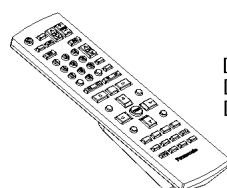
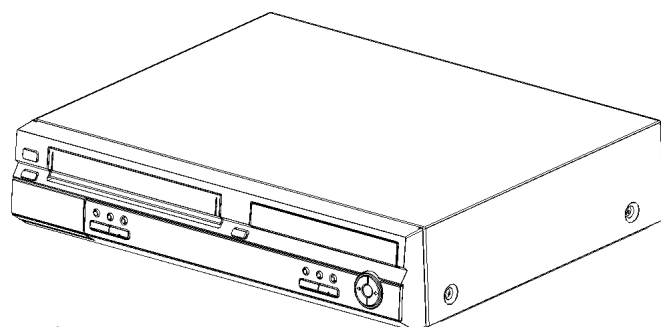


# Service Manual

DVD Video Recorder



DMR-ES30VEB  
DMR-ES30VEG  
DMR-ES30VEC

EUR7720KT0  
EUR7720KS0  
EUR7720KS0

**DMR-ES30VEG**  
**DMR-ES30VEC**  
**DMR-ES30VEB**

Vol. 1

Colour

(S).....Silver Type

**Note 1:**

This model's DVD Drive is VXY1867.

**Note 2:**

This model's VHS Mechanism is

R4-MECHANISM-CHASSIS-FOR-EURO-MODEL:

Order No. MAD0403002C2

# Panasonic

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# SPECIFICATIONS

<b>Power supply:</b>	AC220-240 V, 50/60 Hz
<b>Power consumption:</b>	39 W +/-1,3W Power Save mode: 3W+/-0,4W
<b>Dimensions and Mass:</b>	430 (W)×352 (D)×89 (H) mm (excluding protrusions) / 5.6kg
<b>Operating temperature range:</b>	+5 to +40°C
<b>Operating humidity range:</b>	35 to 80% RH (no condensation)
<b>Pickup:</b>	Laser power and Wave length: CLASS2/CLASS1 662nm / 795nm No hazardous radiation is emitted with the safety protection Laser performance: Class 3B / Class 3A (optical scan unit)
<b>(NORSK) Bølglengde:</b>	662nm / 795nm
<b>Laserstyrke</b>	Ingen farlig stråling sendes ut
<b>Video Recording signal:</b>	PAL-BGH (EG / EC) PAL-I (EG) MESECAM (EG / EC) NTSC (only from extern and DVD) PAL625/50, PAL525/60 NTSC (playback on PAL TV)
<b>DVD Signal system:</b>	
<b>DVD Region number:</b>	Region No.2
<b>DVD Video Recording format:</b>	DVD-RAM / DVD-R / DVD-RW Video MPEG2 (Hybrid VBR) Audio: Dolby Digital 2CH
<b>DVD Recording, Playable discs:</b>	DVD-RAM: 12cm 4.7GB / 9.4GB / 8cm 2.8GB DVD-R: 12cm 4.7GB / 8cm 1.4GB DVD-RW: 12cm 4.7GB DVD+R: 12cm 4.7GB
<b>DVD approximate Recording time:</b>	XP: 10 MBps 60min SP: 5 MBps 120min LP: 3 MBps 240min EP: 1.7 / 1.2 MBps 360 - 480min
<b>Playable disctype:</b>	DVD-Video, DVD-Audio, DVD+RW CD-Audio (CD-DA), Video CD CD-R/CD-RW (CD-DA, Video CD formatted discs) MP3 (audio), JPG (picture) Maximum number of tracks and groups recognizable: 999 tracks and 99 groups
<b>TV tuner system (1x DVD / 1x VCR) DMR-ES30V EB:</b>	UHF: CH21-CH68 VHF (OIRT): CHR1-CHR12
<b>TV tuner system (1x DVD / 1x VCR) DMR-ES30V EG / EC:</b>	VHF: CH E2-CH E12 A-H2 UHF: CH21-CH69 CATV: S01-S05 (S1-S3), S1-S20(M1-U10), S21-S41
<b>RF out system:</b>	DMR-ES30V EB UHF: CH21-CH68 (71 +/-3dBu, 75Ω close) DMR-ES30V EG without RF converter
<b>Video Recording system:</b>	4 rotary heads (helical scanning system)
<b>Video heads:</b>	4 rotary heads 1 pair for recording / playback (L-R heads) 1 pair for trick play (L'-R' heads)
<b>Video input:</b>	EURO AV (AV1 / AV2) 21 pin connector (1.0Vp-p, 75Ω terminated) VIDEO IN (AV3 front input) cinch connector (1.0Vp-p, 75Ω terminated)
<b>Video output:</b>	EURO AV (AV1 / AV2) 21 pin connector (1.0Vp-p, 75Ω terminated) VHS / DVD cinch 21 pin connector (1.0Vp-p, 75Ω terminated) DVD (only) cinch 21 pin connector (1.0Vp-p, 75Ω terminated) S-VIDEO Y 1.0 Vp-p, 75Ω terminated S-VIDEO C (PAL) 0.3 Vp-p, 75Ω terminated S-VIDEO C (NTSC) 0.286 Vp-p, 75Ω terminated
<b>DVD RGB video output:</b>	RGB output level: 0.7 Vp-p (75Ω) +/-10% Output terminal: AV (21pin) Number of terminals: 1 system

<b>Audio heads:</b>	1 stationary head 2 channels	Mono Hi-Fi Sound-Stereo
<b>Audio input:</b>	EURO AV (AV1 / AV2)	21 pin connector: -6dBV (500mV), more than 10kΩ
	AUDIO IN (AV3 front input)	cinch connector: -6dBV (500mV), more than 10kΩ
<b>Audio output:</b>	VHS / DVD, DVD only	cinch connector: -6dBV (500mV), less than 1kΩ
	EURO AV (AV1 / AV2)	21 pin connector: -6dBV (500mV), less than 1kΩ
	DVD coaxial output	digital audio output
<b>Audio characteristics:</b>	S/N ratio	Normal: more than 43dB (SP) Hi-Fi: 65dB, DVD: 115dB
	Frequency response	Normal: 80Hz - 8kHz, Hi-Fi: 20Hz - 20kHz DVD: 4Hz - 22kHz (linear audio) 48kHz sampling DVD: 4Hz - 44kHz (linear audio) 96kHz sampling CD Audio: 4Hz - 20kHz
	Total harmonic distortion:	CD Audio: 0.0025%
<b>Dynamic range:</b>	VCR:	more than 90dB
	DVD (linear audio):	more than 98dB
	CD audio:	more than 96dB
<b>Videotape speed and Recording time (PAL / SECAM 240min. tape):</b>	SP:	23.39mm/s, 240min.
	LP:	11.695mm/s, 480min.
	EP:	7.796mm/s, 720min.
	FF / REW time:	60sec. (180min. tape)
<b>Videotape speed and Recording time (NTSC 240min. tape):</b>	SP:	33.35mm/s, 168min.
	EP:	11.12mm/s, 505min.
<b>Winding Speed (180min tape):</b>		FF time approximate 60sec. REW time approximate 43sec.

## Note:

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

MPEG Layer-3 audio decoding technology licensed from Fraunhofer IIS and Thomson multimedia.

This product incorporates copyright protection technology that is protected by method claims of certain U.S. patents and other intellectual property rights owned by Macrovision Corporation and other rights owners. Use of this copyright protection technology must be authorized by Macrovision Corporation, and is intended for home and other limited viewing uses only unless otherwise authorized by Macrovision Corporation. Reverse engineering or disassembly is prohibited.

## Built-in decoders

You can play discs with these symbols.



## ⚠ 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

This service manual contains technical information which will allow service personnel to understand and service these models.

Please place orders using the parts list and not the drawing reference numbers.

1. This service manual does not contain the following information, because of the impossibility of servicing at component level.

- Schematic Diagram, Block Diagram and P.C.B. layout of Digital P.C.B.
- Parts List for individual parts of Digital P.C.B.
- Exploded View and Parts List for individual parts of RAM drive.

2. The following categories are recycling module part. Please send them to Central Repair Center.

- Digital P.C.B.:  
DMR-ES30VEB: RFKBES30VEB  
DMR-ES30VEC: RFKBES30VEC  
DMR-ES30VEG: VEP79104F
- RAM Drive: VXY1867

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

4. 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).

## 2 SAFETY PRECAUTIONS

### 2.1. GENERAL GUIDELINES

1. Be careful during removing metal parts, sharp edges.
2. 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.
3. After servicing, see to it that all the protective devices such as insulation barriers, insulation papers shields are properly installed.
4. After servicing, make the following leakage current checks to prevent the customer from being exposed to shock hazards.

#### 2.1.1. LEAKAGE CURRENT COLD CHECK

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 screw heads, connectors, control shafts, etc. When the exposed metallic part has a return path to the chassis, the reading should be between 1M $\Omega$  and 5.2M $\Omega$ .  
When the exposed metal does not have a return path to the chassis, the reading must be infinity.

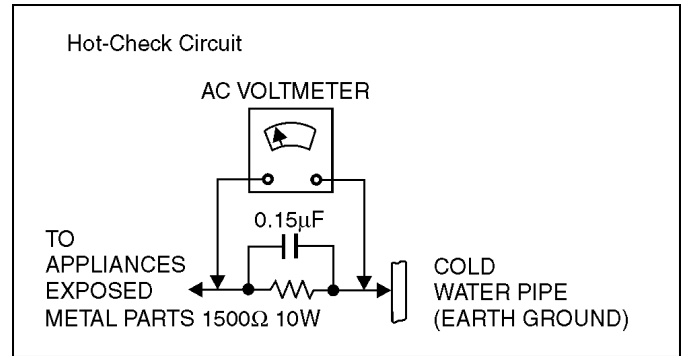


Figure 1

#### 2.1.2. LEAKAGE CURRENT HOT CHECK

1. Plug the AC cord directly into the AC outlet. Do not use an isolation transformer for this check.
2. Connect a 1.5k $\Omega$ , 10 watts resistor, in parallel with a 0.15 $\mu$ F capacitors, between each exposed metallic part on the set and a good earth ground such as a water pipe, as shown in 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 milliampere. 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.

### 3 PREVENTION OF ELECTROSTATIC DISCHARGE (ESD) TO ELECTROSTATIC SENSITIVE (ES) DEVICES

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

## 4 PRECAUTION OF LASER DIODE

### CAUTION:

This product utilizes a laser diode with the unit turned "on", invisible laser radiation is emitted from the pickup lens.  
Wave length: 662 nm/795 nm  
Maximum output radiation power from pickup: 100 $\mu$  W/VDE.  
Laser radiation from the pickup lens is safety level, but be sure the followings:

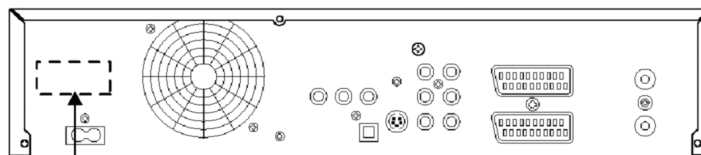
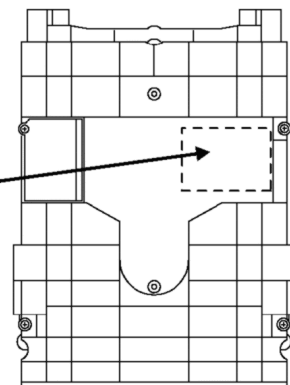
1. Do not disassemble the optical pickup unit, since radiation from exposed laser diode is dangerous.
2. Do not adjust the variable resistor on the pickup unit. It was already adjusted.
3. Do not look at the focus lens using optical instruments.
4. Recommend not to look at pickup lens for a long time.

### ACHTUNG:

Dieses Produkt enthält eine Laserdiode.  
Im eingeschalteten Zustand wird unsichtbare Laserstrahlung von der Lasereinheit ausgestrahlt.  
Wellenlänge: 662 nm/795 nm  
Maximale Strahlungsleistung der Lasereinheit: 100 $\mu$  W/VDE.  
Die Strahlung der eingeschalteten Lasereinheit ist ungefährlich, wenn folgende Punkte beachtet werden:

1. Die Lasereinheit nicht zerlegen, da die Strahlung an der freigelegten Laserdiode gefährlich ist.
2. Den werksseitig justierten Einstellregler der Lasereinheit nicht verstellen.
3. Nicht in die Fokussierlinse blicken.
4. Auch nicht mit optischen Instrumenten in die Fokussierlinse blicken.

CAUTION	- LASER RADIATION WHEN OPEN. DO NOT STARE INTO BEAM.	FDA 21 CFR / Class II
CAUTION	- VISIBLE AND INVISIBLE LASER RADIATION WHEN OPEN. AVOID EXPOSURE TO BEAM.	IEC60825-1 / Class 3B
ATTENTION	- RAYONNEMENT LASER VISIBLE ET INVISIBLE EN CAS D'OUVERTURE. EXPOSITION DANGEREUSE AU RAYONNEMENT.	
ADVASEL	- SYNLIS OG USYNLIS LASERSTRÅLING VED ÅBNING. UNDSÅ UDSÆTTELSE FOR STRÅLING.	
VARO!	- AVATTAESSA OLET ALLTTIINA NÄKYVÄÄ JA NÄKYMÄTÖN LASERSÄTELYLLÄ. ÄLÄ KATSO SÄTEESEEN.	
VARNING	- SYNLIIG OCH OSYNLIIG LASERSTRÅLNING NÄR DENNA DEL ÄR ÖPPNAD. BETRÄKTA EJ STRÅLEN.	
ADVASEL	- SYNLIS OG USYNLIS LASERSTRÅLING NÄR DENDEL ÅPNES. UNDSÅ EKSPONERING FOR STRÅLEN.	
VORSICHT	- SICHTBARE UND UNSICHTBARE LASERSTRHLUNG, WENN ABDECKUNG GEÖFFNET. NICHT DEM STRAHLEN AUSSETZEN.	
注意	- 打开时有可见及不可见激光辐射。避免激光束照射。	
注意	- ここを開くと可視及び不可視レーザー光が出ます。 ビームを見たり、触れたりしないで下さい。 ROLCA0141	



**CLASS1  
LASER PRODUCT**

**LUOKAN 1 LASERLAITE  
KLASS 1 LASER APPARAT**

**CAUTION!**  
THIS PRODUCT UTILIZES A LASER.  
USE OF CONTROLS OR ADJUSTMENTS OR PERFORMANCE OF PROCEDURES OTHER THAN  
THOSE SPECIFIED HEREIN MAY RESULT IN HAZARDOUS RADIATION EXPOSURE.

## 5 HANDLE THE LEAD-FREE SOLDER

Distinction of PbF P.C.B.

### 5.1. ABOUT LEAD FREE SOLDER (PbF)

P.C.B.s (manufactured) using lead-free solder will have a PbF stamp on the P.C.B.

This model uses lead free solder (PbF). 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 the soldering iron with temperature control, please set it to 700 +/-20-F (370 +/-10-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.

## 6 PREVENTION OF STATIC ELECTRICITY DISCHARGE

The laser diode in the traverse unit (optical pickup) may brake down due to static electricity of clothes or human body. Use due caution to electrostatic breakdown when servicing and handling the laser diode.

### 6.1. GROUNDING FOR ELECTROSTATIC BREAKDOWN PREVENTION

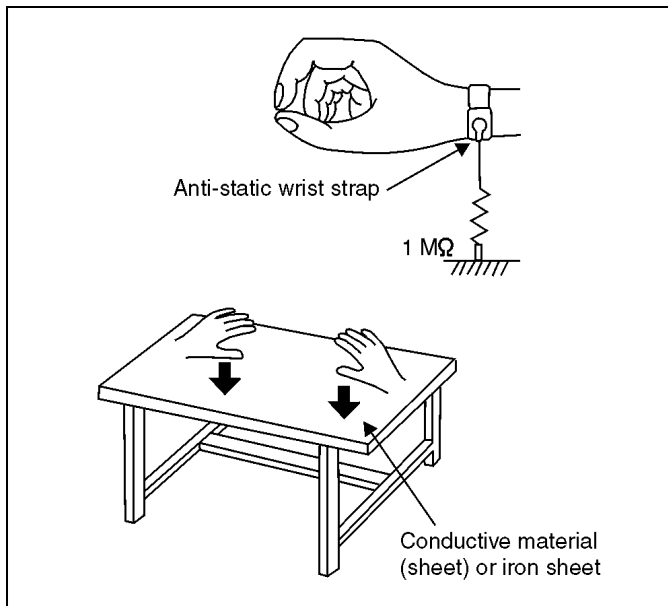
Some devices such as the DVD Video Recorder use the optical pickup (laser diode) and the optical pickup will be damaged by static electricity in the working environment. Proceed servicing works under the working environment where grounding works is completed.

#### 6.1.1. WORKTABLE GROUNDING

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

#### 6.1.2. HUMAN BODY GROUNDING

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



#### 6.1.3. HANDLING OF OPTICAL PICKUP

1. To keep the good quality of the optical pickup maintenance parts during transportation and before installation, the both ends of the laser diode are short-circuit. After replacing the parts with new ones, remove the short circuit according to the correct procedure. (See this Technical Guide.)
2. Do not use a tester to check the laser diode for the optical pickup. Failure to do so will damage the laser diode due to the power supply in the tester.

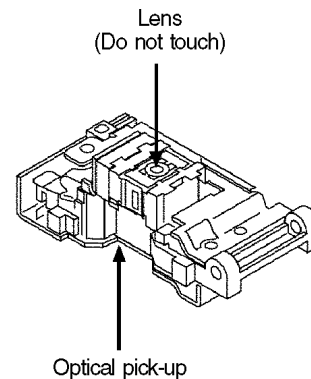
### 6.2. HANDLING PRECAUTIONS FOR OPTICAL PICK-UP UNIT

The laser diode in the optical pick-up unit may break down due to potential difference caused by static electricity of clothes or human body.

So be careful of electrostatic breakdown during repair of the optical pick-up unit.

#### 6.2.1. HANDLING OF OPTICAL PICK-UP UNIT

1. The optical pick-up unit has high precision extremely sensitive structure. Be careful not to apply excessive shock.



## 7 GENERAL DESCRIPTION

### VCR and DVD Controls

<b>DVD/VHS</b>	<b>Stand-by/on switch</b> 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.
<b>DIRECT TV REC</b>	<b>Direct TV record to DVD</b>
<b>VHS OPERATION SELECT DVD</b>	<b>Buttons to switch between DVD and VHS</b>
<b>DVD</b>	Press to operate the functions of the DVD element.
<b>VHS</b>	Press to operate the functions of the VHS element.
<b>DIRECT NAVIGATOR</b>	<b>DIRECT NAVIGATOR TITLE VIEW</b> Main menu of DVD video.
<b>TOP MENU</b>	Direction buttons in the menu navigation. [DVD] Selection of groups ▲▼ or titles. ◀▶ Still picture or time loop playback.
<b>SUB MENU</b>	[DVD] Launch sub-menus.
<b>PROG CHECK</b>	[DVD] <b>TIMER RECORDING</b> menu [VHS] Timer recording menu
<b>STATUS</b>	Time and detail information appears on the screen for 5 seconds.
<b>INPUT SELECT</b>	Switch button of the AV input between AV1, AV2 and AV3 (front) / TP (DVD) and DC (VHS).
<b>CANCEL/RESET</b>	[*] Cancel button
<b>ShowView</b>	[DVD] ShowView menu [VHS] ShowView menu
<b>VIDEO Plus+</b>	EB Model
<b>SLOW/REW SEARCH FF</b>	[DVD] <b>SLOW/SEARCH</b> : Search or slow motion playback [VHS] <b>REW/FF</b> : Fast forward or rewind from stop mode. Forward or reverse scene search during playback mode.
<b>STOP</b>	<b>Stops recording, replay or forward/reverse action.</b> Press and hold more than 3 seconds to remove cassette.
<b>PAUSE</b>	<b>Pause a recording or playback.</b>
<b>REC</b>	[DVD] Record [VHS] Record
<b>EXT LINK</b>	Record with external recording control
<b>DUBBING</b>	Copy from DVD to VHS. Delete selected station.
<b>A</b>	
<b>•DVD</b>	Copy from VHS to DVD. Add a station.
<b>B</b>	

▲ **EJECT** **Front Panel Button:** Remove cassette

▲ **OPEN/CLOSE** **Front Panel Button:** Open and close the disc tray

<b>TV</b>	<b>Turn the television set on and off.</b>
<b>AV</b>	Select the AV input on the television set.
<b>CH</b>	Select the channel on the television set.
<b>VOLUME</b>	Volume control of the television set.
<b>Number buttons - direct input</b>	
1 2 3	5: 0 + 5 15: 1 + 5
4 5 6	MP3/JPEG 5: 0 + 0 + 5 15: 0 + 1 + 5
7 8 9	
0	
<b>FUNCTIONS</b>	[DVD] <b>FUNCTIONS</b> selection menu. [VHS] <b>VHS FUNCTIONS</b> menu.
<b>ENTER</b>	Select or save a setting.
<b>RETURN</b>	Exit a menu.
<b>DISPLAY</b>	[DVD] Launch the disc menu.
<b>TIME SLIP</b>	[DVD] <b>TIME SLIP</b> : Select the timeframe to be skipped. [VHS] <b>JET REW</b> : Fast rewind to the beginning of the cassette.
<b>TRACKING/V LOCK</b>	<b>CH</b> : Channel select button. <b>TRACKING/V LOCK + / -</b> [VHS] Optimisation of the playback picture.
<b>AUDIO</b>	[DVD] Depending on the disc, select the audio channel and or the sound track. [VHS] Press several times to select sound playback mode.
<b>SKIP/INDEX</b>	[DVD] <b>SKIP</b> : Skip chapters, titles, or pictures. [VHS] <b>INDEX</b> : Search for the beginning of a recording.

