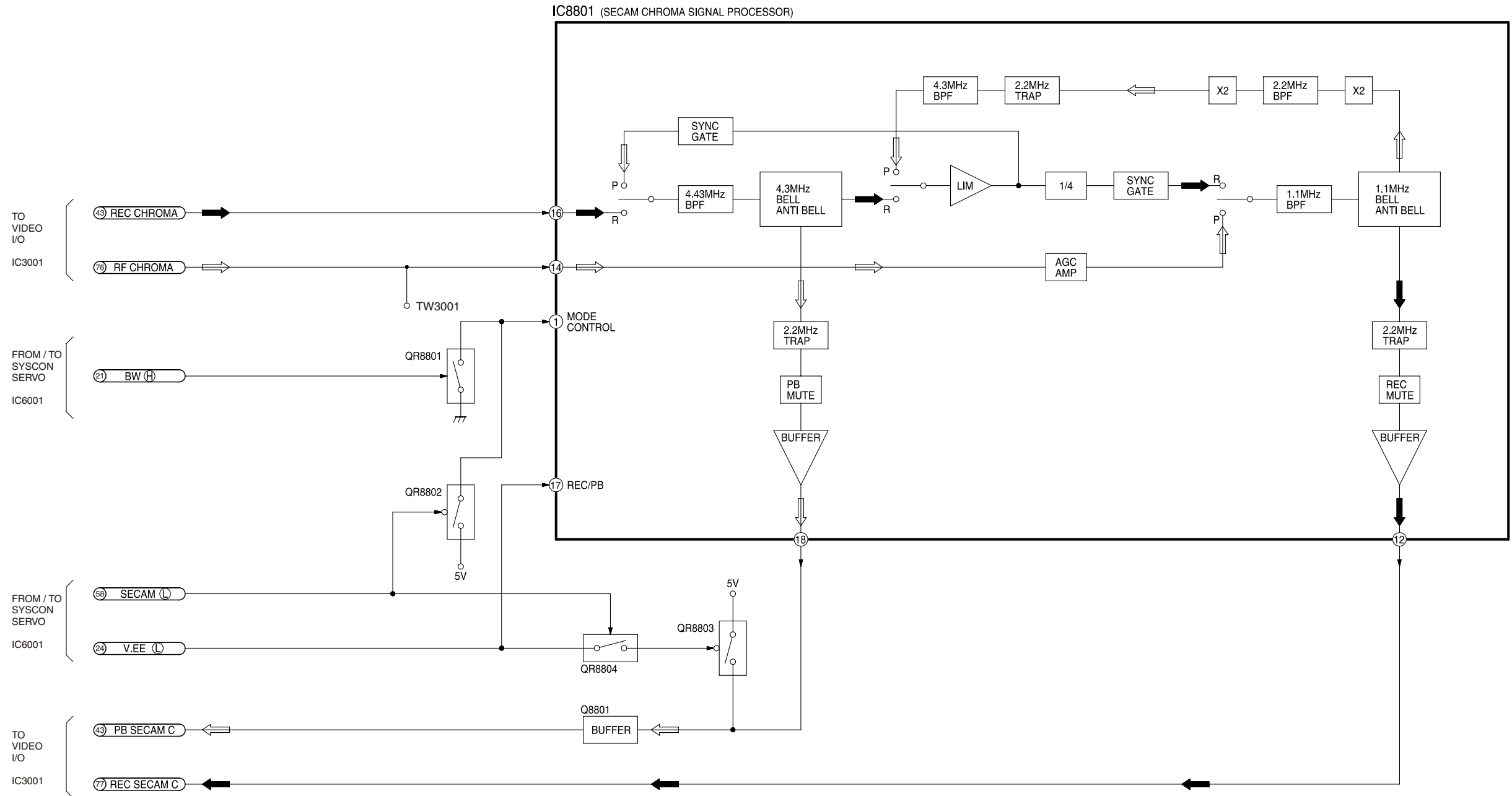


NV-HV51EF, NV-HV61EF
 VCR LUMINANCE & CHROMINANCE 1/2
 BLOCK DIAGRAM



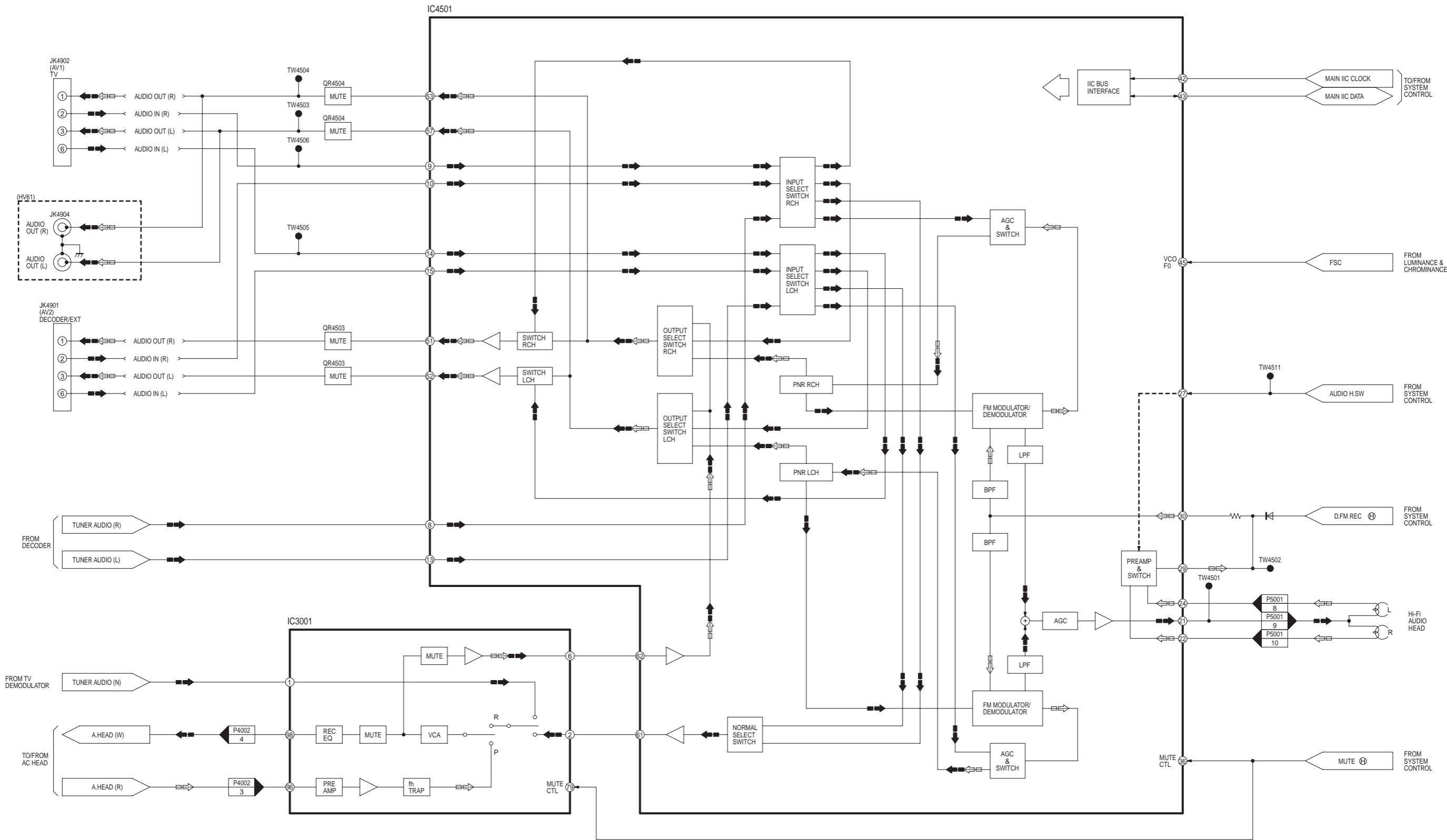
NV-HV51EF, NV-HV61EF
VCR LUMINANCE & CHROMINANCE 2/2
BLOCK DIAGRAM

← VIDEO MAIN SIGNAL PATH IN REC MODE
 ⇐ VIDEO MAIN SIGNAL PATH IN PLAYBACK MODE



← MAIN SIGNAL PATH IN REC MODE

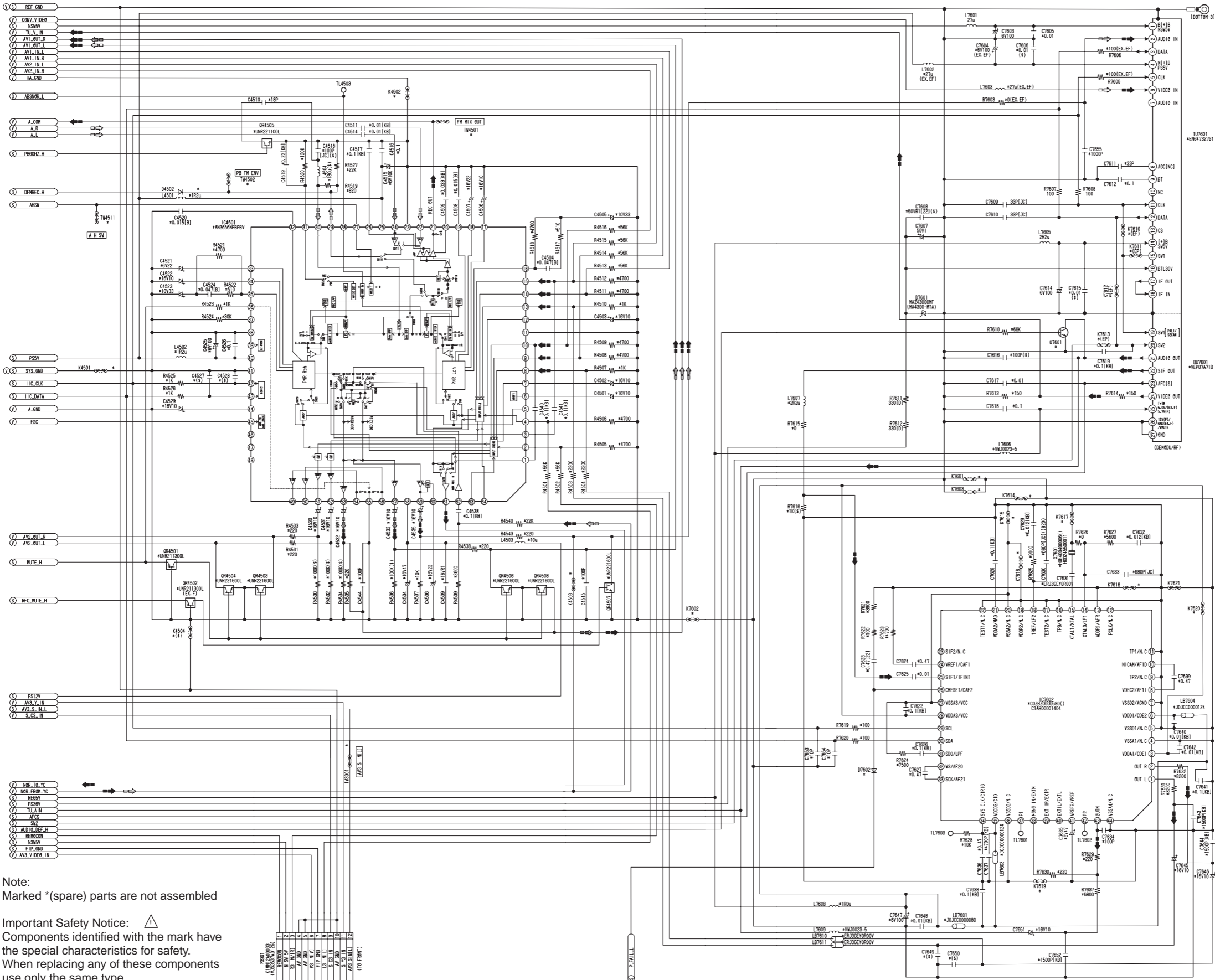
← □ MAIN SIGNAL PATH IN PLAYBACK MODE



NV-HV51EF, NV-HV61EF
VCR AUDIO
BLOCK DIAGRAM

VIDEO MAIN SIGNAL PATH IN REC MODE
AUDIO MAIN SIGNAL PATH IN REC MODE

AUDIO MAIN SIGNAL PATH IN PLAYBACK MODE
VIDEO MAIN SIGNAL PATH IN PLAYBACK MODE



Note:
Marked *(spare) parts are not assembled

Important Safety Notice: Components identified with the mark have the special characteristics for safety. When replacing any of these components use only the same type.