**PLAY**  
**Starts playback.**  
**PLAY/ x1.3 RAM**  
You can increase the playback speed .  
Hold **PLAY** ▶ during playback.

**REC MODE** [DVD] Record mode button (XP, SP, LP, EP)  
[VHS] Record mode button (SP, LP, EP)

**TIMER** Switch timer on and off.

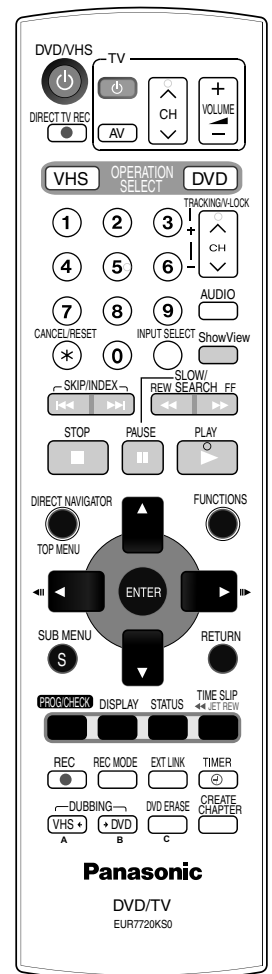
**DVD ERASE** Erase a title during playback.  
c Move the selected station.

**CREATE CHAPTER** Split the recording into chapters.

**VHS/DVD EXT LINK** **Front Panel Button:** Recording with external recording control

**DUBBING** ▶ **Front Panel Button:** Copy from VHS to DVD

◀ **DUBBING** **Front Panel Button:** Copy from DVD to VHS



## 8 NEW FEATURES

### 8.1. QUICK START FUNCTION (REC)

(Note: Descriptions concerning HDD is applied only to models with HDD.)

#### 1. General

A few seconds after tuning on the unit, you can start recording to DVD-RAM.

You can switch the operation of this function (ON/OFF) on the menu screen.

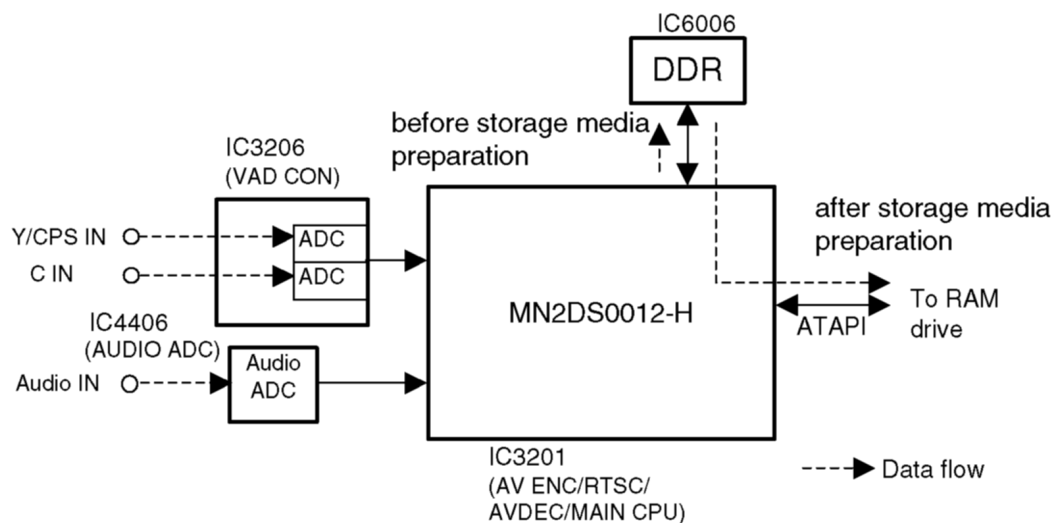
#### 2. Quick start (REC) principle

In the power-off at Quick start, only power supplies for video IC, tuner and storage media are cut off.

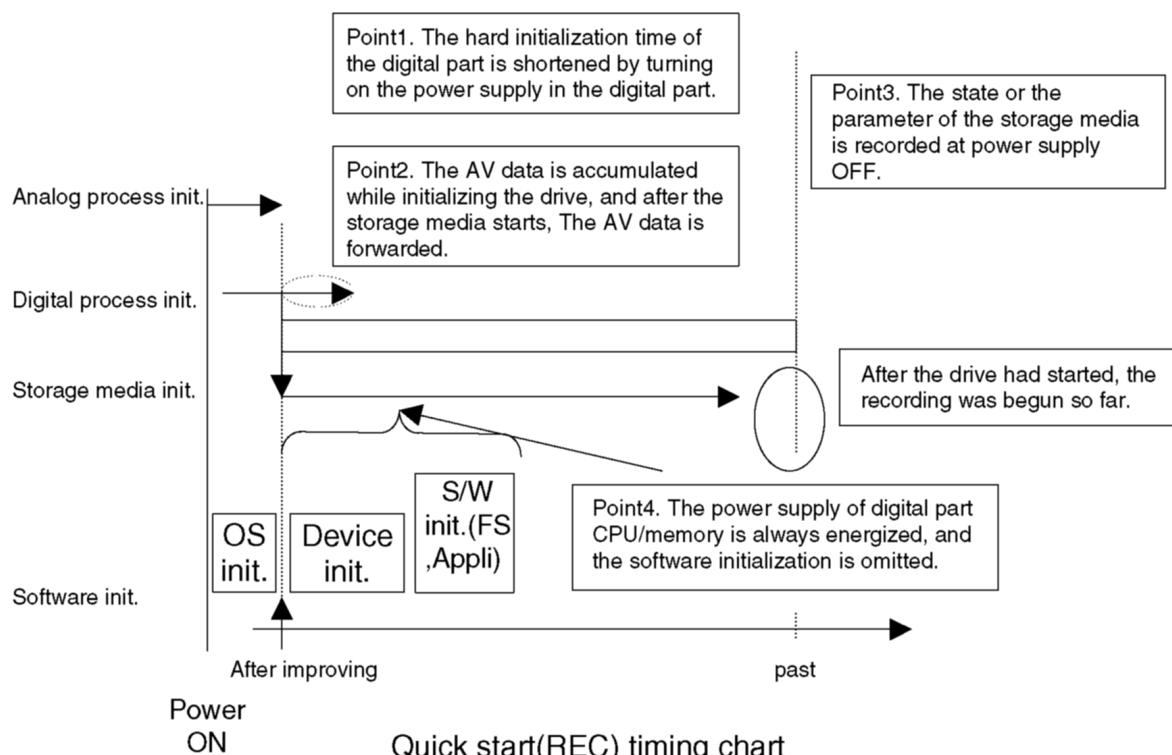
- 2.1. When the REC button is pushed a few second after the power button is pushed, Audio and Video data are stored in DDR SDRAM before a storage media (DVD-RAM) preparation.

\*Preparation time → DVD-RAM: About 8 seconds

- 2.2. After a storage media DVD-RAM preparation, Audio and Video data are transferred from DDR SDRAM to the storage media.



Quick start(REC) explanation chart



Quick start(REC) timing chart

## 9 (DVD) TAKING OUT THE DISC FROM RAM-DRIVE UNIT WHEN THE DISC CANNOT BE EJECTED BY BUTTON

### 9.1. (DVD) FORCIBLE DISC EJECT

#### 9.1.1. (DVD) WHEN THE POWER CAN BE TURNED OFF.

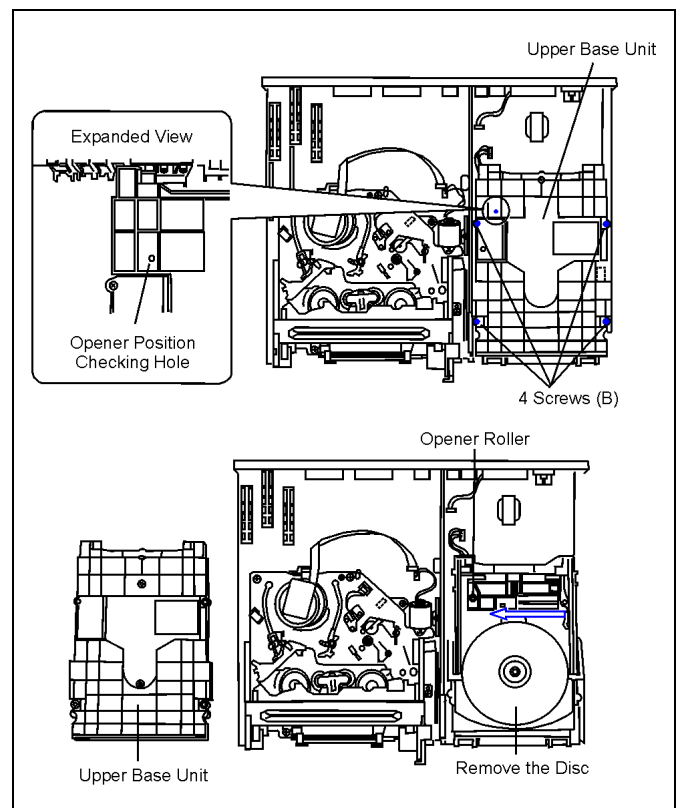
1. Turn off the power and press [(DVD) STOP], [(DVD) CH UP] keys on the front panel simultaneously for 5 seconds.

#### 9.1.2. (DVD) WHEN THE POWER CAN NOT BE TURNED OFF.

1. Press [POWER] key on the front panel for over 10 seconds to turn off the power forcibly and press [(DVD) STOP] [(DVD) CH UP] keys on the front panel simultaneously for 5 seconds.

### 9.2. (DVD) WHEN THE FORCIBLE DISC EJECT CAN NOT BE DONE.

1. Turn off the power and pull out AC cord.
2. Remove the Top Case.
3. Remove the Front Panel.
4. Remove 4 screws (B) and Upper Base Unit from DVD-RAM Drive.
5. Take out the disc and put the Opener Roller on fully position for direction of Arrow.
6. Put the Upper Base Unit so that the Opener Roller is inserted into the groove.
7. Check center of Opener Roller is seen through the Opener position Checking Hole, and tighten 4 screws (B).



## 10 (VHS) REMOVING OF CASSETTE TAPE

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

### 10.1. (VHS) REMOVAL BY COMPULSORY UNLOADING.

If Service Mode can be activated when the power can not be turned on, this operation is able.

1. Press [FF] and [EJECT] button simultaneously for more than 3 seconds and set the Service Mode to 7.
2. Press [STOP] button in order to unload the mechanism. (Pay attention to tape slack)

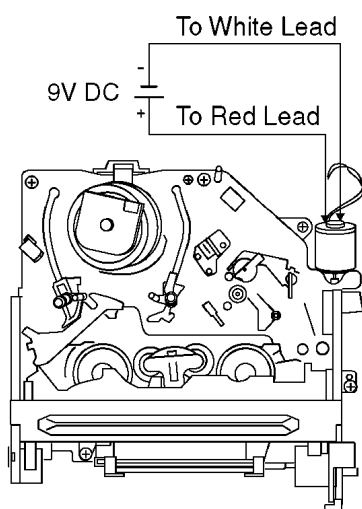
#### Service Mode Display:

7 \*\* \* (STOP) → 7 0L \*\* (EJECT)

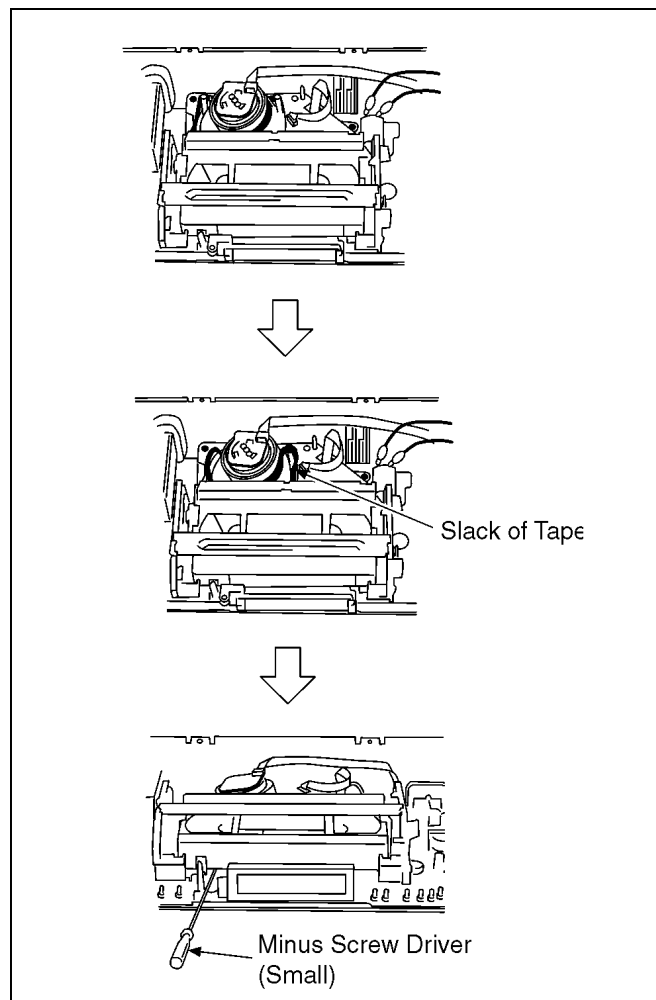
### 10.2. (VHS) REMOVAL BY MANUAL OPERATION.

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

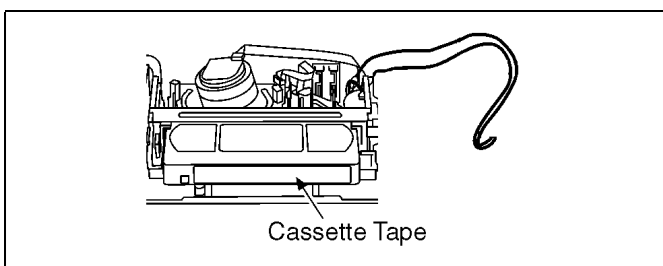
#### CONNECTION for UNLOADING



3. Stop unloading just before unloading will be completed. The tape becomes slack.
4. Rotate the S-Reel by a small minus screwdriver to remove the slack tape.



5. Then unload again to remove the cassette tape.

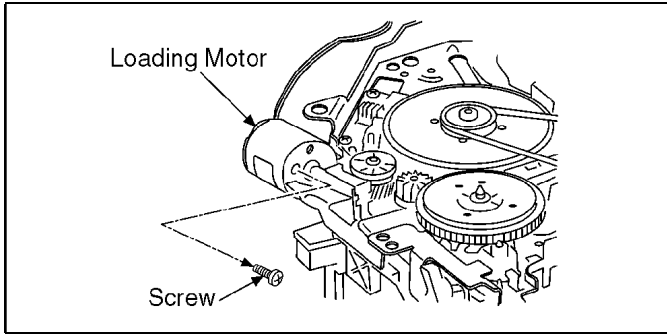




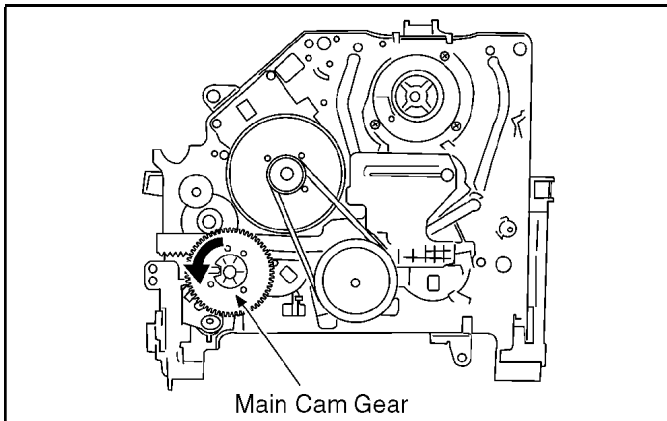
### 10.3. (VHS) TAKE OUT CASSETTE TAPE MANUALLY AFTER REMOVING THE MECHANISM

1. Disconnect the AC plug, and remove the Top Panel, Front Panel and the Mechanism by referring assembling and disassembling description.

2. Remove the Screw and remove the Loading Motor.

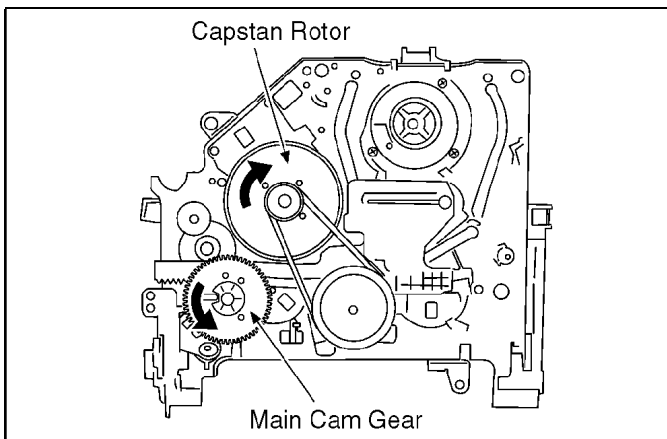


3. Rotate the Main Cam Gear counter-clockwise until just before the unloading will be completed.



4. Rotate the Capstan Motor clockwise to remove the slack tape.

5. Rotate the Main Cam Gear counter-clockwise again to remove the cassette-tape.



6. Attach Loading Motor and tighten the screw.

7. Set the Position Switch to EJECT POSITION certainly and attach the mechanism to chassis.

Fig. (B)

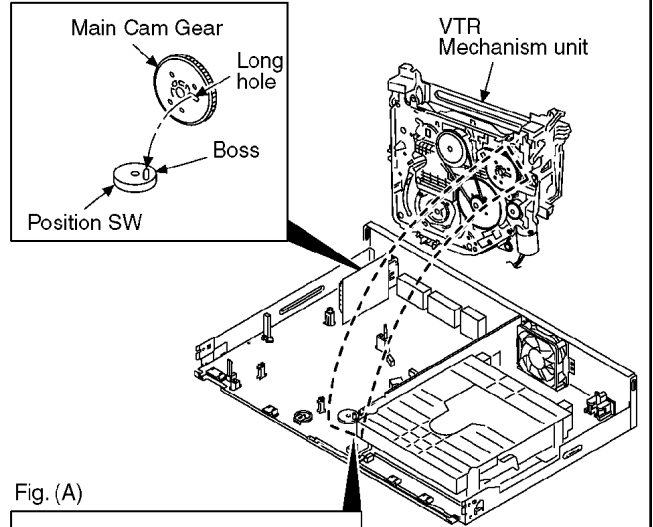
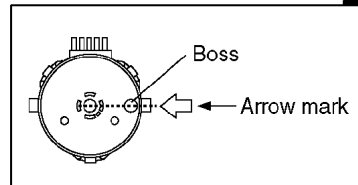


Fig. (A)



# 11 (DVD) SERVICE EXPLORER

## Confirm "RAM-Drive Last Error" in Service Mode

### Execute Service Mode

1. When the power is off, press [DVD DUBBING], [OPEN/CLOSE] and [STOP] keys simultaneously for 5 seconds.

FL Display:

SERV

\*After finishing display "(7). Factor of Drive Error occurring", press [0] [2] ~[1] [9] keys of the Remote Controller so that 19 memories can be displayed as maximum.