NO.	MARKING	REVISION
1	1	1
2	2	1
3	3	1
4	4	1
5	5	1
6	6	1
7	7	1
8	8	1
9	9	1
10	10	1
11	11	1

NV-HV51EF, NV-HV61EF
MAIN PCB - AUDIO/RF/NICAM
SCHEMATIC DIAGRAM

POWER	AV2 SELECT	INPUT CONDITION				OUTPUT RESULT										Audio Output Results				IC4501 settings				Mute signals	
		TV/ VTR	EE/ VTR	OSD ON(H)	INPUT CH	AV2 PB(H)	AV1 OUT	AV1 S(H)	AV2 OUT	AV1 PB(H)	AV2 PB(H)	RGB SW	VCR IN	VCR OUT	AV1 OUT	AV2 Out	RF (C)	AV1 Out Selector	AV2 Out Selector	REC/ PB	Input Select	Dec Select	Mute (H)	A-Mute (H)	
OFF	---	---	---	---	---	L	AV1 IN(0)	AV2 IN(0)	L(0)	L	OFF(1)	TUN(000)	TUN	AV1 IN(0)	AV2 IN(0)	Mute	AV1 IN	AV2 IN	REC	EXT2	EXT1	L	H		
EXT LINK 1/2 Standby	---	---	L	NO.TU	M/H	L	MUTE	MUTE	*1L(0)	L	OFF(1)	TUN(000)	TUN	AV1 IN(0)	AV2 IN(0)	Mute	AV1 IN	AV2 IN	REC	EXT2	EXT1	L	H		
VPS STAND BY	EXT	---	L	NO.TU	M/H	L	MUTE	MUTE	*1L(0)	L	OFF(1)	TUN(000)	TUN	AV1 IN(0)	AV2 IN(0)	Mute	AV1 IN	AV2 IN	REC	EXT2	EXT1	L	L		
				C+ TU	M/H	L	MUTE	MUTE	*1L(0)	L	OFF(1)	TUN(000)	TUN	AV1 IN(0)	AV2 IN(0)	Mute	AV1 IN	AV2 IN	REC	EXT2	EXT1	L	L		
				AV1	M/H	L	MUTE	MUTE	*1L(0)	L	OFF(1)	TUN(000)	TUN	AV1 IN(0)	AV2 IN(0)	Mute	AV1 IN	AV2 IN	REC	EXT2	EXT1	L	L		
				AV2	M/H	L	MUTE	MUTE	*1L(0)	L	OFF(1)	TUN(000)	TUN	AV1 IN(0)	AV2 IN(0)	Mute	AV1 IN	AV2 IN	REC	EXT2	EXT1	L	L		
				AV3	M/H	L	MUTE	MUTE	*1L(0)	L	OFF(1)	TUN(000)	TUN	AV1 IN(0)	AV2 IN(0)	Mute	AV1 IN	AV2 IN	REC	EXT2	EXT1	L	L		
				NO.TU	L	VIDEO	VCR OUT(1)	VCR OUT(1)	H(1)	H	OFF(1)	TUN(000)	TUN	VCR OUT(1)	VCR OUT(1)	Mute	Mute	TUN	REC	TV	EXT1	H	H		
					M/H	L	VCR OUT(1)	VCR OUT(1)	H(1)	L	OFF(1)	TUN(000)	TUN	VCR OUT(1)	VCR OUT(1)	Mute	Mute	TUN	REC	TV	EXT1	H	H		
				C+ TU	L	VIDEO	VCR OUT(1)	VCR OUT(1)	H(1)	H	OFF(1)	TUN(000)	TUN	VCR OUT(1)	VCR OUT(1)	Mute	Mute	TUN	REC	TV	EXT1	H	H		
				AV1	L	VIDEO	VCR OUT(1)	VCR OUT(1)	H(1)	H	OFF(1)	AV1(100)	AV1	VCR OUT(1)	VCR OUT(1)	Mute	Mute	AV1IN	REC	EXT1	EXT1	H	H		
					M/H	L	VCR OUT(1)	VCR OUT(1)	H(1)	L	OFF(1)	AV1(100)	AV1	VCR OUT(1)	VCR OUT(1)	Mute	Mute	AV1IN	REC	EXT1	EXT1	H	H		
				AV2	L	VIDEO	VCR OUT(1)	VCR OUT(1)	H(1)	H	OFF(1)	AV2(010)	AV2	VCR OUT(1)	VCR OUT(1)	Mute	Mute	AV2IN	REC	EXT2	EXT1	H	H		
					M/H	L	VCR OUT(1)	VCR OUT(1)	H(1)	L	OFF(1)	AV2(010)	AV2	VCR OUT(1)	VCR OUT(1)	Mute	Mute	AV2IN	REC	EXT2	EXT1	H	H		
				AV3	L	VIDEO	VCR OUT(1)	VCR OUT(1)	H(1)	H	OFF(1)	AV3(110)	AV3	VCR OUT(1)	VCR OUT(1)	Mute	Mute	AV3IN	REC	EXT3	EXT1	H	H		
					M/H	L	VCR OUT(1)	VCR OUT(1)	H(1)	L	OFF(1)	AV3(110)	AV3	VCR OUT(1)	VCR OUT(1)	Mute	Mute	AV3IN	REC	EXT3	EXT1	H	H		
				NO.TU	L	---	AV2 IN(0)	AV1 IN(0)	L(0)	L	OFF(1)	TUN(000)	TUN	AV2 IN(0)	AV1 IN(0)	Mute	AV2IN	AV1IN	REC	EXT2	EXT1	L	L		
				C+ TU	M/H	L	AV2 IN(0)	AV1 IN(0)	L(0)	L	OFF(1)	TUN(000)	TUN	AV2 IN(0)	AV1 IN(0)	Mute	AV2IN	AV1IN	REC	EXT2	EXT1	L	L		
				AV1	M/H	L	AV2 IN(0)	AV1 IN(0)	L(0)	L	OFF(1)	TUN(000)	TUN	AV2 IN(0)	AV1 IN(0)	Mute	AV2IN	AV1IN	REC	EXT2	EXT1	L	L		
				AV2	M/H	L	AV2 IN(0)	AV1 IN(0)	L(0)	L	OFF(1)	AV1(100)	AV1	AV2 IN(0)	AV1 IN(0)	Mute	AV2IN	AV1IN	REC	EXT2	EXT1	L	L		
				AV3	M/H	L	AV2 IN(0)	AV1 IN(0)	L(0)	L	OFF(1)	AV3(110)	AV3	AV2 IN(0)	AV1 IN(0)	Mute	AV2IN	AV1IN	REC	EXT2	EXT1	L	L		
				NO.TU	L	VIDEO	VCR OUT(1)	VCR OUT(1)	H(1)	L	OFF(1)	TUN(000)	TUN	VCR OUT(1)	VCR OUT(1)	Mute	Mute	TUN	REC	TV	EXT1	H	H		
					M/H	L	VCR OUT(1)	VCR OUT(1)	H(1)	L	OFF(1)	TUN(000)	TUN	VCR OUT(1)	VCR OUT(1)	Mute	Mute	TUN	REC	TV	EXT1	H	H		
				C+ TU	M/H	L	VCR OUT(1)	VCR OUT(1)	H(1)	L	OFF(1)	TUN(000)	TUN	VCR OUT(1)	VCR OUT(1)	Mute	Mute	TUN	REC	TV	EXT1	H	H		
				NO.TU	L	---	AV2 IN(0)	AV1 IN(0)	L(0)	L	OFF(1)	TUN(000)	TUN	AV2 IN(0)	AV1 IN(0)	Mute	AV2IN	AV1IN	REC	EXT2	EXT1	L	L		
				C+ TU	M/H	L	AV2 IN(0)	AV1 IN(0)	L(0)	L	OFF(1)	TUN(000)	TUN	AV2 IN(0)	AV1 IN(0)	Mute	AV2IN	AV1IN	REC	EXT2	EXT1	L	L		
				AV1	M/H	L	AV2 IN(0)	AV1 IN(0)	L(0)	L	OFF(1)	TUN(000)	TUN	AV2 IN(0)	AV1 IN(0)	Mute	AV2IN	AV1IN	REC	EXT2	EXT1	L	L		
				AV2	M/H	L	AV2 IN(0)	AV1 IN(0)	L(0)	L	OFF(1)	AV1(100)	AV1	AV2 IN(0)	AV1 IN(0)	Mute	AV2IN	AV1IN	REC	EXT2	EXT1	L	L		
				AV3	M/H	L	AV2 IN(0)	AV1 IN(0)	L(0)	L	OFF(1)	AV3(110)	AV3	AV2 IN(0)	AV1 IN(0)	Mute	AV2IN	AV1IN	REC	EXT2	EXT1	L	L		
				NO.TU	L	VIDEO	VCR OUT(1)	VCR OUT(1)	H(1)	L	OFF(1)	TUN(000)	TUN	VCR OUT(1)	VCR OUT(1)	Mute	Mute	TUN	REC	TV	EXT1	H	H		
					M/H	L	VCR OUT(1)	VCR OUT(1)	H(1)	L	OFF(1)	TUN(000)	TUN	VCR OUT(1)	VCR OUT(1)	Mute	Mute	TUN	REC	TV	EXT1	H	H		
				C+ TU	M/H	L	VCR OUT(1)	VCR OUT(1)	H(1)	L	OFF(1)	TUN(000)	TUN	VCR OUT(1)	VCR OUT(1)	Mute	Mute	TUN	REC	TV	EXT1	H	H		
				NO.TU	L	---	AV2 IN(0)	AV1 IN(0)	L(0)	L	OFF(1)	TUN(000)	TUN	AV2 IN(0)	AV1 IN(0)	Mute	AV2IN	AV1IN	REC	EXT2	EXT1	L	L		
				C+ TU	M/H	L	AV2 IN(0)	AV1 IN(0)	L(0)	L	OFF(1)	TUN(000)	TUN	AV2 IN(0)	AV1 IN(0)	Mute	AV2IN	AV1IN	REC	EXT2	EXT1	L	L		
				AV1	M/H	L	AV2 IN(0)	AV1 IN(0)	L(0)	L	OFF(1)	TUN(000)	TUN	AV2 IN(0)	AV1 IN(0)	Mute	AV2IN	AV1IN	REC	EXT2	EXT1	L	L		
				AV2	M/H	L	AV2 IN(0)	AV1 IN(0)	L(0)	L	OFF(1)	AV1(100)	AV1	AV2 IN(0)	AV1 IN(0)	Mute	AV2IN	AV1IN	REC	EXT2	EXT1	L	L		
				AV3	M/H	L	AV2 IN(0)	AV1 IN(0)	L(0)	L	OFF(1)	AV3(110)	AV3	AV2 IN(0)	AV1 IN(0)	Mute	AV2IN	AV1IN	REC	EXT2	EXT1	L	L		
				NO.TU	L	VIDEO	VCR OUT(1)	VCR OUT(1)	H(1)	L	OFF(1)	TUN(000)	TUN	VCR OUT(1)	VCR OUT(1)	Mute	Mute	TUN	REC	TV	EXT1	H	H		
					M/H	L	VCR OUT(1)	VCR OUT(1)	H(1)	L	OFF(1)	TUN(000)	TUN	VCR OUT(1)	VCR OUT(1)	Mute	Mute	TUN	REC	TV	EXT1	H	H		
				C+ TU	M/H	L	VCR OUT(1)	VCR OUT(1)	H(1)	L	OFF(1)	TUN(000)	TUN	VCR OUT(1)	VCR OUT(1)	Mute	Mute	TUN	REC	TV	EXT1	H	H		

POWER	INPUT CONDITION				OUTPUT RESULT										Audio Output Results				IC4501 settings				Mute signals											
	AV2 SELECT	TV/ VTR	EE/ VTR	OSD ON(H)	INPUT CH	AV2 PB(H)	AV1 VIDEO	AV1 OUT	AV1 S(H)	AV1 OUT	AV1 PB(H)	AV1	AV2 PB(H)	AV2	RGB SW	VCR IN	VCR OUT	AV1 Out	AV2 Out	RF (C)	AV1 Out Selector	AV2 Out Selector	REC/ PB	Input Select	Dec Select	Mute (H)	A-Mute (H)							
P.ON	EXT	TV	EE	L	NO,TU	---	VIDEO	VCR OUT(1)	L	H(1)	L	OFF(1)	TUN(000)	TUN	TUN	TUN	Mute	Mute	Mute	TUN	TUN	TUN	REC	TV	EXT1	H	H							
							S-VIDEO	Y OUT(11)	H	H(1)	L	OFF(1)	AV1(100)	AV1	Mute	Mute	Mute	AV1 IN(00)	AV1 IN(00)	AV1 IN(00)	AV1 IN(00)	AV1 IN(00)	AV1 IN(00)	AV1 IN(00)	AV1 IN(00)	REC	EXT1	EXT1	H	H				
							VIDEO	VCR OUT(1)	L	H(1)	L	OFF(1)	AV2(010)	AV2	Mute	Mute	Mute	AV1 IN(00)	AV2(010)	AV2(010)	AV2(010)	AV2(010)	AV2(010)	AV2(010)	AV2(010)	AV2(010)	REC	EXT2	EXT1	H	H			
							S-VIDEO	Y OUT(11)	H	H(1)	L	OFF(1)	AV2(010)	AV2	Mute	Mute	Mute	AV1 IN(00)	AV2(010)	AV2(010)	AV2(010)	AV2(010)	AV2(010)	AV2(010)	AV2(010)	AV2(010)	AV2(010)	REC	EXT2	EXT1	H	H		
							VIDEO	VCR OUT(1)	L	H(1)	L	OFF(1)	AV3(110)	AV3	Mute	Mute	Mute	AV1 IN(00)	AV3(110)	AV3(110)	AV3(110)	AV3(110)	AV3(110)	AV3(110)	AV3(110)	AV3(110)	AV3(110)	REC	EXT3	EXT1	H	H		
							S-VIDEO	Y OUT(11)	H	H(1)	L	OFF(1)	AV3(110)	AV3	Mute	Mute	Mute	AV1 IN(00)	AV3(110)	AV3(110)	AV3(110)	AV3(110)	AV3(110)	AV3(110)	AV3(110)	AV3(110)	AV3(110)	REC	EXT3	EXT1	H	H		
							VIDEO	VCR OUT(1)	L	L(0)	L	VCR OUT(11)	VCR OUT(11)	L(0)	L	OFF(1)	TUN(000)	TUN	TUN	TUN	TUN	TUN	TUN	TUN	TUN	TUN	TUN	TUN	REC	TV	OUTSEL	L	L	
							S-VIDEO	Y OUT(11)	H	L(0)	L	VCR OUT(11)	VCR OUT(11)	L(0)	L	OFF(1)	TUN(000)	TUN	TUN	TUN	TUN	TUN	TUN	TUN	TUN	TUN	TUN	TUN	REC	TV	OUTSEL	L	L	
							VIDEO	VCR OUT(1)	L	L(0)	L	VCR OUT(11)	VCR OUT(11)	L(0)	L	OFF(1)	AV1(100)	AV1	*2[H]	AV1 IN(00)	AV1 IN(00)	AV1 IN(00)	AV1 IN(00)	AV1 IN(00)	AV1 IN(00)	AV1 IN(00)	AV1 IN(00)	REC	EXT1	OUTSEL	L	L		
							S-VIDEO	Y OUT(11)	H	L(0)	L	VCR OUT(11)	VCR OUT(11)	L(0)	L	OFF(1)	AV1(100)	AV1	*2[H]	AV1 IN(00)	AV1 IN(00)	AV1 IN(00)	AV1 IN(00)	AV1 IN(00)	AV1 IN(00)	AV1 IN(00)	AV1 IN(00)	REC	EXT1	OUTSEL	L	L		
							VIDEO	VCR OUT(1)	L	L(0)	L	VCR OUT(11)	VCR OUT(11)	L(0)	L	OFF(1)	AV2(010)	AV2	*2[H]	AV2(010)	AV2(010)	AV2(010)	AV2(010)	AV2(010)	AV2(010)	AV2(010)	AV2(010)	REC	EXT2	OUTSEL	L	L		
							S-VIDEO	Y OUT(11)	H	L(0)	L	VCR OUT(11)	VCR OUT(11)	L(0)	L	OFF(1)	AV2(010)	AV2	*2[H]	AV2(010)	AV2(010)	AV2(010)	AV2(010)	AV2(010)	AV2(010)	AV2(010)	AV2(010)	REC	EXT2	OUTSEL	L	L		
							VIDEO	VCR OUT(1)	L	L(0)	L	VCR OUT(11)	VCR OUT(11)	L(0)	L	OFF(1)	AV3(110)	AV3	*2[H]	AV3(110)	AV3(110)	AV3(110)	AV3(110)	AV3(110)	AV3(110)	AV3(110)	AV3(110)	REC	EXT3	OUTSEL	L	L		
							S-VIDEO	Y OUT(11)	H	L(0)	L	VCR OUT(11)	VCR OUT(11)	L(0)	L	OFF(1)	AV3(110)	AV3	*2[H]	AV3(110)	AV3(110)	AV3(110)	AV3(110)	AV3(110)	AV3(110)	AV3(110)	AV3(110)	REC	EXT3	OUTSEL	L	L		
							EXTLINK1/2 Standby is ON"	---	VTR	EE	L	NO,TU	---	VIDEO	VCR OUT(1)	L	H(1)	L	OFF(1)	TUN(000)	TUN	TUN	TUN	TUN	TUN	TUN	TUN	TUN	TUN	REC	TV	OUTSEL	L	L
														S-VIDEO	Y OUT(11)	H	H(1)	L	OFF(1)	TUN(000)	TUN	Mute	Mute	Mute	AV1 IN(00)	AV1 IN(00)	AV1 IN(00)	AV1 IN(00)	AV1 IN(00)	AV1 IN(00)	AV1 IN(00)	AV1 IN(00)	REC	TV
VIDEO	VCR OUT(1)	L	H(1)	L	OFF(1)	AV1(100)								AV1	Mute	Mute	Mute	AV1 IN(00)	AV2(010)	AV2(010)	AV2(010)	AV2(010)	AV2(010)	AV2(010)	AV2(010)	AV2(010)	REC	EXT1	OUTSEL	L	L			
S-VIDEO	Y OUT(11)	H	H(1)	L	OFF(1)	AV1(100)								AV1	Mute	Mute	Mute	AV1 IN(00)	AV2(010)	AV2(010)	AV2(010)	AV2(010)	AV2(010)	AV2(010)	AV2(010)	AV2(010)	AV2(010)	REC	EXT1	OUTSEL	L	L		
VIDEO	VCR OUT(1)	L	H(1)	L	OFF(1)	AV2(010)								AV2	Mute	Mute	Mute	AV1 IN(00)	AV3(110)	AV3(110)	AV3(110)	AV3(110)	AV3(110)	AV3(110)	AV3(110)	AV3(110)	AV3(110)	REC	EXT2	OUTSEL	L	L		
S-VIDEO	Y OUT(11)	H	H(1)	L	OFF(1)	AV2(010)								AV2	Mute	Mute	Mute	AV1 IN(00)	AV3(110)	AV3(110)	AV3(110)	AV3(110)	AV3(110)	AV3(110)	AV3(110)	AV3(110)	AV3(110)	REC	EXT2	OUTSEL	L	L		
VIDEO	VCR OUT(1)	L	L(0)	L	VCR OUT(11)	VCR OUT(11)								L(0)	L	OFF(1)	TUN(000)	TUN	TUN	TUN	TUN	TUN	TUN	TUN	TUN	TUN	TUN	TUN	REC	TV	OUTSEL	L	L	
S-VIDEO	Y OUT(11)	H	L(0)	L	VCR OUT(11)	VCR OUT(11)								L(0)	L	OFF(1)	TUN(000)	TUN	Mute	Mute	Mute	AV1 IN(00)	AV1 IN(00)	AV1 IN(00)	AV1 IN(00)	AV1 IN(00)	AV1 IN(00)	AV1 IN(00)	REC	TV	OUTSEL	L	L	
VIDEO	VCR OUT(1)	L	L(0)	L	VCR OUT(11)	VCR OUT(11)								L(0)	L	OFF(1)	AV1(100)	AV1	*2[H]	AV2(010)	AV2(010)	AV2(010)	AV2(010)	AV2(010)	AV2(010)	AV2(010)	AV2(010)	AV2(010)	REC	EXT1	OUTSEL	L	L	
S-VIDEO	Y OUT(11)	H	L(0)	L	VCR OUT(11)	VCR OUT(11)								L(0)	L	OFF(1)	AV1(100)	AV1	*2[H]	AV2(010)	AV2(010)	AV2(010)	AV2(010)	AV2(010)	AV2(010)	AV2(010)	AV2(010)	AV2(010)	REC	EXT1	OUTSEL	L	L	
VIDEO	VCR OUT(1)	L	L(0)	L	VCR OUT(11)	VCR OUT(11)								L(0)	L	OFF(1)	AV2(010)	AV2	*2[H]	AV3(110)	AV3(110)	AV3(110)	AV3(110)	AV3(110)	AV3(110)	AV3(110)	AV3(110)	AV3(110)	REC	EXT2	OUTSEL	L	L	
S-VIDEO	Y OUT(11)	H	L(0)	L	VCR OUT(11)	VCR OUT(11)								L(0)	L	OFF(1)	AV2(010)	AV2	*2[H]	AV3(110)	AV3(110)	AV3(110)	AV3(110)	AV3(110)	AV3(110)	AV3(110)	AV3(110)	AV3(110)	REC	EXT2	OUTSEL	L	L	
VIDEO	VCR OUT(1)	L	L(0)	L	VCR OUT(11)	VCR OUT(11)								L(0)	L	OFF(1)	AV3(110)	AV3	*2[H]	AV3(110)	AV3(110)	AV3(110)	AV3(110)	AV3(110)	AV3(110)	AV3(110)	AV3(110)	AV3(110)	REC	EXT3	OUTSEL	L	L	
S-VIDEO	Y OUT(11)	H	L(0)	L	VCR OUT(11)	VCR OUT(11)								L(0)	L	OFF(1)	AV3(110)	AV3	*2[H]	AV3(110)	AV3(110)	AV3(110)	AV3(110)	AV3(110)	AV3(110)	AV3(110)	AV3(110)	AV3(110)	REC	EXT3	OUTSEL	L	L	