2. Press [4] [2] keys of remote controller.

### Example of FL Display:

- (1) Error Number is displayed for 5 seconds.

no 01

- (2) Time when the error has occurred is displayed for 5 seconds.

502161915

- (3) Last Drive Error (1/2) is displayed for 5 seconds.

031000

Error  
Sense Key

00: Bad disc  
03: Bad disc  
04: Bad disc or RAM-Drive malfunction

When above error codes are displayed, confirm operation with Panasonic RAM disc or Panasonic DVD-R disc.

\* If the operation is OK, judge the error is due to media.

\* If the operation is NG and symptom as BLOCK NOISES and so on, that are particular symptom of Digital appears, judge the error is due to RAM-Drive or Digital P.C.B. .

- (4) Last Drive Error (2/2) is displayed for 5 seconds.

00130000

- (5) Error occurring Disc type is displayed for 5 seconds.

DVDR

Disc type

\* The error disc cannot be specified, display as "DVD".

- (6) Disc Maker's ID is displayed for 5 seconds.

mXL R061

Example of Disc Maker's ID:

#### DVD-R Disc

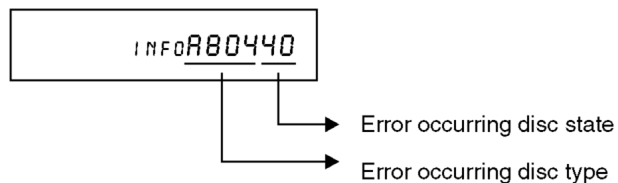
No.	FL Display (Disc Maker's ID)	Disc Maker	Country
1	MEI	Panasonic	Japan
2	PVC	Pioneer	Japan
3	MCC	Mitsubishi Chemical Corporation	Japan
4	TDK	TDK	Japan
5	MXL	Maxell	Japan
6	MCI	MITUI CHEMICALS	Japan
7	JVC	Victor JVC	Japan
8	TAIYOYUDEN TYG	Taiyo yuden	Japan
9	GSC	Giga Storage	Taiwan
10	PRODISC	Prodisc	Taiwan
11	PRINCO	PRINCO	Taiwan
12	RITEK	RITEK	Taiwan
13	OPTDISC	OPTDISC	Taiwan
14	LEAD DATA	LEAD DATA	Taiwan
15	CMC	CMC	Taiwan
16	AUVISTAR	AUVISTAR	Taiwan
17	ACER	Acer	Taiwan
18	VIVASTAR	VIVASTAR	Switzerland
19	LGE	LG Electronics	Korea

#### DVD-RAM Disc

No.	FL Display (Disc Maker's ID)	Disc Maker	Country
1	MEI	Panasonic	
2	MATSUSHITA	Panasonic	Japan
3	MXL	Maxell	Japan
4	PRODISC	Prodisc	Taiwan
5	OPTDISC	OPTDISC	Taiwan
6	CMC	CMC	Taiwan

\*Since an display is arbitrarily set up by the disk producer side, the above-mentioned display may be changed.  
Please make it reference as an example of a display.

(7) Factor of Drive Error occurring is left displayed



#### Error Occurring Disc Type

FL Display	Disc Type
00	DVD-ROM/Video
01	Audio-CD
02	2.6GB DVD-RAM
03	4.7GB DVD-RAM
04	DVD-R

**Error Occurring Disc State**

FL Displays (Hexadecimal)	Description			
	Disc distinction state	Cartridge disc state	Cartridge disc state	Disc size
00	OK	With cartridge	Has not been opened yet.	12 cm
10	OK	With cartridge	Has not been opened yet.	8 cm
20	OK	With cartridge	Has been opened.	12 cm
30	OK	With cartridge	Has been opened.	8 cm
40	OK	Bare	Has not been opened yet.	12 cm
50	OK	Bare	Has not been opened yet.	8 cm
60	OK	Bare	Has been opened.	12 cm
70	OK	Bare	Has been opened.	8 cm
80	NG	With cartridge	Has not been opened yet.	12 cm
90	NG	With cartridge	Has not been opened yet.	8 cm
A0	NG	With cartridge	Has been opened.	12 cm
B0	NG	With cartridge	Has been opened.	8 cm
C0	NG	Bare	Has not been opened yet.	12 cm
D0	NG	Bare	Has not been opened yet.	8 cm
E0	NG	Bare	Has been opened.	12 cm
F0	NG	Bare	Has been opened.	8 cm

# 12 (DVD) SELF-DIAGNOSIS AND SPECIAL MODE SETTING

## 12.1. (DVD) SELF-DIAGNOSIS FUNCTIONS

Self-Diagnosis Function provides information for errors to service personnel by "Self-Diagnosis Display" when any error has occurred.





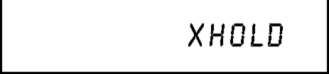
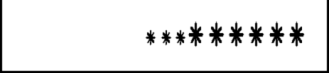
**U\*\*, H\*\* and F\*\* are stored in memory and held.**

Display on FL will be cancelled when the power is turned off or AC input is turned off during self-diagnosis display is ON.

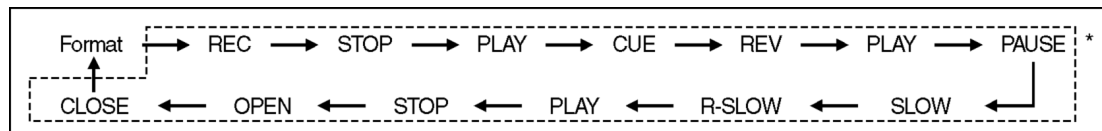
Error Code	Diagnosis contents	Description	Monitor Display	FL display
U30	Remote control code error	Display appears when main unit and remote controller codes are not matched.	No display	<div>REMOTE MODE **</div> <p>"**" is remote controller code of the main unit. Display for 5 seconds.</p>
U59	Abnormal inner temperature detected	Display appears when the drive temperature exceeds 70°C. The power is turned off forcibly. For 30 minutes after this, all key entries are disabled. (Fan motor operates at the highest speed for the first 5 minutes. For the remaining 25 minutes, fan motor is also stopped.) The event is saved in memory as well.	No display	<div>U59</div> <p>"U59" is displayed for 30 minutes.</p>
U99	Hang-up	Displayed when communication error has occurred between Main microprocessor and Timer microprocessor.	No display	<div>U99</div> <p>Displayed is left until the [POWER] key is pressed.</p>
H19	Inoperative fan motor	Display appears when inoperative fan motor is detected after powered on. The power is turned off when detecting.	No display	No display
F00	No error information	Initial setting for error code in memory (Error code Initialization is possible with error code initialization and main unit initialization.)	No display	No display
F58	Drive hardware error	Display appears when drive unit error is detected. The event is saved in memory.	No display	No display
F34	Initialization error when main microprocessor is started up for program recording	Display appears when initialization error is detected after starting up main microprocessor for program recording. The event is saved in memory. The power is turned off when detecting.	No display	No display
UN-SUPPORT	Unsupported disc error	*An unsupported format disc was played, although the drive starts normally. *The data format is not supported, although the media type is supported. *Exceptionally incase of the disc is dirty.	"This disc is incompatible."	<div>UNSUPPORT</div> <p>Display for 5 seconds.</p>
NO READ	Disc read error	*A disc is flawed or dirty. *A poor quality failed to start. *The track information could not be read.	"Cannot read. Please check the disc."	<div>NO READ</div>
HARD ERR	Drive error	The drive detected a hard error.	"DVD drive error."	<p>Display for 5 seconds.</p> <div>HARD ERR</div>
SELF CHECK	Restoration operation	Since the power cord fell out during a power failure or operation, it is under restoration operation. *It will OK, if a display disappears automatically. If a display does not disappear, there is the possibility that defective Digital P.C.B. / RAM drive.	No display	<div>SELF CHECK</div>
Full Program	16 programs are already set.	16 programs are already set.	No display	<div>PROG FULL</div>

Error Code	Diagnosis contents	Description	Monitor Display	FL display
UN-FORMAT	The disc is not formatted	You have inserted an unformatted DVD-RAM or DVD-RW that is unformatted or recorded on other equipment. If you will use this disc, format is necessary. But, all programs recorded on this disc will be deleted.	Format: This disc is not formatted properly. Format the disc in DISK MANAGEMENT?	<i>UN FORMAT</i>
F60	DVD module has not been started.	Defect of Digital P.C.B. . Mode: No change	No display	<i>F60</i>

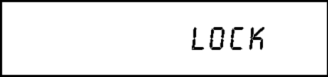
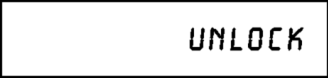
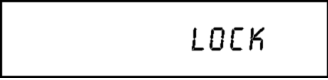

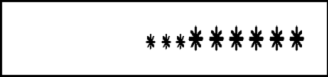
## 12.2. (DVD) SPECIAL MODES SETTING

Item		FL display	Key operation
Mode name	Description		Front Key
TEST Mode	*All the main unit's parameters (include tuner) are initialized.		Press [VHS to DVD DUBBING], [OPEN/CLOSE] and [(DVD)REC] keys simultaneously for five seconds when power is off.
Service Mode	Setting every kind of modes for servicing. *Details are described in "12.3. (DVD) Service Mode".		When the power is off, press [VHS to DVD DUBBING], [OPEN/CLOSE] and [(DVD) STOP] keys simultaneously for 5 seconds.
Rating password	The audiovisual level setting password is initialized to "Level 8".		While the tray is open, press [(DVD) REC] and [(DVD) PLAY] simultaneously for five seconds.
Forced disc eject	Removing a disc that cannot be ejected. The tray will open and unit will shift to P-off mode. *When Timer REC is ON or EXT-LINK is ON, execute "Forced disc eject" after releasing TimerREC or EXT-LINK. *This command is not effective during "Child lock" is ON.	The display before execution leaves. 	When the power is off, press [(DVD) STOP] and [(DVD) CH UP] keys simultaneously for five seconds.
Child lock/unlock	Set or release "Child Lock".		Press [ENTER] and [RETURN] by remote controller simultaneously until [X-HOLD] is displayed.
NTSC/PAL system select	To switch PAL/ NTSC alternately.	The display before execution leaves. 	When the power is on (E-E mode), press [DVD STOP] and [OPEN/CLOSE] simultaneously for five seconds.
Forced power-off	When the power button is not effective while power is ON, turn off the power forcibly. *When Timer REC is ON, execute "Forced Power-off" after releasing Timer REC or EXT-LINK. Action: The tray will open, and the power will turn off.	Display in P-off mode.	Press [Power] key over than 10 seconds.
Aging	Perform sequence of modes as * Aging Description shown below continually.	Display following the then mode.	When the power is ON, press [VHS to DVD DUBBING], [(DVD) CH DOWN] and [OPEN / CLOSE] simultaneously for over five seconds and less than 10 seconds. *When the unit has hung-up because of pressing keys for over 10 seconds, once turn off the power, and re-execute this command. "When releasing Aging mode, press [POWER] key.

### Aging Contents (Example):



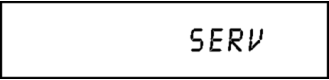



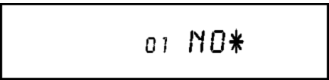
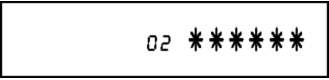
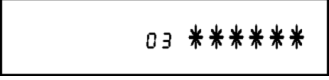
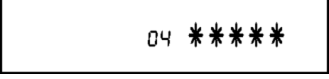
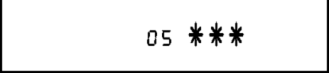
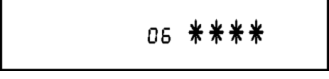
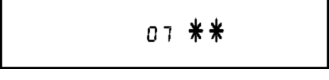
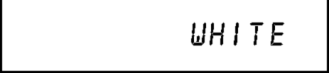
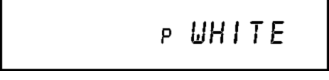
- \* XP mode ... repeat twice  
 SP mode ... repeat 4 times  
 LP mode ... repeat 8 times  
 EP mode ... repeat 12 times

Item		FL display	Key operation
Mode name	Description		Front Key
Demonstration lock/unlock	Ejection of the disc is prohibited. The lock setting is effective until unlocking the tray and not released by "Main unit initialization" of service mode.	*When lock the tray. 	When the power is on, press [(DVD) STOP] and [POWER] keys simultaneously for five seconds.
		"LOCK" is displayed for 3 seconds. *When unlock the tray. 	When the power is on, press [(DVD) STOP] and [POWER] keys simultaneously for five seconds.
		"UNLOCK" is displayed for 3 seconds. *When pressing [OPEN/CLOSE] key while the tray is locked. 	Press [OPEN/CLOSE] key while the tray is locked.
		Display "LOCK" for 3 seconds.	
ATP re-execution	Re-execute ATP.		When the power is on (E-E mode), press [(DVD) CH UP] and [(DVD) CH DOWN] simultaneously for five seconds.
Progressive initialization	The progressive setting is initialized to Interlace.	The display before execution leaves. 	When the power is on (E-E mode), press [VHS to DVD DUBBING] and [(DVD) STOP] simultaneously for five seconds.









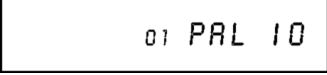
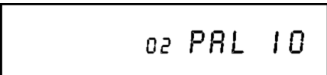
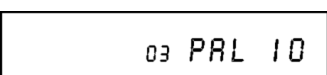
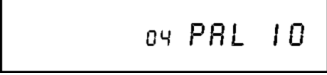
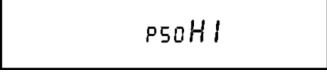
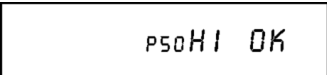
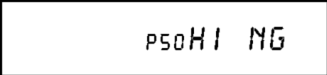
## 12.3. (DVD) SERVICE MODES

Service mode setting: While the power is off, press [DVD DUBBING], [OPEN/CLOSE] and [DVD STOP] keys simultaneously for five seconds.

Item		FL display	Key operation
Mode name	Description		(Remote controller key)
Release Items	Item of Service Mode executing is cancelled.		Press [0] [0] or [Return] in service mode.
Error Code Display	Last Error Code of U59/H/F held by Timer is displayed on FL. *Details are described in “12.1. (DVD) Self-Diagnosis Functions”.	 *  shows U/H/F  shows number	Press [0] [1] in service mode
ROM Version Display	(01)Region code, (02)MAIN firmware version, (03)TIMER firmware version, (04)DRIVE firmware version, (05)ROM correction version, (06)VHS microprocessor version are displayed on FL for five seconds per each version in order, but (07)VHS ROM correction version will be left displayed.	(01)Region code   (02)MAIN firmware version   (03)TIMER firmware version   (04)DRIVE firmware version   (05)ROM correction version+ROM Type   (06)VHS microprocessor version   (07)VHS ROM correction version   * are version displays	Press [0] [2] in service mode
White Picture Output	White picture is output as component Output from AV Decoder. *White picture (Saturation rate: 100%) *It is enable to switch Interlace/Progressive by “I/P Switch: [1] [4]”	*Initial mode is “Interlace”.   Switch Interlace/Progressive 	Press [1] [1] in service mode.  Press [1] [4] in White Picture Output mode. *I/P are switched alternately.

Item		FL display	Key operation
Mode name	Description		(Remote controller key)
Magenta Picture Output	Magenta picture is output with Component Output from AV Decoder. *Magenta picture (Saturation rate: 100%) *It is enable to switch Interlace/Progressive by "I/P Switch: [1] [4]"	*Initial mode is "Interlace". <div>MAGE</div>	Press [1] [2] in service mode.
		Switch Interlace/Progressive <div>P MAGE</div>	Press [1] [4] in Magenta Picture Output mode. *I/P are switched alternately.
RTSC Return in XP (A & V)	AV1 input signal is encoded (XP), decoded (XP) and output decoded signal to external without DISC recording and DISC playback.	Initial mode: EE2/ Interlace/ XP/ Audio 48kHz <div>48 EE2 XP</div>	Press [1] [3] in service mode.
		Switch Interlace/Progressive <div>48P EE2 XP</div>	Press [1] [4] in RTSC Return XP mode. *I/P are switched alternately.
		Audio 44.1 kHz/ 48 kHz Switch <div>44 EE2 XP</div>	Press [2] [4] in RTSC Return XP mode. *48 kHz / 44.1 kHz are switched alternately.
I/P Switch	Switch Interlace and Progressive in EE mode. *Initial setting is "Interlace". *This command is effective during executing "White Picture Output", "Magenta Picture Output" and "RTSC Return in XP (A & V)" modes.	Initial mode is Interlace <div>14 SERV</div>	Press [1] [4] in I/P Switch mode. *I/P are switched alternately.
		Switch Interlace/Progressive <div>14P SERV</div>	
Audio Mute (XTMUTE)	Check whether mute is applied normally by the timer microprocessor.	<div>T-MUTE</div>	Press [2] [1] in service mode.
Audio Mute (XDMUTE)	Check whether mute is applied normally by the Digital P.C.B. (GLUE IC).	<div>D-MUTE</div>	Press [2] [2] in service mode.
Audio Pattern Output	The audio pattern stored in the internal memory is output (Lch: 1kHz/-18dB) (Rch: 400Hz/-18dB) *Audio sound clock switching operation of DAC can be confirmed by sub command [2] [4].	Initial mode (Audio 48kHz) <div>48 AUDIO</div>	Press [2] [3] in service mode.
		Audio 44.1kHz/48kHz switching <div>44 AUDIO</div>	Press [2] [4] in Audio Pattern Output mode. *48 kHz / 44.1 kHz are switched alternately.
Laser Used Time Indiction	Check laser used time (hours) of drive.	<div>ERR *****</div> I(***** ) is the used time display in hour. ILaser used time of DVD/CD in Playback/Recording mode is counted.	Press [4] [1] in service mode.
Delete the Laser Used Time	Laser used time stored in the memory of the unit is deleted.	<div>CLR LASER</div>	Press [9] [5] in service mode.

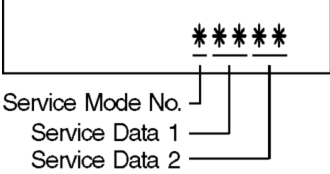
Item		FL display	Key operation
Mode name	Description		(Remote controller key)
RAM Drive Last Error	RAM Drive error code display. *For details about the drive error code, refer to the Service Manual for the specific RAM Drive. *Details are described in "11. (DVD) Service Explorer".	<p>1. Error Number is displayed for 5 seconds.</p> <div>NO **</div> <p>2. Time when the error has occurred is displayed for 5 seconds.</p> <div>YmmDDHHmm</div> <p>Y: Year MM: Month DD: Day hh: Hour mm: Minute</p> <p>3. Last Drive Error (1/2) is displayed for 5 seconds.</p> <div>*****</div> <p>4. Last Drive Error (2/2) is displayed for 5 seconds.</p> <div>*****</div> <p>5. Error occurring Disc type is displayed for 5 seconds.</p> <div>*****</div> <p>6. Disc Maker ID is displayed for 5 seconds.</p> <div>*****</div> <p>7. Factor of Drive Error occurring is left displayed</p> <div>IFO*****</div>	<p>Press [4] [2] in service mode. Then press [0] [1] ~ [9] [9], the past 99 errors are displayed.</p> <p>In case that the supplier cannot be identified, display is black out.</p>
Delete the Last Drive Error	Delete the Last Drive Error information stored on the DVD RAM-Drive.	<div>CLRDRIVE</div>	Press [9] [6] in service mode.
Turn on all FL/LEDs	All segments of FL and all LEDs are turned on.	All segments are turned on.	Press [5] [1] in service mode.
PB HIGH Signal Output	8 pin of AV 1 Jack (PB HIGH terminal) is High (approx. 11V DC).	<div>PBHIGH</div>	Press [5] [2] in service mode.
PB MIDDLE Signal Output	8 pin of AV 1 Jack (PB HIGH terminal) is Middle (approx. 5.5V DC).	<div>PBMIDDLE</div>	Press [5] [3] in service mode.
Front connection inspection	Press all front keys and check the connection between Main P.C.B. and Front P.C.B.	<div> <div>07**</div> <div>07**</div> <div>(1) (2) (1) (2)</div> </div> <p>(1) Each time a key is pressed, segment turned on increases one by one. (2) Total number of keys that have been pressed.</p>	Press [5] [4] in service mode.

Item		FL display	Key operation
Mode name	Description		(Remote controller key)
Production Date Display	Display the date when the unit was produced.	 YYY: Year MM: Month DD: Day	Press [6] [1] in service mode.
Display the accumulated working time	Display the accumulated unit's working time.	 (Indicating unit: Second)	Press [6] [4] in service mode.
Display the Error History	Display the Error History stored on the unit.	Display reason of error for 5 seconds.  Display the time when the error has occurred for 5 seconds.  Y: Year MM: Month DD: Day HH: Hour MM: Minute Accumulated working time till occurring of the error is left displayed.  (Indicating unit: Second)	Press [6] [5] in service mode. Then press [0] [1] ~ [1] [9], the past 19 error histories are displayed.
Delete the Error History	Delete Error History information stored on the unit.		Press [9] [7] in service mode.
AV4 (V) / AV1 (RGB) I/O Setting	Set input to AV4(V) and set output to AV1(RGB) for I/O checking		Press [8] [0] in service mode.
AV2 (Y/C) / AV1 (V) I/O Setting	Set input to AV2(Y/C) and set output to AV1(V) for I/O checking		Press [8] [1] in service mode.
AV2 (V) / AV1 (Y/C) I/O Setting	Set input to AV2(V) and set output to AV1(Y/C) for I/O checking		Press [8] [2] in service mode.
AV2 (RGB) / AV1 (V) I/O Setting	Set input to AV2(RGB) and set output to AV1(V) for I/O checking		Press [8] [3] in service mode.
P50 (H) Output	Timer Microprocessor IC7501-22 output High signal for AV1-pin 10 passing through inverter (approx. 0V DC at AV1-pin 10).	 When OK.  When NG. 	Press [8] [4] in service mode.

Item		FL display	Key operation
Mode name	Description		(Remote controller key)
P50 (L) Output	Timer Microprocessor IC7501-22 output Low signal for AV1-pin 10 passing through inverter (approx. 4.4 V DC at AV1-pin 10).	<div>P50LOW</div> <p>When OK.</p> <div>P50LOW OK</div> <p>When NG.</p> <div>P50LOW NG</div>	Press [8] [5] in service mode.
Tray OPEN/CLOSE Test	The RAM drive tray is opened and closed repeatedly.	<div>*****</div> <p>** is number of open/close cycle times.</p>	Press [9] [1] in service mode *When releasing this mode, press the [POWER] button on Front Panel more than 10 seconds.
Error code initialization	Initialization of the last error code held by timer (Write in F00)	<div>CLRE-CODE</div>	Press [9] [8] in service mode.
Initialize Service	Last Drive Error, Error history and Error Codes stored on the unit are initialized to factory setting. Then VHS Microprocessor is initialized to shipping setting too.	<div>CLRSERV</div>	Press [9] [9] in service mode.
Finishing service mode	Release Service Mode.	<p>Display in STOP (E-E) mode.</p> <div>*****</div>	Press power button on the front panel in service mode.

# 13 (VHS) SELF-DIAGNOSIS AND SPECIAL MODE SETTING

## 13.1. (VHS) SPECIAL MODES SETTING

Item		FL display	Key operation
Mode name	Description		Front Key
Tracking Center	Tape Tracking is adjusted to center FIX position.	No display.	During PLAYBACK, press [VHS CH UP] and [VHS CH DOWN] keys simultaneously.
VHS Service Mode	In order to make service easy, a part of inside information of a microprocessor is displayed on FIP. *Details are described in "13.2. VHS Service Mode".		Press [FF], and [EJECT] keys simultaneously for three seconds when power is off.
Releasing EXT LINK & Timer Program	Releasing Continuation EXT LINK & Continuation Timer Program	No display.	While in EXT LINK or Timer REC mode, press [VHS STOP] key for 3 seconds.
Eject	Ejecting Cassette Tape	No display.	While in other than Timer REC mode, press [VHS STOP] key for 3 seconds or press [STOP] key of the Remote Controller for 3 seconds in VHS mode.

## 13.2. (VHS) SERVICE MODES

### (Service Mode Setting)

- When power is OFF, press [FF] and [EJECT] keys simultaneously for 3 seconds to into Service Mode.
- In Service Mode, press [FF] and [EJECT] keys simultaneously to add Service Number.

Service Mode Number	Contents	Contents of Indication on minute	Contents of Indication on second	Remarks
0	Indication for the inner data of IC6001	VHS mode (Real time)	Process number of the mechanism movement (Real time)	
1	Indication for the inner data of IC6001	Tape beginning and ending detection data (Real time) 00: Both tape beginning and ending have not been detected 01: Tape ending is detecting now 02: Tape beginning is detecting now 03: Both tape beginning and ending are detecting now	Key code (Real time)  Indicate the receiving code when the key of VCR or remote controller being operated.	
2	Indication for the inner data of IC6001	Mechanism position (Real time) 0L: EJECT position 02: DOWN position 03: RREW position 04: LOAD position 05: REV position 06: PLAY position 07: POFF position 08: STOP_R position 09: STOP_F position 0- : FF/REW position 0_ : Intermediate between each positions	Ordering for the Motors (Real time) 0*, 2*: CYL off, CAP off 1*: CYL off, CAP on (fwd) 3*: CYL off, CAPon (rev) 8*, A*: CYL on, CAP off 9*: CYL on, CAPon (fwd) B*: CYL on, CAP on (rev)  *0: Motor off *1: Loading *2: Unloading *3: Break (Load + Unload)	The following functions are prohibited to operate the mechanism without cassette tape. ITape beginning and ending detection. IReel lock detection ITape detection and tape position detection  Press the EJET key for over 3 seconds in this mode, and then the VCR is shifted into the special modes, such as PG Adjustment, Model Code Setting, and so on. The orders for the motors are asfollows.
3	Self-diagnosis history (1st)	1st history of error number	"- -" is displayed.	
4	Self-diagnosis history (2nd)	2nd history of error number	"- -" is displayed	
5	Self-diagnosis history (3rd)	3rd history of error number	"- -" is displayed	
6	Indication for the inner data of IC6001	Servo data (4 digits) (Real time)		

Service Mode Number	Contents	Contents of Indication on minute	Contents of Indication on second	Remarks
7	Manual mechanism operation	Mechanism position (Real time) 0L: EJECT position 02: DOWN position 03: RREW position 04: LOAD position 05: REV position 06: PLAY position 07: POFF position 08: STOP_R position 09: STOP_F position 0- : FF/REW position 0 _ : Intermediate between each positions	Ordering for the Motors 0*, 2*: CYL off, CAP off 1*:CYL off, CAP on (fwd) 3*: CYL off, CAPon (rev) 8*, A*: CYL on, CAP off 9*: CYL on, CAPon (fwd) B*: CYL on, CAP on (rev) *0: Motor off *1:Loading *2: Unloading *3: Break (Load + Unload)	Press the following key; PLAY key: Loading STOP key: Unloading

### 13.3. (VHS) SELF-DIAGNOSIS FUNCTIONS

This model has a self-diagnosis. If the VHS section detects trouble during installation or during use, the power is automatically turned off or become power-save mode and it is memorized into the EEPROM (IC9705) as error code of two-digit number. Its memorized error code can be displayed in "second" display portion (the last 2 digits of the FIP) by placing the unit in Service Mode Number 2 when turning on the Service Information Display as for example "01" or "02" etc. as below. If a second error occurs, the most recent error will be memorized and can be displayed in Service Mode Number 2. It can be memorized until 3 self-diagnosis histories in maximum.

In order to erase the memorized error code, press FF and EJECT buttons on the Front Panel simultaneously over 5 seconds during turning on Service Information Display mode.

#### 13.3.1. MEMORY OF THE SELF-DIAGNOSIS HISTORY

\*This is effective only in Service Mode 3, 4, 5.

##### 13.3.1.1. ERROR NUMBERS AT A GLANCE

Memory No. (Error Code)	Reason
01	The cylinder could not be started. (Error of the cylinder or the cylinder driver.)
02	The CAP FG could not be detected.
03	Mechanism lock during without the unloading and the cassette-up.
04	Mechanism lock during unloading
05	S-reel pulse cannot be detected during unloading. (Error of the S-reel circuit or the Capstan circuit)
06	Mechanism lock during the Cassette-up.
15	S-reel pulse cannot be detected when a cassette tape is inserted. (Error of the S-reel circuit or the Capstan circuit)
16	Detection of the Cylinder lock during the constant rotation
17	Detection of S-reel lock during the constant tape running
18	Detection of T-reel lock during the constant tape running
2*	An error while the PG Automatic Adjustment
Refer to following table	
80	An exceptional ejection depends on a accidental error

**Note:**

2\* is as follows.

20	NG1 in the PG Shifter Automatic Adjustment (The cylinder rotation is unstable during the automatic adjustment.)
21	NG2 in the PG Shifter Automatic Adjustment (The vertical sync signal is lacked while over 5 seconds on the alignment tape.)
22	NG3 in the PG Shifter Automatic Adjustment (The installing position of Heads to the cylinder is out of specification.)
23	NG4 in the PG Shifter Automatic Adjustment (The servo is not locked to the cylinder for more than 10 sec.)

##### 13.3.1.2. MEMORY FOR THE SELF-DIAGNOSIS HISTORY

3. The self-diagnosis result is memorized the state of the moment of detecting.

4. There are the histories from number 1 to number 3.

5. The latest error is memorized on history number 1, and then the old histories are shifted to the history number 2 and 3.

The error code memorized in the history number 2 and 3 is over-written by shift.

4. If the latest error is the same with the history number 1 (2nd-latest), it is not memorized.

(The same error code is not memorized in succession)

##### 13.3.1.3. CLEAR FOR THE SELF-DIAGNOSIS HISTORY

1. Press FF and EJECT buttons on the VCR simultaneously over 5 seconds during turning on Service Information Display mode.

##### 13.3.1.4. INDICATION OF THE SELF-DIAGNOSIS HISTORY

The self-diagnosis histories can be indicated on the FIP with Service Mode number 3 to 5.

The procedure of service mode setting and indication format are the same as usual.



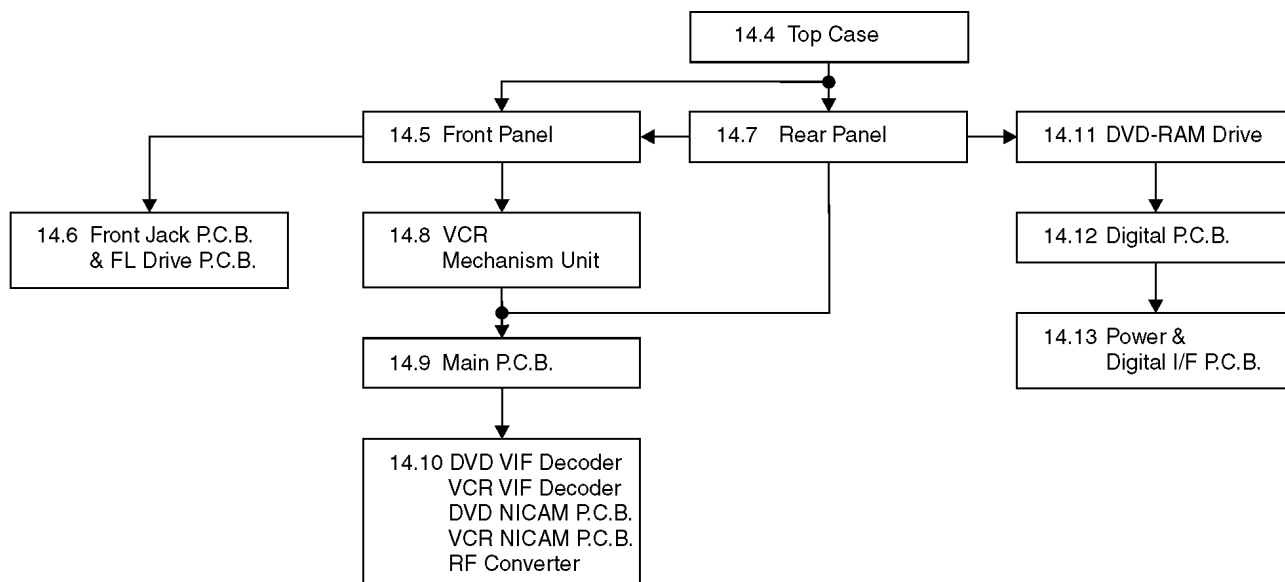
FIP INDICATION: <b>4</b> <b>0</b> <b>3</b> <b>-</b> <b>-</b>				
Hour of one-digit	Minute of two-digit	Minute of one-digit	Second of two-digit	Second of one-digit
Service mode number	Error code		—	—
3	Error code of history 1 (the latest)		—	—
4	Error code of history 2 (2nd latest)		—	—
5	Error code of history 3 (3rd latest)		—	—

The Error code of history 1, 2 and 3 can be indicated by selecting the Service mode 3, 4 and 5.  
In case of no error code in the memory, it is indicated as "00".

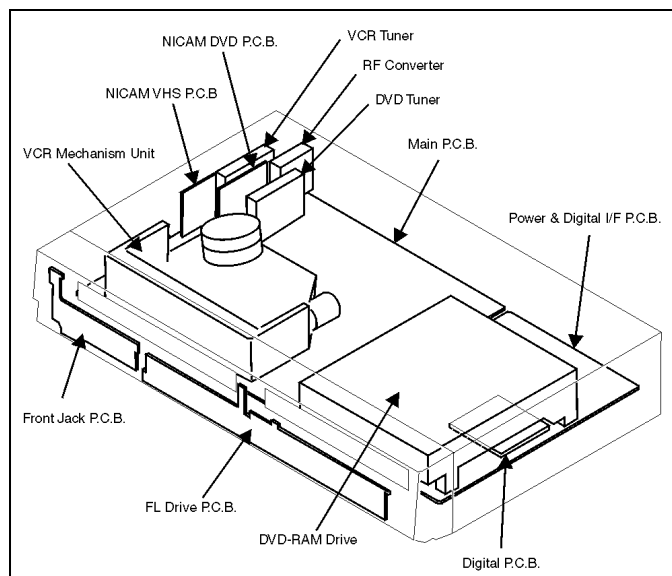
# 14 ASSEMBLING AND DISASSEMBLING

## 14.1. DISASSEMBLY FLOW CHART

The following chart is the procedure for disassembling the casing and inside parts for internal inspection when carrying out the servicing. To assemble the unit, reverse the steps shown in the chart below.



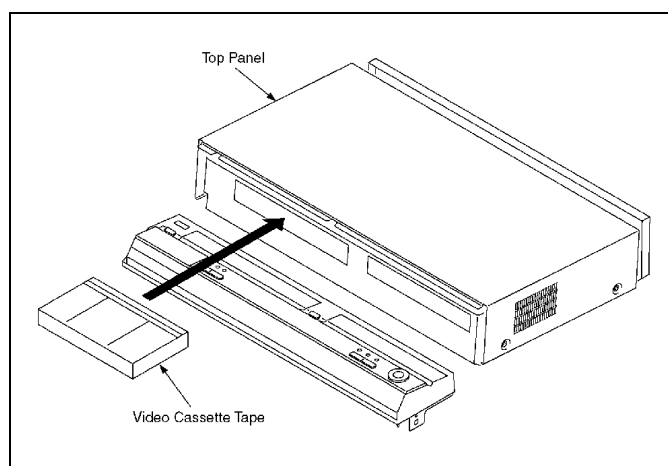
## 14.2. P.C.B. POSITIONS



## 14.3. CAUTION WHILE INSERTING CASSETTE TAPE WHEN DISASSEMBLING THE UNIT

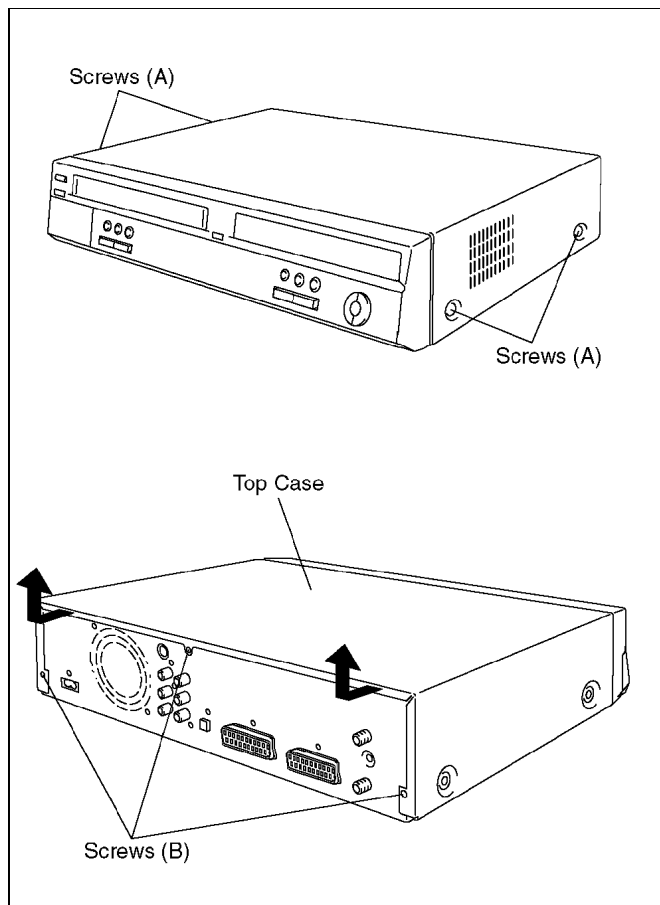
### NOTE:

Video Cassette might not enter when a strong lighting is applied to VHS Mechanism when Video Cassette is inserted. Please weaken the lighting or cover with the top panel etc.



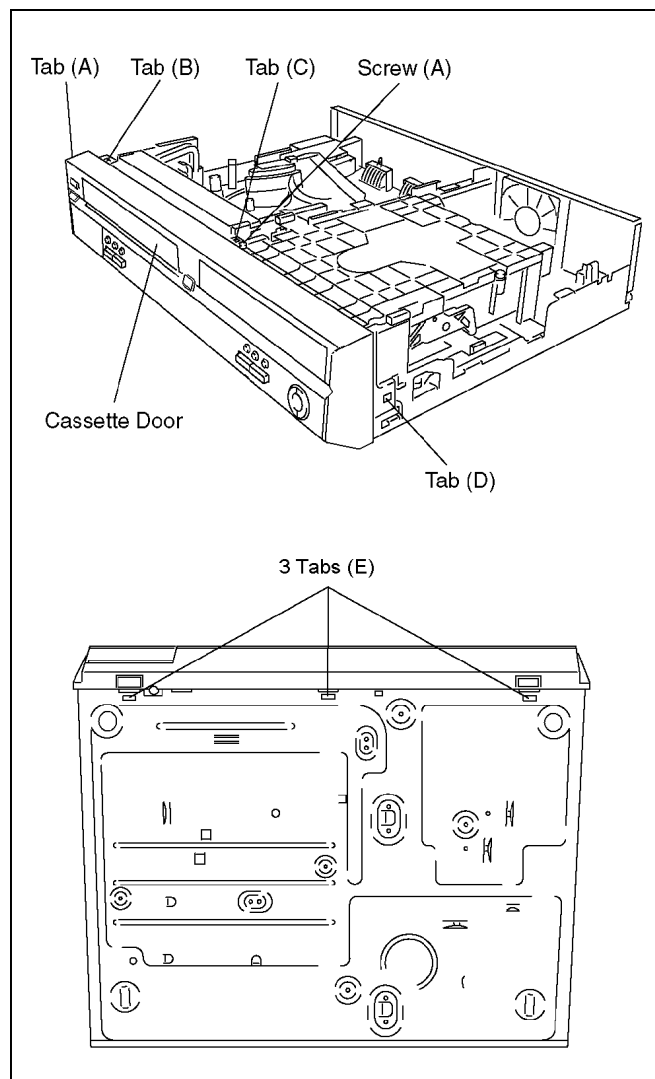
## 14.4. TOP CASE

1. Remove the 4 screws (A) and 3 screws (B).
2. Slide the Top Case for rear direction slightly, and open the both ends at rear side of the Top Case a little and lift up the Top Case for the direction of the arrows.