POWER		INPUT CONDITION				OUTPUT RESULT										Audio Output Results				IC4501 settings			Mute signals		
TV/ VTR	AV2 SELECT	TV/ VTR	EE/ VTR	OSD ON(H)	INPUT CH	AV1 OUT	AV2 PB(H)	AV1 OUT	AV1 S(H)	AV2 OUT	AV1 PB(H)	AV2 PB(H)	RGB SW	VCR IN	VCR OUT	AV1 OUT	AV2 Out	RF (C)	AV1 Out Selector	AV2 Out Selector	REC/ PB	Input Select	Dec Select	Mute (H)	A-Mute (H)
					AV3	VIDEO S-VIDEO	---	VCR OUT(1)	L	VCR OUT(1)	H(1)	*2[H]	OFF(1)	AV3(110)	AV3	AV3IN	AV3IN	AV3IN	AV3IN	INSEL	REC	EXT3	OUTSEL	L	L
			VV	L	NO.TU	VIDEO S-VIDEO	---	VCR OUT(1)	H	VCR OUT(1)	M/H(1)	*3[MH]	OFF(1)	MUTE	PB	PB	PB	PB	TUN	TUN	PB	TV	OUTSEL	L	L
					C+ TU	VIDEO S-VIDEO	---	VCR OUT(1)	L	VCR OUT(1)	M/H(1)	*3[MH]	OFF(1)	MUTE	PB	PB	PB	PB	TUN	TUN	PB	TV	OUTSEL	L	L
					AV1	VIDEO S-VIDEO	---	VCR OUT(1)	L	VCR OUT(1)	M/H(1)	*3[MH]	OFF(1)	MUTE	PB	PB	PB	PB	TUN	TUN	PB	EXT1	OUTSEL	L	L
					AV2	VIDEO S-VIDEO	---	VCR OUT(1)	L	VCR OUT(1)	M/H(1)	*3[MH]	OFF(1)	MUTE	PB	PB	PB	PB	TUN	TUN	PB	EXT2	OUTSEL	L	L
					AV3	VIDEO S-VIDEO	---	VCR OUT(1)	H	VCR OUT(1)	M/H(1)	*3[MH]	OFF(1)	MUTE	PB	PB	PB	PB	TUN	TUN	PB	EXT3	OUTSEL	L	L
				H	NO.TU	VIDEO S-VIDEO	---	VCR OUT(1)	L	VCR OUT(1)	H(1)	*2[H]	OFF(1)	MUTE	PB	PB	PB	PB	TUN	TUN	PB	TV	OUTSEL	L	L
					C+ TU	VIDEO S-VIDEO	---	VCR OUT(1)	L	VCR OUT(1)	H(1)	*2[H]	OFF(1)	MUTE	PB	PB	PB	PB	TUN	TUN	PB	TV	OUTSEL	L	L
					AV1	VIDEO S-VIDEO	---	VCR OUT(1)	H	VCR OUT(1)	H(1)	*2[H]	OFF(1)	MUTE	PB	PB	PB	PB	TUN	TUN	PB	EXT1	OUTSEL	L	L
					AV2	VIDEO S-VIDEO	---	VCR OUT(1)	L	VCR OUT(1)	H(1)	*2[H]	OFF(1)	MUTE	PB	PB	PB	PB	TUN	TUN	PB	EXT2	OUTSEL	L	L
					AV3	VIDEO S-VIDEO	---	VCR OUT(1)	L	VCR OUT(1)	H(1)	*2[H]	OFF(1)	MUTE	PB	PB	PB	PB	TUN	TUN	PB	EXT3	OUTSEL	L	L
	DECODER		EE	L	NO.TU	VIDEO S-VIDEO	L	VCR OUT(1)	L	AV1 IN(00)	L(0)	L	OFF(1)	TUN(000)	TUN	TUN	AV1IN	TUN	AV1IN	AV1IN	REC	TV	EXT1	L	L
						VIDEO	MH	AV2 IN(0)	L	AV1 IN(00)	M/H(1)	L	*4	TUN(000)	TUN	AV2IN	AV1IN	A2IN	AV2IN	AV2IN	REC	EXT2	EXT1	L	L
					C+ TU	VIDEO S-VIDEO	L	VCR OUT(1)	L	TUN IN(10)	L(0)	L	OFF(1)	TUN(000)	TUN	TUN	TUN	TUN	TUN	TUN	REC	TV	TVIN	L	L
						VIDEO	MH	VCR OUT(1)	L	TUN IN(10)	L(0)	L	OFF(1)	AV2(010)	AV2	AV2IN	TUN	AV2IN	AV2IN	TUN	REC	EXT2	TVIN	L	L
					AV1	VIDEO S-VIDEO	L	VCR OUT(1)	L	AV1 IN(00)	L(0)	L	OFF(1)	AV1(100)	AV1	AV1IN	AV1IN	AV1IN	AV1IN	AV1IN	REC	EXT1	EXT1	L	L
						VIDEO	MH	AV2 IN(0)	L	AV1 IN(00)	M/H(1)	L	*4	AV2(010)	AV2	AV2IN	AV1IN	AV2IN	AV2IN	AV2IN	REC	EXT2	EXT1	L	L
					AV2	VIDEO S-VIDEO	L	VCR OUT(1)	L	AV1 IN(00)	L(0)	L	OFF(1)	AV2(010)	AV2	AV2IN	AV1IN	AV2IN	AV2IN	AV2IN	REC	EXT2	EXT1	L	L
						VIDEO	MH	AV2 IN(0)	L	AV1 IN(00)	M/H(1)	L	*4	AV2(010)	AV2	AV2IN	AV1IN	AV2IN	AV2IN	AV2IN	REC	EXT2	EXT1	L	L
					AV3	VIDEO S-VIDEO	L	VCR OUT(1)	L	AV1 IN(00)	L(0)	L	OFF(1)	AV3(110)	AV3	AV3IN	AV1IN	AV3IN	AV3IN	AV3IN	REC	EXT3	EXT1	L	L
						VIDEO	MH	AV2 IN(0)	L	AV1 IN(00)	M/H(1)	L	*4	AV3(110)	AV3	AV3IN	AV1IN	A2IN	AV2IN	AV2IN	REC	EXT2	EXT1	L	L
				H	NO.TU	VIDEO S-VIDEO	L	VCR OUT(1)	L	AV1 IN(00)	H(1)	L	OFF(1)	TUN(000)	TUN	TUN	AV1IN	TUN	TUN	AV1IN	REC	TV	EXT1	L	L
						VIDEO	MH	VCR OUT(1)	L	AV1 IN(00)	H(1)	L	OFF(1)	TUN(000)	TUN	TUN	AV1IN	TUN	TUN	AV1IN	REC	TV	EXT1	L	L
					C+ TU	VIDEO S-VIDEO	L	VCR OUT(1)	L	TUN IN(10)	H(1)	L	OFF(1)	TUN(000)	TUN	TUN	TUN	TUN	TUN	TUN	REC	TV	TVIN	L	L
						VIDEO	MH	VCR OUT(1)	L	TUN IN(10)	H(1)	L	OFF(1)	AV2(010)	AV2	AV2IN	TUN	AV2IN	AV2IN	TUN	REC	EXT2	TVIN	L	L
					AV1	VIDEO S-VIDEO	L	VCR OUT(1)	L	AV1 IN(00)	H(1)	L	OFF(1)	AV1(100)	AV1	AV1IN	AV1IN	AV1IN	AV1IN	AV1IN	REC	EXT1	EXT1	L	L