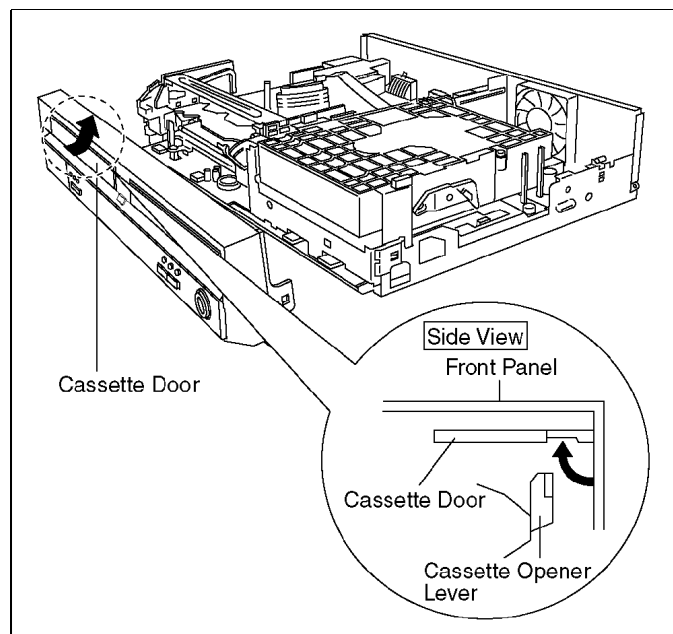
## 14.5. FRONT PANEL

1. Remove one screw (A).
2. Unlock tab (A) and tab (B) simultaneously.
3. Unlock tab (C) and tab (D) simultaneously.
4. Unlock 3 tabs (E) respectively and pull out Front Panel with connector slightly.



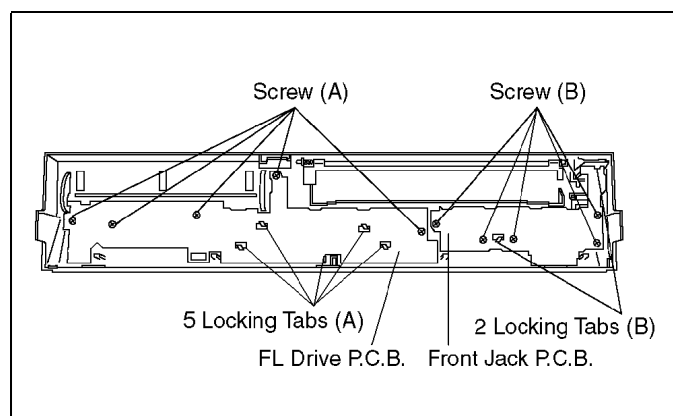
**Note:**

When attaching Front Panel, in order to hook Cassette Door Opener Lever to Cassette Door, push up cassette door in the direction of arrow and insert a front panel.



## 14.6. FRONT JACK P.C.B. & FL DRIVE P.C.B.

1. Remove one 5 screws (A) and unlock 5 Locking Tabs (A) to remove FL Drive P.C.B. .
2. Remove one 5 screws (B) and unlock 2 Locking Tabs (B) to remove Front Jack P.C.B. .



## 14.7. REAR PANEL & FAN MOTOR

1. Remove 5 Screws (A), Screw (B), 2 Screws (C) and Fan Connector.
2. Unlock 2 Locking Tabs to remove Rear Panel with Fan Motor.
3. Attention when inserting Rear Panel:  
Don't shut the Fan Cable Fig. 2 between Rear Panel and Chassis.  
Check that the Locking Tabs Fig. 1 on both sides on the Rear Panel snap into the holes of the Chassis.

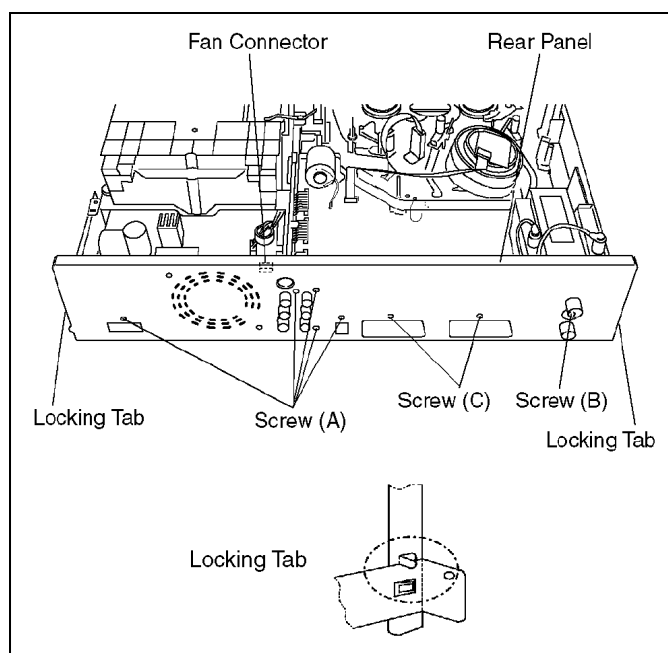


Fig. 1

### 14.7.1. ONLY FAN MOTOR

1. Remove 2 Screws and Fan Connector to remove Fan Motor.

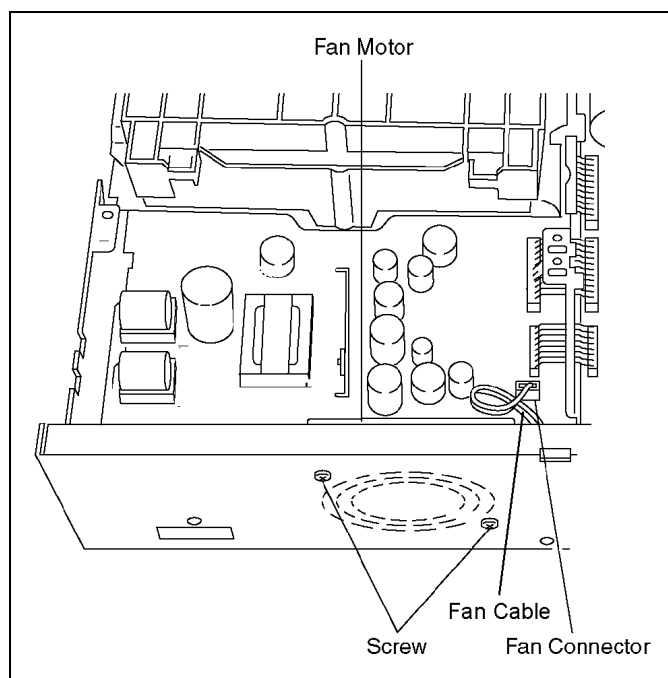


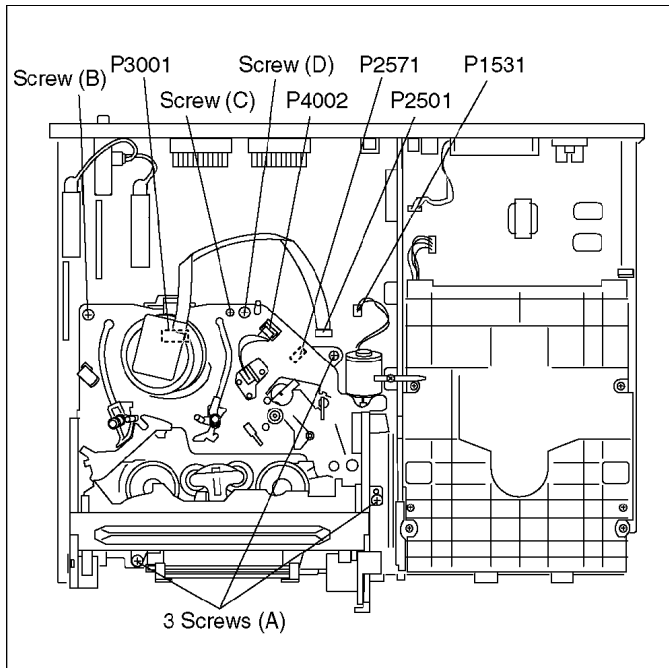
Fig. 2

## 14.8. VCR MECHANISM UNIT

1. Disconnect 3 Connectors (P1531, P2501 and P4002).
2. Remove 3 Black Screws (A), Screw (B), Screw (C) and Screw D).
3. Lift up VCR Mechanism Unit perpendicularly so to disconnect Connectors (P2571 and P3001).

### Note:

When you lift up VCR Mechanism Unit, because connections of P2501 and P3001 are tight, pay attention to that.



### 14.8.1. CAUTION FOR ATTACHING VCR MECHANISM UNIT

1. Because Position SW should be set to "Eject Position", refer to fig.(A) and set the position switch so that the boss and arrow mark come on a straight line.
2. Attach VCR Mechanism Unit so that Boss of Position SW is put into long hole of Main Cam Gear, refer to Fig. (B).

Fig. (B)

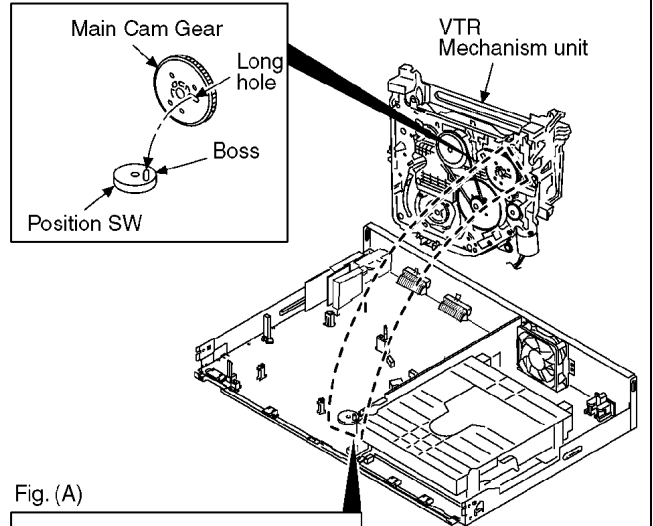
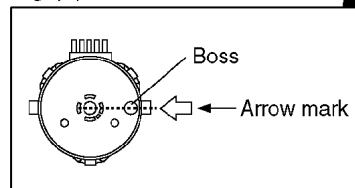
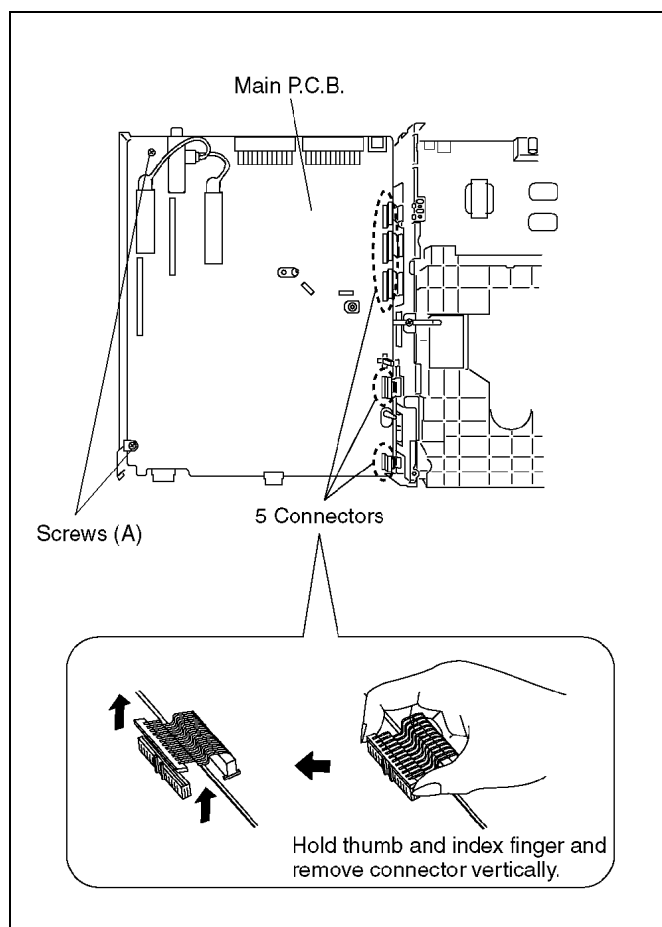


Fig. (A)



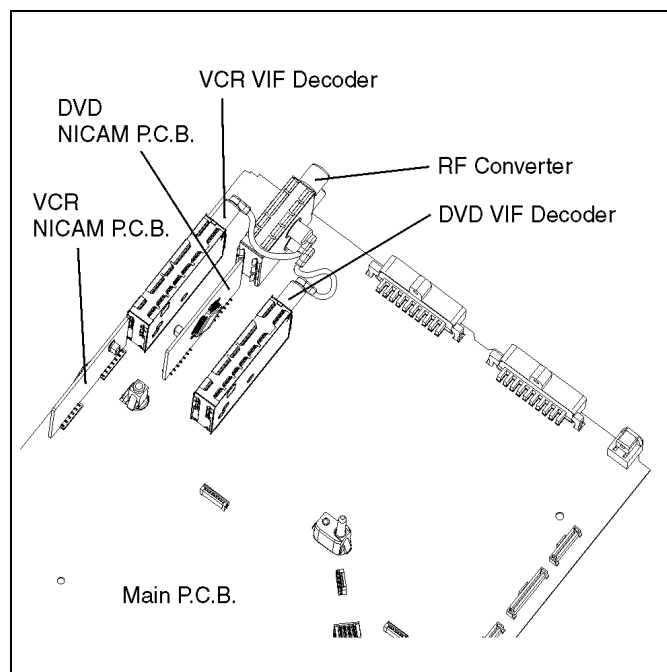
## 14.9. MAIN P.C.B.

1. Disconnect 5 Connectors.
2. Remove 2 Screws (A), and remove Main P.C.B.



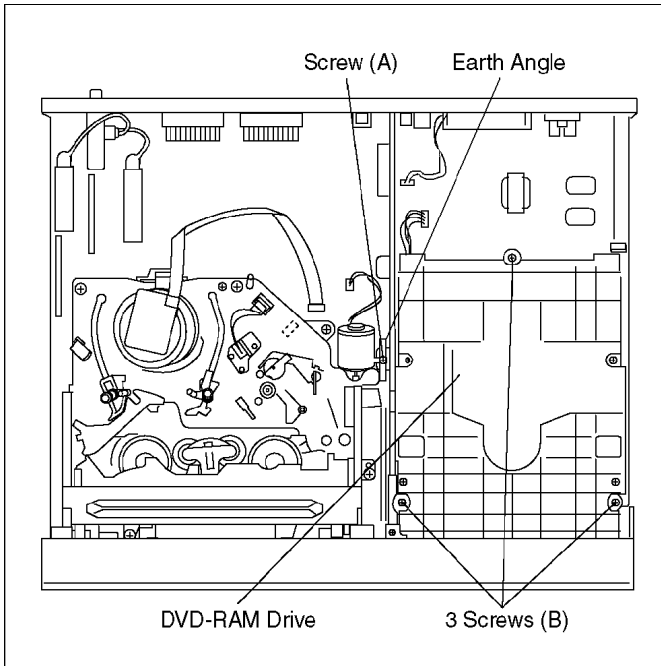
## 14.10. DVD VIF DECODER, VCR VIF DECODER, VCR NICAM P.C.B., DVD NICAM P.C.B.

1. Remove the solders.
2. Pull out the P.C.B. .

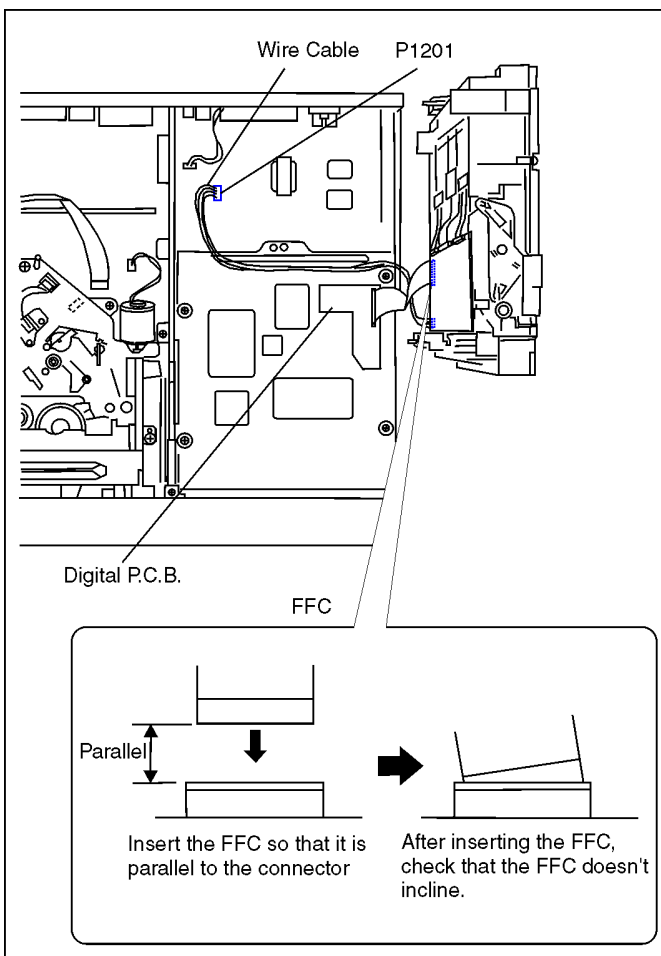


## 14.11. DVD-RAM DRIVE

1. Remove Screw (A) and Earth Angle.
2. Remove 3 Screws (B).
3. Lift up DVD-RAM Drive slightly.

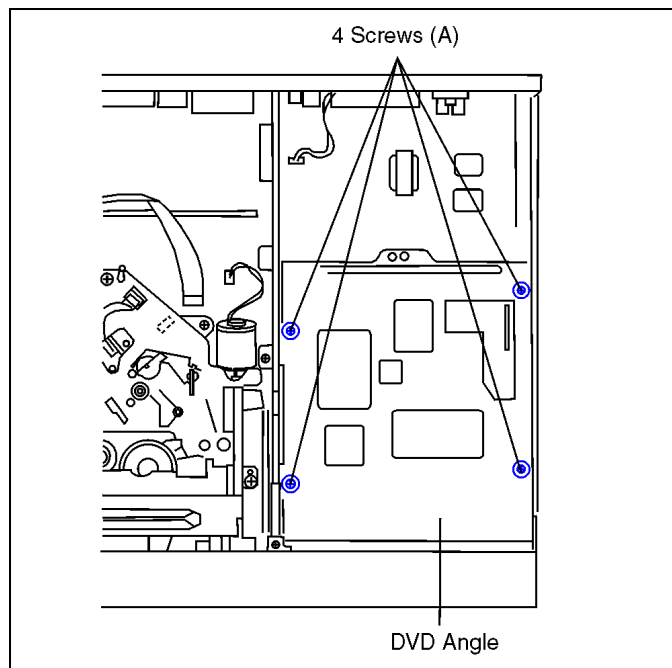


4. Remove Wire Cable from Connector P1201.
5. Disconnect FFC from Digital P.C.B. .



## 14.12. DIGITAL P.C.B.

1. Remove 4 Screws (A) and DVD Angle.



2. Disconnect FFC.
3. Remove Screw (B).
4. Unlock Clamper (A), pay attention to Connector (A), and pull out Digital P.C.B. to disconnect Connector (A).

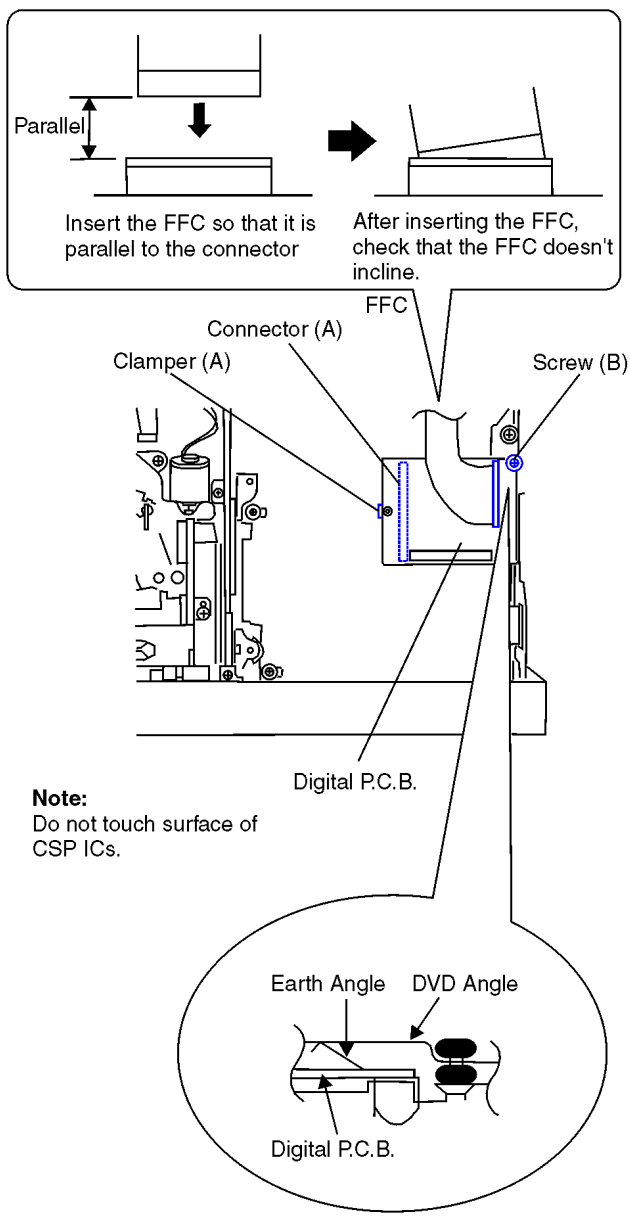
### CAUTION 1:

When replacing Digital P.C.B., pay attention to inserting FFC, and be careful to do not touch surface of CSP ICs.

If you have touched surface of CSP IC, clean up with alcohol and so on to prevent oxidation.

### CAUTION 2:

When attaching Digital P.C.B. on to Earth Angle, Earth Angle should be touches to DVD angle as shown below.



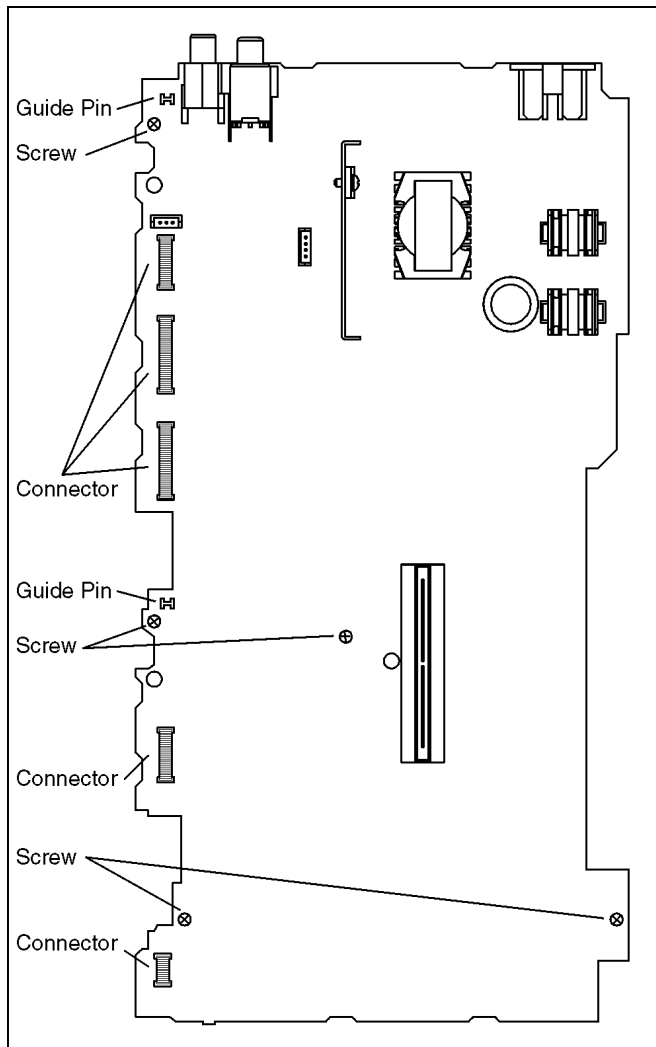


## 14.13. POWER & DIGITAL I/F P.C.B.

1. Remove Front Panel, Rear Panel,  
DVD-RAM Drive, Digital P.C.B. .
2. Disconnect 5 Connectors.
3. Remove the 5 Screws.
4. Remove Power & Digital I/F P.C.B.

**Note:**

When inserting P.C.B. confirm correct positions of Guide Pins.



## 15 SERVICE FIXTURE AND TOOLS

Part Number	Description	Pcs	Compatibility
RFKZ0125	Extension FFC (Digital P.C.B. - DVD-RAM Drive / 40 Pin)	1	Same as E30/HS2/E50/E55/ES10 series
RFKZ0126	Extension Cable (Power & Digital I/F P.C.B. - DVD-RAM Drive / 4 Pin)	1	Same as E30/HS2/ES10 series
RFKZ0168	Extension Cable (Power & Digital I/F P.C.B. - FAN / 3 Pin)	1	Same as E50/E55 series
VFK1729	Extension Cable (Main P.C.B. - Power & Digital I/F P.C.B. / 13pin/40mm)	2	Same as E75V
RFKZ0240	Extension Cable (Main P.C.B. - Power & Digital I/F P.C.B. / 19pin/40mm)	2	Same as E75V
RFKZ0178	Extension Cable (Main P.C.B. - Power & Digital I/F P.C.B. / 7pin/40mm)	1	Same as E75V
RFKZ0215	Extension Cable (Main P.C.B. - Front (Jack) P.C.B. / 12 Pin)	1	Same as DMR-E55/E75V series
RFKZ0239	Extension Cable (Power & Digital I/F P.C.B. - FL Drive P.C.B. / 10 Pin)	1	Same as E75V
RFKZ0238	Extension Cable (Power & Digital I/F P.C.B. - FL Drive P.C.B. / 8 Pin)	1	Same as E75V

(for VHS)

Part Number	Description	Pcs	Compatibility
VFJ8125H3F	PAL VHS Alignment Tape	1	Same as E75V
VFK0329	Post Adjustment Screwdriver	1	Same as E75V
VFK0330	Fine Adjustment Gear Driver	1	Same as E75V

## 16 SERVICE POSITIONS

### 16.1. CHECKING AND REPAIRING OF POWER & DIGITAL I/F P.C.B.

#### 1. Top Case

- Remove 4 Screws (A) on side and 3 Screws (B) on rear side.
- Remove Top Case.

#### 2. Front Panel

- Remove on Screw (A) on center.
- Unlock 2 Locking Tabs (A), (D) on Front Panel side and 2 Locking Tabs (B), (C) on Front Panel topside.
- Unlock 3 Locking Tabs (E) on Front Panel bottom side and remove Front Panel.

#### 3. Rear Panel with Fan Motor

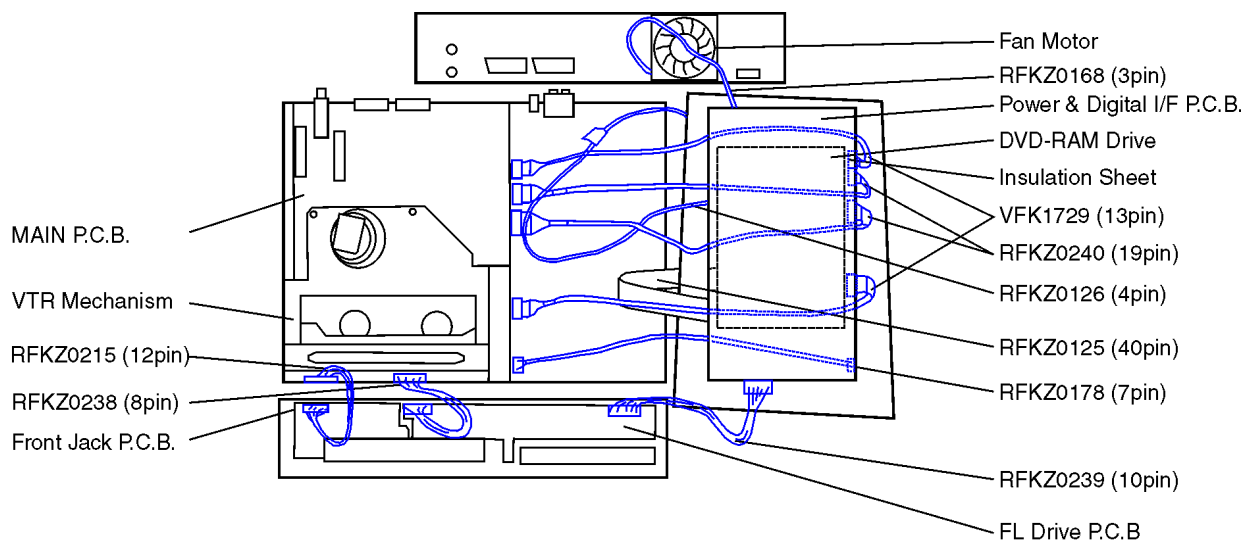
- Remove 5 Screws (A), (B) and (C) on Rear Panel.
- Unlock 2 Locking Tabs to remove Rear Panel with Fan Motor.

#### 4. VTR Mechanism Unit

- Disconnect 3 Connectors.
- Remove 3 black Screws (A) and 3 Screws (B), (C), (D).
- Lift up VTR Mechanism Unit to remove it.

#### 5. Main P.C.B.

- Disconnect 5 Connectors from Power & Digital I/F P.C.B.
- Remove 2 Screws (A) and remove Main P.C.B.
- Attach VTR Mechanism Unit on to Main P.C.B.
- Tighten Screw (C) with Earth Wire and tighten Screw (D) beside Screw (C).
- Insert on Connector and 2 FFCs.
- Hold Main P.C.B. with VTR Mechanism, put it upside-down and connect Extension Cables:
  - between Main P.C.B. and Power Digital I/F: P.C.B. RFKZ0178 (1x), RFKZ0240 (2x), VKF1729 (2x)
  - between Main P.C.B. and Front Jack P.C.B.: RFKZ0215
  - between Main P.C.B. and FL Drive P.C.B.: RFKZ0238
  - between Power & Digital I/F P.C.B. and FL Drive P.C.B.: RFKZ0239
  - between Power & Digital I/F P.C.B. and Fan Motor: RFKZ0168



## 16.2. CHECKING AND REPAIRING OF MAIN P.C.B.

### 1. Top Case

- Remove 4 Screws (A) on side and 3 Screws (B) on rear side.
- Remove Top Case.

### 2. Front Panel

- Remove on Screw (A) on center.
- Unlock 2 Locking Tabs (A), (D) on Front Panel side and unlock 2 Locking Tabs (B), (C) on Front Panel topside.
- Unlock 3 Locking Tabs (E) on Front Panel bottom side and remove Front Panel.

### 3. Rear Panel with Fan Motor

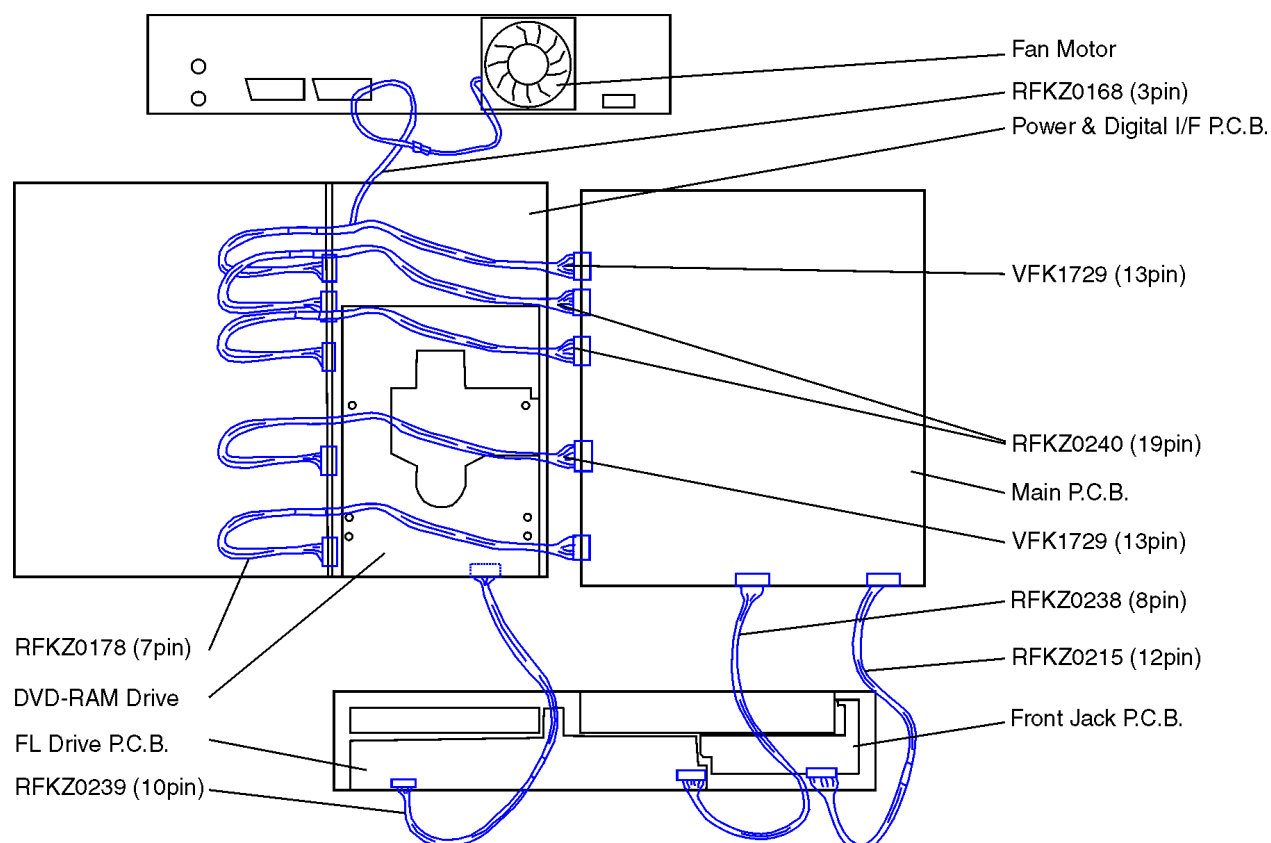
- Remove 5 Screws (A), (B) and (C) on Rear Panel.
- Unlock 2 Locking Tabs to remove Rear Panel with Fan Motor.

### 4. VTR Mechanism Unit

- Disconnect 3 Connectors.
- Remove 3 black Screws (A) and 3 Screws (B), (C), (D).
- Lift up VTR Mechanism Unit to remove it.

### 5. Main P.C.B.

- Disconnect 5 Connectors from Power & Digital I/F P.C.B.
- Remove 2 Screws (A) and remove Main P.C.B.
- Attach VTR Mechanism Unit on to Main P.C.B.
- Tighten Screw (C) with Earth Wire and tighten Screw (D) beside Screw (C).
- Insert on Connector and 2 FFCs.
- Hold Main P.C.B. with VTR Mechanism, put it upside-down and connect Extension Cables:
  - between Main P.C.B. and Power Digital I/F: P.C.B. RFKZ0178 (1x), RFKZ0240 (2x), VKF1729 (2x)
  - between Main P.C.B. and Front Jack P.C.B.: RFKZ0215
  - between Main P.C.B. and FL Drive P.C.B.: RFKZ0238
  - between Power & Digital I/F P.C.B. and FL Drive P.C.B.: RFKZ0239
  - between Power & Digital I/F P.C.B. and Fan Motor: RFKZ0168



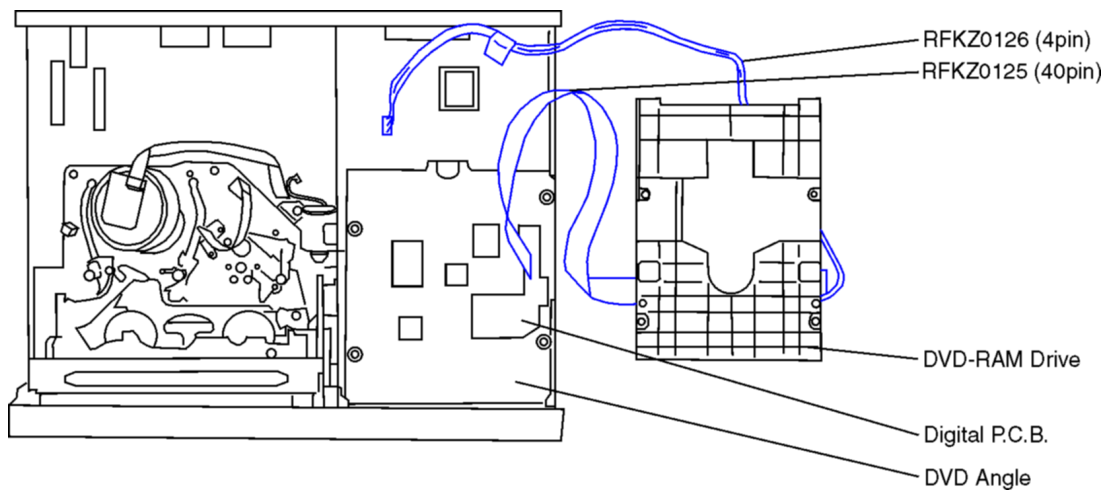
## 16.3. CHECKING AND REPAIRING OF DVD-RAM DRIVE

### 1. Top Case

- Remove 4 Screws (A) on side and 3 Screws (B) on rear side.
- Remove Top Case.

### 2. DVD-RAM Drive

- Remove the Screw (A) and the Earth Angle.
- Remove 3 Screws (B).
- Lift up DVD-RAM Drive slightly.
- Remove wire cable from Wire Clamper (A).
- Disconnect Connector P1103 and FFC from Digital P.C.B. .
- Remove DVD-RAM Drive and put it beside chassis.
- Connect Extension Cables:
  - between Power & Digital I/F P.C.B. and DVD-RAM Drive with RFKZ0126
  - between Digital P.C.B. and DVD-RAM Drive with RFKZ0125



## 17 (DVD) CAUTION AFTER REPLACING PARTS

### 17.1. (DVD) AFTER REPLACING THE RAM DRIVE

After replacing of RAM drive unit, TEST mode is not necessary. Please confirm operation for RAM drive.  
In this case, all parameters are initialized.

### 17.2. (DVD) AFTER REPLACING THE TIMER MICROPROCESSOR

When the unit does not operate normally after replacing the Timer Microprocessor or Main P.C.B. with new one, reset Timer Microprocessor.

Step	Operation	Descriptions
1	While power is ON, short IC9706-4 pin (RESET_OUT) and the GND momentarily.	"RESET (L)" is transmitted to the XRESET terminal of Timer Microprocessor (IC9701-11 pin), then the unit operates normally.

### 17.3. (DVD) AFTER REPLACING EEPROM (IC9705)

IC9705 has Clock setting data, Tuning data, Self-Diagnosis data (DVD & VHS) and VHS PG Shifter adjustment data.  
Therefore after replacing IC9705, PG Shifter should be adjusted.

# 18 (VHS) CAUTION AFTER REPLACING PARTS

PG Shifter Automatic Adjustment and X-VALUE & LINEARITY (P2 and P3 Posts) ADJUSTMENT should be performed after replacing DD Cylinder, EEPROM (IC9705) or Digital I/F P.C.B.