POWER	INPUT CONDITION				OUTPUT RESULT										Audio Output Results				IC4501 settings				Mute signals		
	AV2 SELECT	TV/VTR	EE/VTR	OSD ON(H)	INPUT CH	AV2 PB(H)	AV1 OUT	AV1 S(H)	AV1 OUT	AV2 OUT	AV1 PB(H)	AV2 PB(H)	RGB SW	VCR IN	VCR OUT	AV1 Out	AV2 Out	RF (C)	AV1 Out Selector	AV2 Out Selector	REC/PB	Input Select	Dec Select	Mute (H)	A-Mute (H)
P.ON						MH	VCR OUT(1)	L	H	AV1 IN(00)	H(1)	L	OFF(1)	AV2(010)	AV2	AV2IN	AV1IN	AV2IN	AV1IN	REC	EXT2	EXT1	L	L	
					AV2	L	VCR OUT(1)	L	H	AV1 IN(00)	H(1)	L	OFF(1)	AV2(010)	AV2	AV2IN	AV1IN	AV2IN	AV1IN	REC	EXT2	EXT1	L	L	
						MH	VCR OUT(1)	L	H	AV1 IN(00)	H(1)	L	OFF(1)	AV2(010)	AV2	AV2IN	AV1IN	AV2IN	AV1IN	REC	EXT2	EXT1	L	L	
					AV3	L	VCR OUT(1)	L	H	AV1 IN(00)	H(1)	L	OFF(1)	AV3(110)	AV3	AV3IN	AV1IN	AV3IN	AV1IN	REC	EXT3	EXT1	L	L	
						MH	VCR OUT(1)	L	H	AV1 IN(00)	H(1)	L	OFF(1)	AV3(110)	AV3	AV3IN	AV1IN	AV3IN	AV1IN	REC	EXT3	EXT1	L	L	
		VTR	EE	L	NO.TU	L	VCR OUT(1)	L	H	AV1 IN(00)	H(1)	L	OFF(1)	TUN(000)	TUN	TUN	AV1IN	TUN	TUN	AV1IN	REC	TV	EXT1	L	L
						MH	VCR OUT(1)	L	H	AV1 IN(00)	H(1)	L	OFF(1)	TUN(000)	TUN	TUN	AV1IN	TUN	TUN	AV1IN	REC	TV	EXT1	L	L
					C+.TU	L	VCR OUT(1)	L	H	TUN IN(10)	H(1)	L	OFF(1)	TUN(000)	TUN	TUN	AV1IN	TUN	TUN	TUN	REC	TV	TVIN	L	L
						MH	VCR OUT(1)	L	H	TUN IN(10)	M/H(1)	L	OFF(1)	AV2(010)	AV2	AV2IN	AV1IN	AV2IN	AV1IN	REC	EXT2	TVIN	L	L	
					AV1	L	VCR OUT(1)	L	H	AV1 IN(00)	H(1)	L	OFF(1)	AV1(100)	AV1	AV1IN	AV1IN	AV1IN	AV1IN	REC	EXT1	EXT1	L	L	
						MH	VCR OUT(1)	L	H	AV1 IN(00)	M/H(1)	L	OFF(1)	AV2(010)	AV2	AV2IN	AV1IN	AV2IN	AV1IN	REC	EXT2	EXT1	L	L	
					AV2	L	VCR OUT(1)	L	H	AV1 IN(00)	H(1)	L	OFF(1)	AV2(010)	AV2	AV2IN	AV1IN	AV2IN	AV1IN	REC	EXT2	EXT1	L	L	
					MH	VCR OUT(1)	L	H	AV1 IN(00)	M/H(1)	L	OFF(1)	AV2(010)	AV2	AV2IN	AV1IN	AV2IN	AV1IN	REC	EXT2	EXT1	L	L		
				AV3	L	VCR OUT(1)	L	H	AV1 IN(00)	H(1)	L	OFF(1)	AV3(110)	AV3	AV3IN	AV1IN	AV3IN	AV1IN	REC	EXT3	EXT1	L	L		
					MH	VCR OUT(1)	L	H	AV1 IN(00)	M/H(1)	L	OFF(1)	AV3(110)	AV3	AV3IN	AV1IN	AV3IN	AV1IN	REC	EXT3	EXT1	L	L		
				NO.TU	L	VCR OUT(1)	L	H	AV1 IN(00)	H(1)	L	OFF(1)	TUN(000)	TUN	TUN	AV1IN	TUN	TUN	AV1IN	REC	TV	EXT1	L	L	
					MH	VCR OUT(1)	L	H	AV1 IN(00)	H(1)	L	OFF(1)	TUN(000)	TUN	TUN	AV1IN	TUN	TUN	AV1IN	REC	TV	EXT1	L	L	
				C+.TU	L	VCR OUT(1)	L	H	TUN IN(10)	H(1)	L	OFF(1)	TUN(000)	TUN	TUN	AV1IN	TUN	TUN	TUN	REC	TV	TVIN	L	L	
					MH	VCR OUT(1)	L	H	TUN IN(10)	H(1)	L	OFF(1)	AV2(010)	AV2	AV2IN	AV1IN	AV2IN	AV1IN	REC	EXT2	TVIN	L	L		
				AV1	L	VCR OUT(1)	L	H	AV1 IN(00)	H(1)	L	OFF(1)	AV1(100)	AV1	AV1IN	AV1IN	AV1IN	AV1IN	REC	EXT1	EXT1	L	L		
					MH	VCR OUT(1)	L	H	AV1 IN(00)	H(1)	L	OFF(1)	AV2(010)	AV2	AV2IN	AV1IN	AV2IN	AV1IN	REC	EXT2	EXT1	L	L		
				AV2	L	VCR OUT(1)	L	H	AV1 IN(00)	H(1)	L	OFF(1)	AV2(010)	AV2	AV2IN	AV1IN	AV2IN	AV1IN	REC	EXT2	EXT1	L	L		
					MH	VCR OUT(1)	L	H	AV1 IN(00)	H(1)	L	OFF(1)	AV2(010)	AV2	AV2IN	AV1IN	AV2IN	AV1IN	REC	EXT2	EXT1	L	L		
				AV3	L	VCR OUT(1)	L	H	AV1 IN(00)	H(1)	L	OFF(1)	AV3(110)	AV3	AV3IN	AV1IN	AV3IN	AV1IN	REC	EXT3	EXT1	L	L		
					MH	VCR OUT(1)	L	H	AV1 IN(00)	H(1)	L	OFF(1)	AV3(110)	AV3	AV3IN	AV1IN	AV3IN	AV1IN	REC	EXT3	EXT1	L	L		
				NO.TU	L	VCR OUT(1)	L	H	AV1 IN(00)	M/H(1)	L	OFF(1)	MUTE	MUTE	PB	AV1IN	PB	PB	AV1IN	PB	TV	EXT1	L	L	
		VV	--		MH	VCR OUT(1)	L	H	AV1 IN(00)	M/H(1)	L	OFF(1)	MUTE	MUTE	PB	AV1IN	PB	PB	AV1IN	PB	TV	EXT1	L	L	

INPUT CONDITION				OUTPUT RESULT										Audio Output Results				IC4501 settings			Mute signals				
POWER	AV2 SELECT	TV/ VTR	EE/ VTR	OSD ON(H)	INPUT CH	AV2 PB(H)	AV1 OUT	AV1 S(H)	AV2 OUT	AV1 PB(H)	AV2 PB(H)	RGB SW	VCR IN	VCR OUT	AV1 OUT	AV2 Out	RF (C)	AV1 Out Selector	AV2 Out Selector	REC/ PB	Input Select	Dec Select	Mute (H)	A-Mute (H)	
					C+ TU	L	VIDEO	AV1 OUT	VCR OUT(1)	L	M/H(1)	L	OFF(1)	MUTE	PB	PB	PB	TUN	TUN	PB	PB	TV	TVIN	L	L
							S-VIDEO		Y OUT(11)	H															
						M/H	VIDEO	VCR OUT(1)	VCR OUT(1)	L	M/H(1)	L	OFF(1)	MUTE	PB	PB	PB	AV2IN	TUN	PB	PB	EXT2	TVIN	L	L
							S-VIDEO		Y OUT(11)	H															
					AV1	L	VIDEO	VCR OUT(1)	VCR OUT(1)	L	M/H(1)	L	OFF(1)	MUTE	PB	PB	PB	AV1IN	AV1IN	PB	PB	EXT1	EXT1	L	L
						M/H	VIDEO	VCR OUT(1)	VCR OUT(1)	H															
							S-VIDEO		Y OUT(11)	H															
					AV2	L	VIDEO	VCR OUT(1)	VCR OUT(1)	L	M/H(1)	L	OFF(1)	MUTE	PB	PB	PB	AV2IN	AV1IN	PB	PB	EXT2	EXT1	L	L
						M/H	VIDEO	VCR OUT(1)	Y OUT(11)	H															
							S-VIDEO		Y OUT(11)	H															
					AV3	L	VIDEO	VCR OUT(1)	VCR OUT(1)	L	M/H(1)	L	OFF(1)	MUTE	PB	PB	PB	AV3IN	AV1IN	PB	PB	EXT3	EXT1	L	L
						M/H	VIDEO	VCR OUT(1)	VCR OUT(1)	H															
							S-VIDEO		Y OUT(11)	H															

Remark:

Tuner position, DECODER OFF (e.g. ARD)

Tuner position, DECODER ON (e.g. PREMI)

OFF = HIGH

ON = LOW

Non-Playback signal

Playback signal

Inputselect= Audio Output signal from AN3655 at Line Out

In case of EXT LINK1 standby(not EXT LINK2), AV1 PB must not output 'M' or 'H'

AV2 PB must not output 'M' or 'H' if AV2 PB IN is 'M' or 'H'.