**Note:**

The "X-VALUE & LINEARITY (P2 and P3 Posts) ADJUSTMENT" is not necessary after only replacement of EEPROM (IC9705) or Digital I/F P.C.B.

## 18.1. ADJUSTMENT PROCEDURES AFTER REPLACING DD CYLINDER, VHS MICROPROCESSOR OR MAIN P.C.B

### PG SHIFTER ADJUSTMENT PROCEDURE

PROCEDURE	F.I.P. DISPLAY
<b>Turn on the Service Mode</b> 1. Press the FF key and the EJECT key simultaneously for more than 3 seconds.	00000
<b>Activate the Service Mode 2</b> 2. While keep pressing FF key, press the EJECT key twice.	20000
<b>Activate the Entering Mode.</b> 3. Press the EJECT key for more than 3 seconds.	2 00
<b>Set the Mode 2.</b> 4. Press the CH UP key once.	2 100
<b>Insert the alignment cassette tape (VFJ8125H3F)</b> 5. The PG Shifter Adjustment starts automatically.	2 100
<b>When the sequence of the automatic adjustment has been terminated, the following action has been made.</b> <b>I SUCCEED: The cassette tape is ejected.</b> <b>I ERROR: The "F20", "F21", "F22" or "F23" is displayed.</b> <b>Refer to next PG Shifter Adjustment Self-Diagnosis Indication Table regarding the details of the indications.</b>	
<b>Exit from Service Mode.</b> 6. Press FF and EJECT keys simultaneously in 6 times. Then the FIP becomes normal indication.	10:00 (Normal Indication)

### PG SHIFTER AUTOMATIC ADJUSTMENT SELF-DIAGNOSIS INDICATION

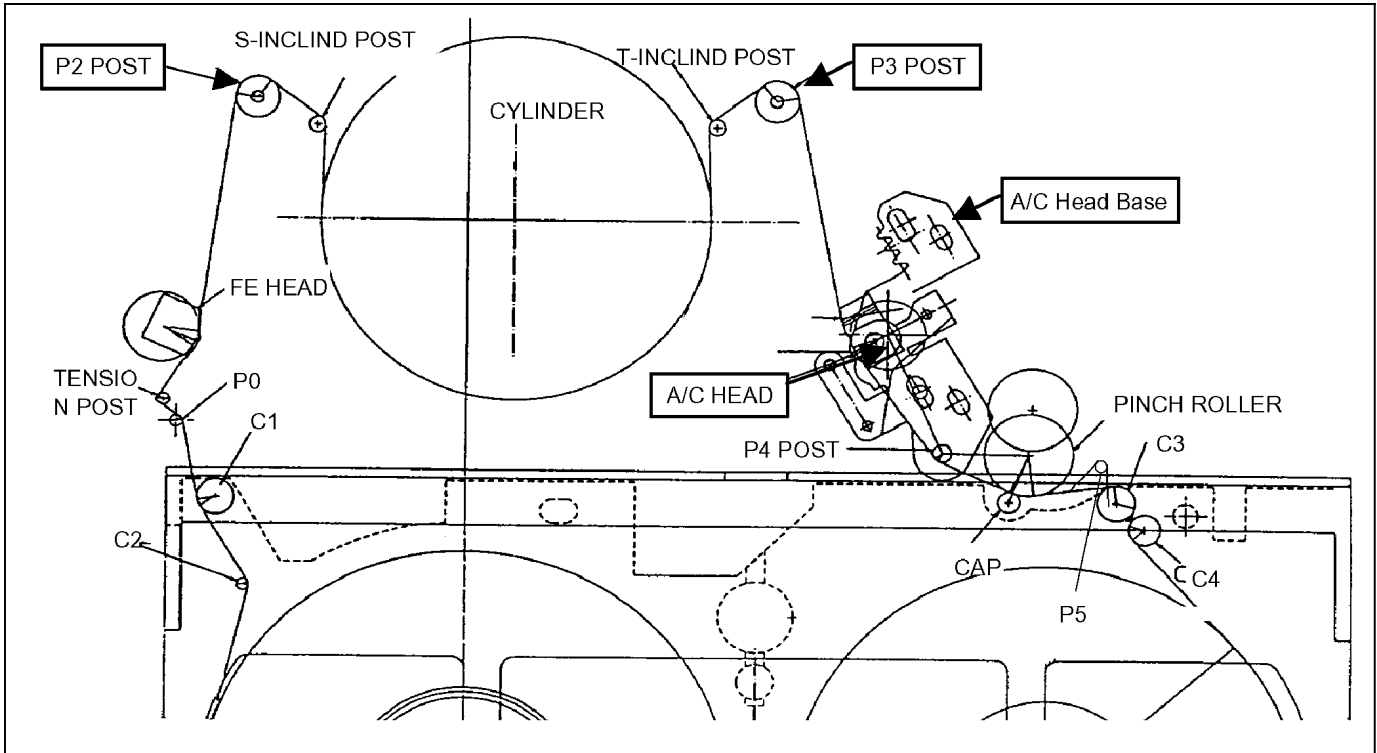
F20	NG1 in the PG Shifter Automatic Adjustment (The cylinder rotation is unstable during the automatic adjustment.)
F21	NG2 in the PG Shifter Automatic Adjustment (The vertical sync signal is lacked while over 5 seconds on the alignment tape.)
F22	NG3 in the PG Shifter Automatic Adjustment (The installing position of Heads to the cylinder is out of specification.)
F23	NG4 in the PG Shifter Automatic Adjustment (The servo is not locked to the cylinder for more than 10 sec.)

**NOTE:**

When DD Cylinder was replaced, the Tape Interchangeability adjustment (X-Value Adjustment, P2 and P3 Posts Adjustment) shown below should be performed after the PG Shifter Automatic Adjustment.

## 18.2. (VHS) X-VALUE & LINEARITY (P2 AND P3 POSTS) ADJUSTMENT

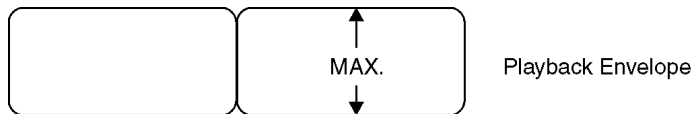
1. Set the Auto Tracking to off.
  - a. Press the FF key and the EJECT key simultaneously for more than 3 seconds to enter Service Mode.
  - b. While keep pressing FF key, press the EJECT key twice to activate Service Mode 2, then Auto-Tracking is turned off.
2. Perform the X-VALUE ADJUSTMENT



### 18.2.1. (VHS) X-VALUE ADJUSTMENT

1. After turning off the Auto tracking, playback the alignment Tape and press [VHS CH UP] and [VHS CH DOWN] keys simultaneously to adjust the tracking to FIX value.
2. Adjust A/C Head Base so that the envelope becomes maximum level. (It is described on “5-2. Tape Interchangeability Adjustment” in “R4 Mechanism” that is separated volume.)

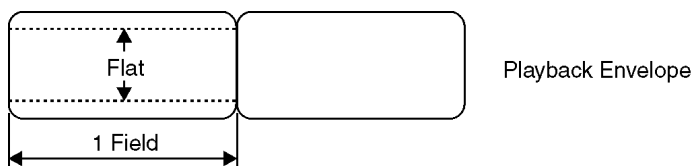
Alignment Tape	VFJ8125H3F
Test Point of Playback Envelope	TW3001 (or TW4502)



### 18.2.2. (VHS) LINEARITY ADJUSTMENT

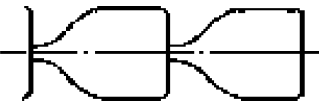



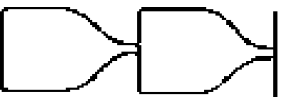

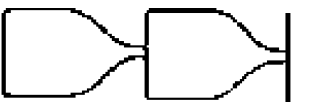




1. After turning off the Auto tracking, playback the alignment Tape and press [VHS CH UP] and [VHS CH DOWN] keys simultaneously to adjust the tracking to FIX value.
2. Adjust the LINEARITY so that the envelope is flat when moving tracking to (+) and (-) directions.

Alignment Tape	VFJ8125H3F
Test Point of Playback Envelope	TW3001 (or TW4502)



I Main symptoms and Adjustment point

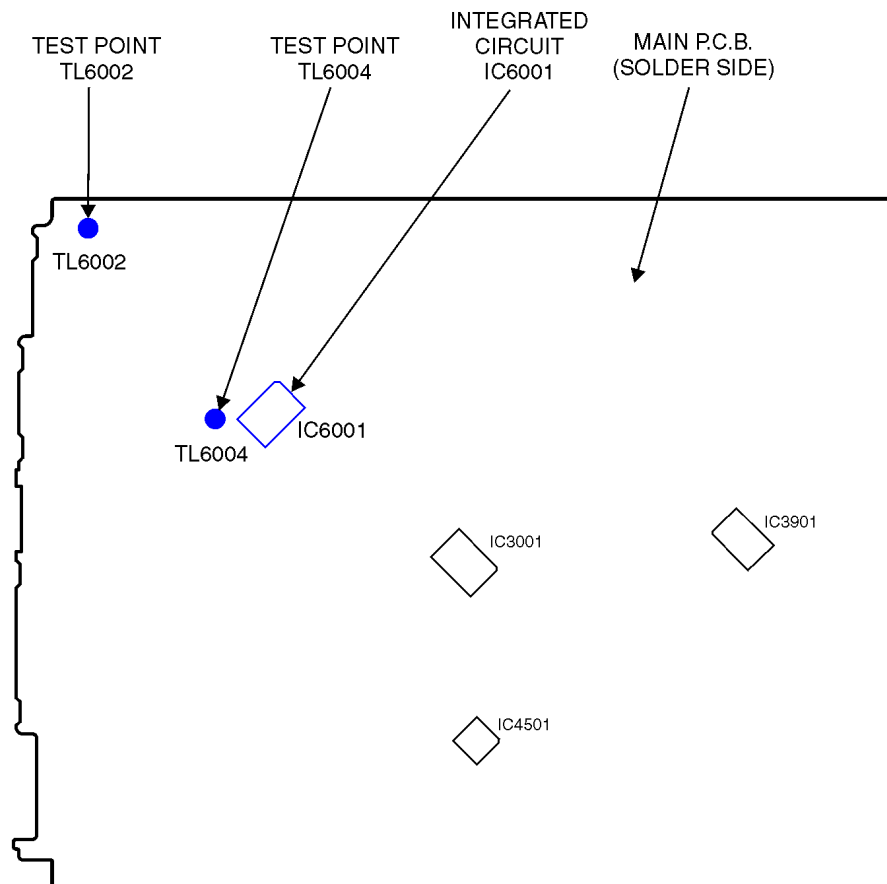


Envelope	Post Name		Adjustment Method
	P2 Post		Turn P2 Post counter-clockwise (Approx. 1/2 revolution)
	P2 Post		Turn P2 Post clockwise (Approx. 1/4 revolution)
	P3 Post		Turn P3 Post clockwise (Approx. 1/2 revolution)
	P3 Post		Turn P3 Post counter-clockwise (Approx. 1/4 revolution)
	P2 Post		Turn P2 Post clockwise (Less than 1 revolution) Turn P3 Post counter-clockwise (Less than 1revolution)
	P3 Post		

### 18.3. (VHS) CAUTION AFTER REPLACING VHS MICROPROCESSOR (IC6001)

After replacing VHS Microprocessor IC6001, if the unit does not operate normally, reset IC6001.

1. Turn on the power.
2. Short out circuit between TL6004 (RESET\_L) and TL6002 (GND) momentarily to reset IC6001.



## 19 (DVD) STANDARD INSPECTION SPECIFICATIONS AFTER MAKING REPAIRS

After making repairs, we recommend performing the following inspection, to check normal operation.

No.	Procedure	Item to Check
1	Turn on the power, and confirm items pointed out.	Items pointed out should reappear.
2	Insert RAM disc.	The Panasonic RAM disc should be recognized.
3	Enter the EE (TU IN / AV IN - AV OUT) mode.	No abnormality should be seen in the picture, sound or operation.
4	Perform auto recording and playback for one minute using the RAM disc.	No abnormality should be seen in the picture, sound or operation. *Panasonic DVD-RAM disc should be used when recording and playback.
5	If a problem is caused by a VCD, DVD-R, DVD-Video, Audio-CD, or MP3, playback the test disc.	No abnormality should be seen in the picture, sound or operation.
6	After checking and making repairs, upgrade the firmware to the latest version.	Make sure that [FIRM_SUCCESS] appears in the FL displays. *[UNSUPPORT] display means the unit is already updated to newest same version. Then version up is not necessary.
7	Transfer [9][9] in the service mode setting, and initialize the service settings (return various settings and error information to their default values. The laser time is not included in this initialization).	Make sure that [CLR SERV] appears in the FL display. After checking it, turn the power off.
8	When replacing of RAM drive, transfer [9] [5] in the service mode setting to delete Laser used time.	Make sure that [CLR LASER] appears in the FL display. After that, turn power off.

Use the following checklist to establish the judgement criteria for the picture and sound.

Item	Contents	Check	Item	Contents	Check
Picture	Block noise		Sound	Distorted sound	
	Crosscut noise			Noise (static, background noise, etc.)	
	Dot noise			The sound level is too low.	
	Picture disruption			The sound level is too high.	
	Not bright enough			The sound level changes.	
	Too bright				
	Flickering color				
	Color fading				

# 20 VOLTAGE AND WAVEFORM CHART

## NOTE:

- Indicated voltage values are the standard values for the unit measured by the DC electronic circuit tester (high-impedance) with the chassis taken as standard.

Therefore, there may exist some errors in the voltage values, depending on the internal impedance of the DC circuit tester.

Ref.no.	IC1101															
Mode	1	2	3	4	5	6	7	8								
Stop	5.40	2.10	0.00	282.30	282.30	NC	14.60	0.00								
Play	5.40	2.10	0.00	282.30	282.30	NC	14.60	0.00								
REC	5.40	2.10	0.00	282.30	282.30	NC	14.60	0.00								

Ref.no.	IC1201															
Mode	1	2	3	4	5	6	7	8								
Stop	12.27	4.39	1.17	1.27	1.16	0.00	6.15	12.24								
Play	12.27	4.39	1.17	1.27	1.16	0.00	6.15	12.24								
REC	12.27	4.39	1.17	1.27	1.16	0.00	6.16	12.24								

Ref.no.	IC1101															
Mode	1	2	3						9	10	11	12	13	14	15	16
Stop	10.78	0.00	2.44													
Play	10.78	0.00	2.44													
REC	10.78	0.00	2.44													

Ref.no.	IC1203															
Mode	1	2	3	4	5	6	7	8								
Stop	12.27	0.00	1.30	4.14	0.00	1.25	0.75	5.20								
Play	12.27	0.00	1.30	4.14	0.00	1.25	0.75	5.20								
REC	12.27	0.00	1.29	4.14	0.00	1.25	0.74	5.19								

Ref.no.	IC2501																		
Mode	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Stop	12.24	0.23	0.00	0.22	0.00	0.00	16.05	0.00	2.73	1.72	1.70	0.62	1.33	2.40	2.43	2.43	2.43	1.25	4.96
Play	12.24	0.23	0.00	0.23	0.00	0.00	14.54	0.00	2.74	1.72	1.69	0.61	1.37	2.38	2.43	2.43	2.43	1.25	4.96
REC	12.24	0.23	0.00	0.23	0.00	0.00	14.57	0.00	2.72	1.72	1.69	0.61	1.35	2.39	2.43	2.43	2.43	1.26	4.96
Ref.no.	21	22	23	24	25	26	27												
Stop	12.25	0.73	0.73	0.00	0.73	0.00	0.00												
Play	12.24	3.15	3.15	0.00	3.14	0.00	0.00												
REC	12.24	3.13	3.14	0.00	3.13	0.00	0.00												

Ref.no.	IC3001																		
Mode	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Stop	0.00	0.00	0.05	5.01	2.07	2.56	2.81	1.96	1.90	2.26	2.08	1.64	0.00	1.39	2.77	3.31	2.77	1.98	2.77
Play	0.00	0.00	0.05	5.01	2.07	2.55	2.81	1.83	1.68	2.90	3.05	0.98	0.00	2.64	2.77	3.33	2.75	1.27	2.77
REC	0.00	0.00	0.05	5.01	2.05	2.57	2.81	2.06	2.01	1.88	2.08	1.70	0.00	1.40	2.77	3.30	2.77	2.14	2.77
Ref.no.	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39
Stop	0.00	4.96	2.29	0.40	2.11	2.97	0.00	0.00	1.62	2.22	0.14	2.24	2.10	1.98	3.90	2.39	3.90	2.15	1.48
Play	2.77	4.39	2.30	2.80	2.11	2.76	1.63	0.00	1.60	2.82	0.37	2.25	2.05	2.78	2.72	2.15	2.82	2.17	1.46
REC	2.77	4.96	2.30	0.35	2.11	2.73	0.00	0.00	1.46	2.85	0.28	2.25	1.86	1.79	2.80	2.15	2.80	2.13	1.46
Ref.no.	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59
Stop	2.56	1.95	2.10	0.00	3.06	3.06	0.00	0.12	3.35	4.97	2.10	4.97	2.54	0.00	1.04	0.00	2.15	1.99	4.94
Play	2.16	1.96	2.11	0.00	3.05	2.05	4.97	0.13	3.04	4.97	1.85	4.97	2.54	0.00	1.94	0.00	2.16	2.03	4.94
REC	2.55	1.96	2.10	0.00	3.06	0.00	0.00	0.13	3.06	4.97	1.88	4.97	0.00	0.00	1.94	0.00	0.00	1.97	4.89
Ref.no.	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79
Stop	0.00	2.35	2.19	2.18	2.18	2.14	0.33	2.42	1.97	2.69	2.15	0.13	3.99	3.92	2.75	2.21	2.82	0.01	0.00
Play	0.00	2.10	2.15	2.31	2.19	2.36	0.33	2.42	1.96	2.42	2.16	0.13	4.00	3.94	2.74	2.16	2.82	0.00	0.00
REC	0.00	0.00	0.00	2.30	2.19	0.00	0.00	2.43	0.00	2.69	2.16	0.13	4.01	3.97	2.74	2.16	2.82	0.00	0.00
Ref.no.	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99
Stop	2.86	0.00	3.22	0.00	2.23	2.23	2.23	0.00	2.22	2.22	2.22	5.01	0.58	2.52	2.50	0.00	0.00	2.33	0.00
Play	4.73	0.00	2.96	4.92	2.23	0.00	0.00	0.00	0.00	2.22	2.22	5.01	0.51	2.52	2.50	0.00	0.00	2.54	0.00
REC	4.66	0.00	3.13	4.87	2.36	0.00	2.34	0.00	0.01	0.00	0.01	5.01	0.60	2.53	2.50	0.00	0.00	2.31	0.00

Ref.no.	IC3002															
Mode	1	2	3	4	5	6	7	8								
Stop	5.04	0.00	0.00	3.47	4.69	0.00	0.01	5.59								
Play	5.04	0.00	0.00	3.47	4.69	0.00	0.01	5.58								
REC	5.04	0.00	0.00	3.47	4.67	0.02	0.02	5.53								

Ref.no.	IC3003															
Mode	1	2	3	4	5	6	7	8								
Stop	2.78	0.00	2.80	0.00	2.79	5.00	2.05	0.00								
Play	2.79	4.88	2.78	0.00	2.79	5.03	2.05	0.00								
REC	2.78	0.00	2.79	0.00	2.79	5.03	2.05	0.00								

Ref.no.	IC3501															
Mode	1	2	3	4	5	6	7	8								
Stop	2.72	4.87	2.71	4.88	2.71	4.89	1.99	0.00								
Play	2.71	0.01	2.72	4.88	2.70	4.89	1.99	0.00								
REC	2.71	4.86	2.71	4.87	2.71	4.89	1.99	0.00								

Ref.no.	IC3502													
Mode	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Stop	4.87	0.01	4.89	3.36	3.16	4.89	2.72	2.86	2.86	2.86	0.00	3.51	3.51	2.01
Play	0.01	0.01	4.89	3.37	3.14	4.89	2.48	2.02	2.02	2.02	0.00	3.53	3.53	2.01
REC	4.86	0.01	4.89	3.36	3.14	4.89	2.72	2.86	2.86	2.86	0.00	3.51	3.51	2.01