RGB SW output "ON" if AV1PB is "H" or "M". (RGB SW output "OFF" if AV1PB is "L")

NO.TU

C+TU

RGW SW

RGW SW

EE

VV

INSEL

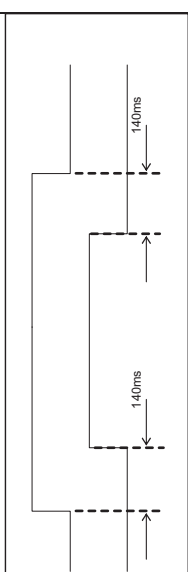
*1[L(0)]

2[H] / *3[M/H]

*4

INPUT / OUTPUT CHART FOR IC6001																			
Ptn.No.	Signal Name	I/O	Describe	P-OFF	P-SAVE	P-FAIL	Reset												
1	A.DEF(H)	O	Output signal for audio defea and decoder IC reset	Low	Low	Low	Low												
2	CKILLER DET(L)	I	COLOR KILLER Detection of COLOR KILLER active	In	In	In	In												
3	AFC S	I	S curve input from tuner	In	In	In	In												
4	SLP(H)	O	Output signal depends on tape speed During N10H or P9H: High Except N10H and P9H: Low	Low	Low	Low	Low												
5	CPB	I	PB input from AV2 <ul style="list-style-type: none"> • 3.21V ~ : High • 1.23V ~ 3.21V : Middle • ~ 1.23V : Low 	In	In	In	In												
6	N/S/T2	I	Normal/Service/Test2 select <ul style="list-style-type: none"> • 4.0V ~ NORMAL mode • 2.5V ~ 4.0V : SERVICE mode • 1.0V ~ 2.5V : TEST2 mode • 0V ~ 1.0V : No define (spare) 	In	In	In	In												
7	S-PHOTO	I	Photo sensor input from supply side <ul style="list-style-type: none"> • more than 2.6V: black / less than 2.4V: white 	In	In	In	In												
8	T-PHOTO	I	Photo sensor input from take up side <ul style="list-style-type: none"> • more than 2.6V: black / less than 2.4V: white 	In	In	In	In												
9	TRACKING_ENVE	I	Video envelope input for auto tracking and CVC	In	In	In	In												
10	AV1_8IN	I	PB input from AV1 <ul style="list-style-type: none"> • 3.21V ~ : High • 1.23V ~ 3.21V : Middle • ~ 1.23V : Low 	In	In	In	In												
11	CURRENT_LIMIT	O	Current limit for capstan driver	In DA=0V	In DA=0V	Low	In DA=0V												
12	F ADJUST	O	Analogue voltage output for HEAD frequency response adjustment	In DA=0V	In DA=0V	Low	In DA=0V												
13	ART.V/H/N	O	Artificial V synchronization signal	Low	Low	Low	Low												
14	IR	I	Interrupt input from IR sensor	In	In	In	In												
15	AVPB-H(L)	O	Output signal for AV2-PB <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>pin8 setup</th> <th>AVPB-H(L)</th> <th>AVPBM-</th> </tr> </thead> <tbody> <tr> <td>High</td> <td>L</td> <td>Hi-Z</td> </tr> <tr> <td>Middle</td> <td>H</td> <td>Hi-Z</td> </tr> <tr> <td>Low</td> <td>H</td> <td>L</td> </tr> </tbody> </table>	pin8 setup	AVPB-H(L)	AVPBM-	High	L	Hi-Z	Middle	H	Hi-Z	Low	H	L	High	High	Low	High
pin8 setup	AVPB-H(L)	AVPBM-																	
High	L	Hi-Z																	
Middle	H	Hi-Z																	
Low	H	L																	
16	AVPB-M(H)	O		Low	Low	Low	Low												

INPUT / OUTPUT CHART FOR IC6001

Pin.No.	Signal Name	I/O	Describe	P-OFF	P-SAVE	P-FAIL	Reset																																																																																					
17	EEP_WR	O	Write enable for EEPROM H: READ only L: Write	High	High	Low	High																																																																																					
18	VIDEO.H.SW	O	Output signal for video HEAD switch NTSC : 11122µs, PAL : 13333µs	Low	Low	Low	Low																																																																																					
19	A.H.SW	O	Output signal for FM audio HEAD switch	Low	Low	Low	Low																																																																																					
20	PROG ON (H)	O	H: IIC bus is connected to AV2 L: IIC bus is not connected to AV2	Low	Low	Low	Low																																																																																					
21	B/W(H)	O	Output signal for B/W mode	Low	Low	Low	Low																																																																																					
22	TBC MODE0	O	Output control signal of TBC mode	Low	Low	Low	Low																																																																																					
23	ABS_NORM(H)	I	Input signal for FM audio envelope level detection	In	In	In	In																																																																																					
24	V EE(L)	O	Output signal for switch between EE and VV	Low	Low	Low	Low																																																																																					
25	D.FM.REC(H)	O	Control signal for FM audio recording current	Low	Low	Low	Low																																																																																					
26	D.A.REC(H)	O	Control signal for normal audio recording current	Low	Low	Low	Low																																																																																					
			Control signal for FM audio recording current																																																																																									
27	BIAS(H)	O	 <p>D.REC(H)</p> <p>BIAS(H)</p>	Low	Low	Low	Low																																																																																					
28	FM.MUTE(H)	O	Output signal for audio mute control	High	High	Low	High																																																																																					
29	PAL-I/BG/DK(SYS4)	O	Output terminal for broad cast system to control the video circuit	Low	Low	Low	Low																																																																																					
30	POS.SW4	I/O	Input signal for mecha position	In	In	In	In																																																																																					
31	POS.SW3	I/O	<table border="1" data-bbox="873 932 1176 1428"> <thead> <tr> <th>POS.SW7</th> <th>POS.SW2</th> <th>POS.SW3</th> <th>POS.SW4</th> <th>Position</th> </tr> </thead> <tbody> <tr><td>0</td><td>0</td><td>0</td><td>0</td><td></td></tr> <tr><td>0</td><td>0</td><td>0</td><td>1</td><td></td></tr> <tr><td>0</td><td>0</td><td>1</td><td>0</td><td>DOWN</td></tr> <tr><td>0</td><td>0</td><td>1</td><td>1</td><td>R-REW</td></tr> <tr><td>0</td><td>1</td><td>0</td><td>0</td><td>LOAD</td></tr> <tr><td>0</td><td>1</td><td>0</td><td>1</td><td>REV</td></tr> <tr><td>0</td><td>1</td><td>1</td><td>0</td><td>PLAY</td></tr> <tr><td>0</td><td>1</td><td>1</td><td>1</td><td>POFF</td></tr> <tr><td>1</td><td>0</td><td>0</td><td>0</td><td>STOP R</td></tr> <tr><td>1</td><td>0</td><td>0</td><td>1</td><td>STOP F</td></tr> <tr><td>1</td><td>0</td><td>1</td><td>0</td><td></td></tr> <tr><td>1</td><td>0</td><td>1</td><td>1</td><td></td></tr> <tr><td>1</td><td>1</td><td>0</td><td>0</td><td>FF/REW</td></tr> <tr><td>1</td><td>1</td><td>0</td><td>1</td><td></td></tr> <tr><td>1</td><td>1</td><td>1</td><td>0</td><td></td></tr> <tr><td>1</td><td>1</td><td>1</td><td>1</td><td>EJECT</td></tr> </tbody> </table>	POS.SW7	POS.SW2	POS.SW3	POS.SW4	Position	0	0	0	0		0	0	0	1		0	0	1	0	DOWN	0	0	1	1	R-REW	0	1	0	0	LOAD	0	1	0	1	REV	0	1	1	0	PLAY	0	1	1	1	POFF	1	0	0	0	STOP R	1	0	0	1	STOP F	1	0	1	0		1	0	1	1		1	1	0	0	FF/REW	1	1	0	1		1	1	1	0		1	1	1	1	EJECT	In	In	In	In
POS.SW7	POS.SW2	POS.SW3	POS.SW4	Position																																																																																								
0	0	0	0																																																																																									
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32	POS.SW2	I/O		In	In	In	In																																																																																					
33	POS.SW1	I/O		In	In	In	In																																																																																					
34	RESET(L)	I	Input signal for ucon reset	In	In	In	In																																																																																					
35	32KHz IN	I	Sub oscillator input	---	---	---	---																																																																																					
36	32KHz OUT	O	Sub oscillator output	---	---	---	---																																																																																					
37	+5V(D)	-	Vcc(5V)	---	---	---	---																																																																																					
38	12MHz.IN	I	Main oscillator input	---	---	---	---																																																																																					

INPUT / OUTPUT CHART FOR IC6001

Pin.No.	Signal Name	I/O	Describe	P-OFF	P-SAVE	P-FAIL	Reset															
39	12MHz.OUTPUT	O	Main oscillator output	---	---	---	---															
40	GND(D)	-	GND	---	---	---	---															
41	POWER OFF(5)	O	Control signal for power circuit	Low	Low	Low	Low															
42	FIP ON(L)	O	Control signal for FIP (on/off) • Power save • FIP ON(L)	Low	High	Low	Low															
43	12M.START(H)	I	Starting clock select terminal at releasing RESET	---	---	---	---															
44	NC	I	Non connect	Low	Low	Low	Low															
45	624/628	O	Detect PAL OSD scanning line 624 or 628 by Input Voltage. (For Service) (The permanent countermeasure for the complaint that the problem of V dancing with HongKong TV.) <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>ucon PIN</th> <th>Option code</th> <th>Result</th> </tr> </thead> <tbody> <tr> <td>5V</td> <td>628</td> <td>628 Odd</td> </tr> <tr> <td>5V</td> <td>624</td> <td>624 Even</td> </tr> <tr> <td>0V</td> <td>624</td> <td>624 Even</td> </tr> <tr> <td>0V</td> <td>628</td> <td>624 Even</td> </tr> </tbody> </table> <- Initial setting	ucon PIN	Option code	Result	5V	628	628 Odd	5V	624	624 Even	0V	624	624 Even	0V	628	624 Even	In	In	In	In
ucon PIN	Option code	Result																				
5V	628	628 Odd																				
5V	624	624 Even																				
0V	624	624 Even																				
0V	628	624 Even																				
46	GND	I	GND	---	---	---	---															
47	4FC.LPF	I	NC	---	---	---	Low															
48	OSD.FSC IN	I	NC	---	---	---	Low															
49	GND(OSD)	-	GND	---	---	---	---															
50	CVIN	I	Input signal of composite video	---	---	---	---															
51	LECHA	I	Input signal for white level of composite video	---	---	---	---															
52	CVOUT	O	Output signal for character generator	---	---	---	---															
53	5V(OSD)	-	5V	---	---	---	---															
54	HLF	I	For slicer IC	---	---	---	Low															
55	AMUTE(H)	O	Audio mute signal only for RF convertor	High	High	Low	High															
56	CVIN(EDS)	I	Input signal of composite video for Slicer IC	In	In	In	In															
57	GND	I	GND	---	---	---	---															
58	SECAMPAL(SYS2)	O	Output signal for Video system control	Low	Low	Low	Low															
59	SECAM.V.IN AD.V	I	AD.V (TBC function is exist. It decide by Option code) Input Vsync signal from TBC IC SECAM.V.IN (TBC function is not exist. It decide by Option code) Input C signal for SECAM superimpose <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th rowspan="2">Condition</th> <th rowspan="2">SVHS model</th> <th colspan="2">Except SVHS model</th> </tr> <tr> <th>Internal sync</th> <th>EB/EBL model</th> </tr> </thead> <tbody> <tr> <td>result</td> <td>AD.V</td> <td>OUTPUT Low</td> <td>OUTPUT Low</td> </tr> </tbody> </table>	Condition	SVHS model	Except SVHS model		Internal sync	EB/EBL model	result	AD.V	OUTPUT Low	OUTPUT Low	Depend on table	Low	Low	In					
Condition	SVHS model	Except SVHS model																				
		Internal sync	EB/EBL model																			
result	AD.V	OUTPUT Low	OUTPUT Low																			

INPUT / OUTPUT CHART FOR IC6001

Pin.No.	Signal Name	I/O	Describe	P-OFF	P-SAVE	P-FAIL	Reset
60	OSD PULSE	O	Abstraction signal for BOX from the Video signal at Superimpose	Low	Low	Low	Low
61	SLEEP(L)	O	Power circuit control signal for super power save mode <ul style="list-style-type: none"> • Power save • FIP ON(L) 	High	Low	Low	High
62	UNLOADING(H)	O	Control signal for Loading motor forward	Low	Low	Low	Low
63	LOADING(H)	O	Control signal for Loading motor reverse	Low	Low	Low	Low
64	FLD CS	O	FLD	Not fix	Not fix	Low	Low
65	MESECAM DET (H)	I	MESECAM/NORMAL Detection between MESECAM and NORMAL	In	In	In	In
66	LP(H)	O	Output signal depends on tape speed (During N4H,N6H,P6H or P9H: High) <ul style="list-style-type: none"> • Another speed: Low 	Low	Low	Low	Low
67	S-VHS DET(H)	O	SVHS/V H S Detection between SVHS and V H S	In	In	In	In
68	FLD DATA OUT	O	FIP Serial data output signal for FIP driver	Not fix	Not fix	Low	Low
69	FLD DATA IN	I	FIP Serial data input signal for FIP driver	Not fix	Not fix	In	In
70	FLD CLK	O	FIP Serial clock signal for FIP driver	Not fix	Not fix	Low	Low
71	IIC CLK	O	IIC clock for all IIC devices	Not fix	Not fix	Low	Hi-z
72	IIC DATA	O	IIC data for all IIC devices	Not fix	Not fix	Low	Hi-z
73	125Hz	O	TEST2 125Hz output for adjustment of clock accuracy	Low	Low	Low	Low
74	CAP/R/F	O	Control signal for capstan motor direction	Low	Low	Low	Low
75	PB60Hz	O	Switch trap for HiFi audio in case of NTSC PB (60Hz)	Low	Low	Low	Low
76	CAP/ET	I/O	Torque control signal for capstan motor	0V	0V	Low	0V
77	CYL-ET	I/O	Torque control signal for cylinder motor Cylinder OFF : 5.000V	Low PWM=5.000V	Low PWM=5.000V	Low	Low PWM=5.000V
78	P FAIL	I/O	Interrupt input signal for power fail detection	In	In	In	In
79	S.REEL.PULSE	I/O	Input signal from supply reel sensor	In	In	In	In
80	T.REEL.PULSE	I/O	Input signal from take up reel sensor	In	In	In	In
81	S TAB(L)	I	Input signal from frase prevention tab <ul style="list-style-type: none"> • exist: Low no exist:High PULL UP R use input pull-up resistor. 	In	In	In	In
82	POWER_KEY	I/O	Input signal from power button on the body <ul style="list-style-type: none"> • Switch between ON and off, when down edge is detected. 	In	In	In	In
83	CNR OFF(H)	I/O	AV1CHIP GNR control for AV1CHIP	Low	Low	Low	Low
84	SECAM_ID(H)	I/O	SECAM Detection of SECAM mode	In	In	In	In
85	DAVN	I/O	DAVN signal from Slicer	In	In	In	In
86	FGAMP.OUTPUT	I/O	Output from internal FG Amplifier	---	---	---	---
87	FGAMP.IN	I	Input for internal FG Amplifier	---	---	---	---
88	GND(A)	I	GND	---	---	---	---
89	AV3_S_IN(L)	I/O	AV3 Detection of composite or component for AV3 VIDEO INPUT	In	In	In	In

INPUT / OUTPUT CHART FOR IC6001

Pin.No.	Signal Name	I/O	Describe	P-OFF	P-SAVE	P-FAIL	Reset
90	PFG	I	PFG input terminal				
91	OREF	O	Output from internal reference voltage (2.5V)				
92	IREF	I	Input for internal reference voltage				
93	SCAS_IN(L)	I/O	VHS/SVHS Detection between VHS tape or S-VHS tape	In	In	In	In
94	CTL-HEAD(-)	I/O	Input signal from CTL HEAD(+)				
95	CTL-HEAD(+)	I/O	Input signal from CTL HEAD(-)				
96	CTL-AMP.REF	I	Input for internal CTL amplifier reference voltage				
97	PB.CTL.OUT	I/O	Output from internal CTL amplifier				
98	+5V(A)	I	+5V (A)				
99	+5V(AD)	I	+5V (AD)				
100	EX.FF/REW(L)	I/O	FF/REW Filter switch signal for PB-CTL	Low	Low	Low	Low

Front Panel VCR Controls

	Stand-by/on switch \odot/I		Stop ends recording, playback, or winding.
	Activates the recording timer.		Playback
	Record		Fast rewind to the beginning of the tape.
	Ejects the cassette.		Erases a cassette.
	Channel selector		Search
			Fast winding

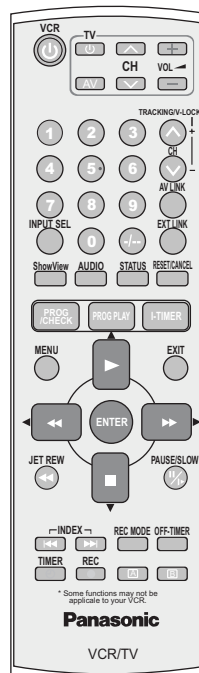
TV Controls

Some Panasonic television sets may be controlled with the remote control unit of this VCR.

	Television set Stand-by/on switch.
	Selects the TV set's AV port.
	TV Channel selector.
	TV Volume control.

VCR Playback Controls

	Normal playback
	Stop ends recording, playback, or winding. Eject: Press and hold for more than 3 seconds.
	Fast forward/rewind when stopped, search forward or backwards during playback.
	Stop a recording session. Still playback or Slow Playback.
	Search beginning of a recording session.
	Fast rewind to beginning of tape.



VCR Standard Controls

	Stand-by/on switch Press to switch the unit from on to stand-by mode or vice versa. In stand-by mode, the unit is still consuming a small amount of power.		RESET : Resets the counter to 0:00.00. CANCEL : Clears an entry you made.
	Displays the menu.		Select program storage position or enter the ShowView / VideoPlus+ number. E.g.: 18 = \odot 1 8 \odot
	Quits a menu.		Channel select buttons. Tracking control of VCR picture disturbance.
	Switches between AV inputs A1, A2 and Tuner (depending on model).		Menu navigation buttons. ENTER : Selecting or storing settings.
	Audio out settings.		
	Switches from television reception to the video playback channel.		

VCR Recording Controls

	ShowView Menu		Activate the recording timer mode.
	Programming TV programmes broadcasted at the same time and on the same channel.		Record
	Switches the VCR into stand-by mode after a preset period of time during recording, playback or stop mode.		Sets the tape speed (SP/LP/EP).
	Displays the menu Timer recording.		Delete highlighted station.
	Plays back programmed recordings.		Move highlighted station.
	Activates the recording timer for externally controlled recording.		Press repeatedly to display the time, tape counter or tape remain.