Ref.no.	IC3901																			
Mode	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Stop	2.03	2.50	1.57	0.00	1.56	4.95	0.00	4.95	0.55	0.04	0.00	0.53	0.00	0.00	0.04	1.56	0.55	0.00	1.68	1.71
Play	2.03	0.00	1.57	0.00	0.00	4.95	0.00	4.96	0.00	0.04	0.00	0.50	0.00	0.00	0.00	1.56	0.53	0.00	1.67	1.71
REC	2.03	2.50	1.57	0.00	1.56	0.00	0.00	4.95	0.60	0.04	0.00	0.57	0.00	0.00	0.00	1.56	0.57	0.00	1.67	1.71
Ref.no.																				
Mode	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
Stop	0.00	1.69	1.20	1.26	4.95	0.00	10.67	1.01	0.00	2.41	1.55	0.00	1.55	0.00	1.56	0.05	1.56	0.02	2.37	4.95
Play	0.00	1.69	1.19	1.25	4.95	1.02	10.67	1.01	0.00	2.40	0.03	0.00	1.56	0.00	1.56	0.02	1.56	0.02	2.37	0.02
REC	0.00	1.69	1.89	1.25	4.95	1.02	10.66	1.01	0.00	2.40	1.55	0.00	1.55	0.00	1.56	0.05	1.56	0.02	2.36	4.95
Ref.no.																				
Mode	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Stop	1.55	4.96	2.90	0.00	2.90	11.24	1.75	2.00	4.54	4.49	4.50	4.50	4.50	4.50	4.50	4.50	9.10	0.00	4.50	4.50
Play	0.02	4.96	2.00	0.00	2.90	11.24	1.60	2.00	4.53	4.49	4.50	4.50	4.50	4.50	4.50	4.50	9.09	4.50	4.50	4.50
REC	1.55	4.96	2.90	0.00	2.90	11.24	1.67	2.00	4.53	4.49	4.50	4.50	4.50	4.50	4.50	4.50	9.09	4.50	4.50	4.50
Ref.no.																				
Mode	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
Stop	4.50	4.50	4.50	0.00	8.96	0.00	0.00	0.00	0.00	0.00	4.54	4.54	4.54	4.54	0.00	4.53	9.14	0.00	4.55	0.00
Play	4.50	4.50	4.50	4.50	8.96	0.00	0.00	0.00	0.00	0.00	4.54	4.54	4.54	4.54	0.00	4.53	9.14	4.55	4.55	0.00
REC	4.50	4.50	4.50	4.50	8.96	0.00	0.00	0.00	0.00	0.00	4.54	4.54	4.54	4.54	0.00	4.54	9.14	4.55	4.55	0.00
Ref.no.																				
Mode	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
Stop	2.10	4.96	2.02	0.05	3.26	4.70	3.77	4.67	4.53	0.04	2.03	0.82	1.87	4.96	1.62	0.00	1.87	0.04	1.59	2.50
Play	2.10	4.96	2.01	0.00	3.28	4.71	3.77	4.62	4.47	0.00	2.03	0.81	1.87	4.96	1.61	0.00	1.87	0.04	1.59	2.50
REC	2.09	4.96	2.00	4.96	3.25	4.70	3.77	4.66	4.53	0.04	2.03	0.81	1.87	4.96	1.61	0.00	1.87	0.04	1.59	2.50

Ref.no.	IC3902																			
Mode	1	2	3	4	5	6	7	8												
Stop	2.74	0.05	2.75	0.04	2.75	4.96	2.01	0.00												
Play	2.74	0.05	2.75	0.04	2.75	4.96	2.01	0.00												
REC	2.74	0.05	2.75	0.04	2.75	4.95	2.01	0.00												

Ref.no.	IC3903																			
Mode	1	2	3	4	5	6	7	8												
Stop	1.65	0.05	1.47	0.04	1.47	4.96	0.92	0.00												
Play	1.65	0.05	1.47	0.04	1.47	4.96	0.92	0.00												
REC	1.64	0.05	1.47	0.04	1.46	4.95	0.92	0.00												

Ref.no.	IC3904																			
Mode	1	2	3	4	5	6	7	8												
Stop	1.42	0.05	1.47	0.04	1.47	4.96	0.70	0.00												
Play	1.42	0.05	1.47	0.04	1.47	4.96	0.70	0.00												
REC	1.42	0.05	1.47	0.04	1.47	4.96	0.70	0.00												

Ref.no.	IC3906																			
Mode	1	2	3	4	5	6	7	8												
Stop	4.98	0.00	0.00	3.41	4.46	0.00	0.00	5.53												
Play	4.98	0.00	0.00	3.41	4.45	0.00	0.00	5.53												
REC	4.98	0.00	0.00	3.41	4.43	0.00	0.00	5.51												

Ref.no.	IC4501																			
Mode	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Stop	2.39	0.00	2.39	0.00	0.04	2.50	2.01	0.00	0.00	0.00	0.00	2.02	0.00	0.00	0.00	2.47	0.47	2.50	2.49	2.05
Play	2.38	0.00	2.38	0.00	0.03	2.48	2.02	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	2.49	0.51	2.52	2.52	0.00
REC	2.36	0.00	2.36	0.00	0.06	2.47	1.99	0.00	0.00	0.00	0.00	1.98	0.00	0.00	0.00	2.44	0.45	2.47	5.46	1.98
Ref.no.	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
Stop	2.05	2.05	0.00	2.05	5.01	2.06	0.00	0.00	4.24	1.81	1.81	0.00	2.49	2.50	0.51	2.47	4.80	1.68	0.00	0.07
Play	0.00	0.66	0.00	0.66	5.00	0.10	2.57	4.20	1.81	1.81	1.78	2.53	2.53	0.54	2.50	0.00	1.68	0.00	0.07	5.00
REC	1.90	1.98	0.00	2.06	4.96	2.04	0.00	4.21	3.97	3.97	1.09	2.46	2.47	0.49	2.44	0.00	1.67	0.00	0.06	4.96
Ref.no.	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Stop	0.00	0.03	3.99	3.28	1.58	1.87	2.49	2.49	0.18	0.88	5.89	5.99	6.03	0.00	0.00	0.00	6.03	11.87	6.18	0.00
Play	0.05	0.04	4.00	3.28	1.54	4.88	2.53	2.53	0.18	0.87	5.88	5.96	6.05	0.01	0.00	0.01	6.03	11.87	6.18	0.00
REC	0.00	0.00	3.98	3.29	1.58	4.82	2.47	2.47	0.18	0.87	5.85	5.95	5.95	0.01	0.00	0.01	5.95	11.87	6.09	0.00
Ref.no.	61	62	63	64																
Mode	61	62	63	64																
Stop	2.49	2.42	0.00	0.00																
Play	2.48	2.41	0.00	0.00																
REC	2.46	2.39	0.00	0.00																

Ref.no.	IC6001																			
Mode	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Stop	0.00	0.00	4.89	0.00	4.86	4.86	4.71	4.69	3.24	0.00	0.00	3.32	0.00	4.86	3.79	4.88	0.00	2.48	0.00	0.20
Play	0.00	0.01	4.89	0.00	4.85	4.85	4.80	4.71	1.82	4.85	4.58	0.13	0.00	4.83	3.80	0.00	0.00	2.21	2.53	0.02
REC	0.00	0.01	4.87	0.00	4.82	4.82	3.90	4.45	3.12	4.82	4.56	3.30	0.00	4.82	3.82	4.86	0.00	2.81	0.00	4.85
Ref.no.	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
Stop	4.86	0.00	4.23	0.00	0.00	0.00	0.00	4.82	4.89	0.00	4.90	4.90	0.00	0.00	0.00	2.95	4.92	2.13	5.03	0.00
Play	4.85	0.00	4.21	0.00	0.00	0.00	0.00	0.00	4.90	0.00	4.90	4.90	0.00	0.00	0.00	2.95	4.92	2.13	5.03	0.00
REC	4.82	0.00	4.21	0.00	0.00	4.88	0.00	0.00	4.88	0.00	4.88	4.88	0.00	4.91	0.00	2.95	4.92	2.13	5.03	0.00
Ref.no.	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Stop	0.00	4.88	4.90	4.90	0.00	0.00	1.80	2.19	0.00	1.02	2.45	1.02	4.92	2.78	0.00	1.30	0.00	0.00	0.61	0.01
Play	4.87	0.00	4.91	4.90	4.88	0.00	1.81	2.20	0.00	1.88	2.45	1.85	4.91	2.02	0.00	2.10	0.00	0.00	0.38	4.86
REC	0.00	4.87	4.89	4.88	0.00	0.00	1.82	2.19	0.00	0.84	2.45	0.84	4.92	2.75	0.00	1.16	0.00	0.00	0.45	0.01
Ref.no.	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
Stop	0.01	0.00	4.86	0.70	3.82	3.88	4.14	3.80	0.90	4.05	3.98	3.98	0.00	0.00	4.86	0.00	2.41	0.28	0.15	0.16
Play	4.15	0.00	4.86	0.97	3.80	3.85	4.14	3.89	1.38	4.06	4.90	3.04	0.00	0.00	4.68	2.50	3.90	0.24	4.94	4.94
REC	0.01	0.00	4.84	0.98	3.86	3.86	4.16	3.85	1.90	4.02	3.98	3.95	0.00	0.00	4.66	2.47	2.39	0.31	4.93	4.93
Ref.no.	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
Stop	0.00	0.00	0.00	0.00	4.85	2.46	2.46	0.00	0.00	1.25	2.46	2.47	0.00	2.44	2.44	2.46	2.46	4.95	4.84	4.67
Play	0.00	0.00	0.00	0.00	4.81	2.46	2.46	0.00	0.00	1.27	2.46	2.47	0.00	2.44	2.44	2.46	2.45	2.49	4.86	4.67
REC	0.00	0.00	0.00	0.00	4.79	2.46	2.46	0.00	0.00	1.27	2.46	2.46	0.00	2.07	2.84	2.46	2.45	4.95	4.83	4.67

Ref.no.	IC6102																			
Mode	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Stop	0.00	0.00	0.04	4.00	3.93	0.00	0.15	0.06	4.82	4.83	0.00	3.45	0.00	4.51	3.54	1.45	1.09	0.00	4.83	4.83
Play	0.00	0.00	0.01	4.00	3.95	0.00	0.37	0.02	4.84	4.84 / 0.00	0.00	3.45	0.00	0.01	3.64	1.45	1.03	-0.32	4.82	4.82
REC	0.00	0.00	0.02	4.00	3.94	0.00	0.17	0.02	4.80	0.00	0.00	3.47	0.16	4.62	3.45	1.45	1.02	-0.20	4.81	4.81

Ref.no.	IC6201																			
Mode	1	2	3	4	5															
Stop	4.91	4.91	0.00	0.00	0.00															
Play	4.91	4.91	0.00	0.00	0.00															
REC	4.90	4.90	0.00	0.00	0.00															

Ref.no.	IC6302																			
Mode	1	2	3	4																
Stop	4.96	0.00	4.68	5.65																
Play	4.96	0.00	4.67	5.64																
REC	4.96	0.00	4.66	5.61																

Ref.no.	IC7401																		
Mode	1	2	3	4	5	6	7	8											
Stop	4.97	0.00	0.00	3.39	5.51	0.00	0.00	5.51											
Play	4.97	0.00	0.00	3.39	5.50	0.00	0.00	5.50											
REC	4.97	0.00	0.00	3.39	5.48	0.00	0.00	5.48											

Ref.no.	IC7502																			
Mode	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Stop	4.96	0.69	4.13	3.80	0.00	2.10	2.09	4.83	-27.00	-25.00	-25.00	-25.00	-25.00	-22.84	-0.23	-20.54	-20.52	4.83	-21.00	-23.00
Play	4.96	0.69	4.13	3.80	0.00	2.10	2.09	4.83	-27.00	-25.00	-25.00	-25.00	-25.00	-22.84	-0.23	-20.54	-20.52	4.83	-21.00	-23.00
REC	4.96	0.69	4.13	3.80	0.00	2.10	2.09	4.83	-27.00	-25.00	-25.00	-25.00	-25.00	-22.84	-0.23	-20.54	-20.52	4.83	-21.00	-23.00
Ref.no.																				
Mode	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
Stop	-23.20	-23.55	-23.00	-23.00	-21.00	-21.00	-21.00	-21.00	-21.00	-17.00	-18.00	-18.00	-20.00	-16.00	-23.00	-23.00	-23.00	-23.00	-23.00	-18.00
Play	-23.20	-23.55	-23.00	-23.00	-21.00	-21.00	-21.00	-21.00	-21.00	-17.00	-18.00	-18.00	-20.00	-16.00	-23.00	-23.00	-23.00	-23.00	-23.00	-18.00
REC	-23.20	-23.55	-23.00	-23.00	-21.00	-21.00	-21.00	-21.00	-21.00	-17.00	-18.00	-18.00	-20.00	-16.00	-23.00	-23.00	-23.00	-23.00	-23.00	-18.00
Ref.no.																				
Mode	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Stop	-18.00	-18.00	-18.00	-18.00	-28.00	-28.00	-28.00	-28.00	-28.00	-28.00	-28.00	-28.00	-28.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
Play	-18.00	-18.00	-18.00	-18.00	-28.00	-28.00	-28.00	-28.00	-28.00	-28.00	-28.00	-28.00	-28.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
REC	-18.00	-18.00	-18.00	-18.00	-28.00	-28.00	-28.00	-28.00	-28.00	-28.00	-28.00	-28.00	-28.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00
Ref.no.																				
Mode	61	62	63	64																
Stop	-0.20	-25.00	-25.00	-29.12																
Play	-0.20	-25.00	-25.00	-29.12																
REC	-0.20	-25.00	-25.00	-29.12																
Ref.no.	IC9102																			
Mode	1	2	3	4	5	6	7	8												
Stop	4.96	0.00	0.00	3.37	4.92	0.05	0.05	5.82												
Play	4.96	0.00	0.00	3.37	4.93	0.07	0.07	5.81												
REC	4.96	0.00	0.00	3.37	4.93	0.07	0.07	5.81												
Ref.no.	IC9103																			
Mode	1	2	3	4	5	6	7	8												
Stop	12.19	4.47	1.18	1.22	1.18	0.02	10.60	12.19												
Play	12.19	4.47	1.18	1.22	1.18	0.02	10.60	12.19												
REC	12.19	4.47	1.18	1.22	1.18	0.02	10.60	12.19												
Ref.no.	IC9105																			
Mode	1	2	3	4	5	6	7	8												
Stop	12.12	0.01	1.29	4.16	0.02	1.04	0.76	3.30												
Play	12.12	0.01	1.29	4.16	0.02	1.04	0.76	3.30												
REC	12.12	0.01	1.29	4.16	0.02	1.04	0.76	3.30												
Ref.no.	IC9106																			
Mode	1	2	3	4	5															
Stop	5.82	4.93	3.25	0.00	0.00															
Play	5.82	4.93	3.25	0.00	0.00															
REC	5.82	4.92	3.25	0.00	0.00															
Ref.no.	IC9301																			
Mode	1	2	3	4	5	6			9	10	11	12	13	14	15	16				
Stop	1.20	0.01	4.92	5.83	0.01	4.99														
Play	1.20	0.01	4.92	5.83	0.01	4.99														
REC	1.20	0.01	4.92	5.83	0.02	4.99														
Ref.no.	IC9302																			
Mode	1	2	3	4	5	6	7	8												
Stop	4.60	3.31	3.31	0.02	3.31	3.31	4.63	10.53												
Play	4.60	3.31	3.31	0.02	3.31	3.31	4.63	10.53												
REC	4.60	3.31	3.31	0.02	3.31	3.31	4.63	10.53												
Ref.no.	IC9303																			
Mode	1	2	3	4	5	6														
Stop	0.00	1.52	4.71	2.32	0.02	2.26														
Play	0.00	1.33	4.71	2.12	0.02	2.06														
REC	0.00	1.52	4.71	2.33	0.02	2.26														
Ref.no.	IC9304																			
Mode	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16				
Stop	4.71	1.88	2.01	1.41	4.53	1.41	0.02	1.88	1.88	0.02	1.86	1.86	1.39	1.40	1.39	1.87				
Play	4.71	1.89	2.02	1.42	4.53	1.43	0.01	1.88	1.88	0.02	1.87	1.86	1.56	1.48	1.52	1.87				
REC	4.71	1.88	2.02	1.63	4.53	1.63	0.02	1.88	1.88	0.02	1.86	1.86	1.83	1.84	1.83	1.87				
Ref.no.	IC9305																			
Mode	1	2	3	4	5	6	7	8												
Stop	10.53	4.99	4.99	0.02	3.31	3.31	3.31	12.26												
Play	10.53	4.99	4.99	0.02	3.31	3.31	3.31	12.26												
REC	10.53	4.99	4.99	0.02	3.31	3.31	3.31	12.26												
Ref.no.	IC9701																			
Mode	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Stop	4.11	4.85	2.80	0.00	0.00	0.00	0.00	0.00	0.73	0.91	4.96	1.49	0.00	2.03	3.32	4.96	3.26	3.21	3.21	3.10
Play	4.19	4.84	2.85	0.00	0.00	0.00	0.00	0.00	0.73	0.91	4.96	1.51	0.00	2.04	3.34	4.96	3.26	3.18	3.16	3.31
REC	4.12	4.83	2.82	0.00	0.00	0.00	0.00	0.00	0.73	0.91	4.96	1.50	0.00	2.03	3.33	4.96	3.25	3.17	3.17	3.31
Ref.no.																				
Mode	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
Stop	0.00	0.00	0.00	3.32	0.00	0.00	0.00	4.63	4.48	0.00	0.90	1.57	1.20	4.96	2.42	0.00	0.00	3.32	3.25	3.32
Play	0.00	0.00	0.00	3.32	0.00	0.00	0.00	4.68	4.56	0.00	0.89	1.58	1.20	4.96	2.42	0.00	0.00	3.32	3.24	3.32
REC	0.00	0.00	1.81	3.32	0.00	0.00	0.00	4.70	4.59	0.00	0.90	1.58	1.20	4.96	2.42	0.00	0.00	3.32	3.32	3.32
Ref.no.																				
Mode	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Stop	0.00	0.00	3.23	3.31	0.00	0.00	4.85	4.96	4.95	4.95	4.94	4.84	0.46	0.00	0.00	0.00	4.95	0.00	0.00	4.92
Play	0.00	0.00	3.19	3.31	0.00	0.00	4.84	4.96	4.95	4.96	4.94	2.45	0.58	0.00	0.00	0.00	4.95	0.00	0.00	0.00

Ref.no.	IC9705																			
Mode	1	2	3	4	5	6	7	8												
Stop	0.01	0.01	0.01	0.01	4.59	4.89	4.95	4.84												
Play	0.01	0.01	0.01	0.01	4.57	4.89	4.95	4.83												
REC	0.01	0.01	0.01	0.01	4.58	4.89	4.95	4.83												

Ref.no.	IC9706																			
Mode	1	2	3	4	5				9	10	11	12	13	14	15	16				
Stop	0.00	0.00	0.00	4.95	4.96															
Play	0.00	0.00	0.00	4.95	4.96															
REC	0.00	0.00	0.00	4.95	4.96															

Ref.no.	P9105																			
Mode	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Stop	0.00	0.00	0.00	3.31	0.00	3.31	3.25	3.20	3.32	3.20	0.00	3.22	0.00	3.26	1.47	0.00	4.98	0.00	0.00	0.00
Play	0.00	0.00	0.00	3.31	0.00	3.31	3.24	3.20	3.32	3.20	0.00	3.22	0.00	3.25	3.25	0.00	4.98	0.00	0.00	0.00
REC	0.00	0.00	0.00	3.31	0.00	3.31	3.24	3.18	3.32	3.20	0.00	3.20	0.00	3.25	1.47	0.00	4.98	0.00	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	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.46	4.92	2.46	0.00	0.00	0.00	0.00	1.60	0.00	3.24	2.40	0.00
Play	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.46	4.93	2.46	0.00	0.00	0.00	0.00	1.60	0.00	3.24	2.40	0.00
REC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.46	4.92	2.46	0.00	0.00	0.00	0.00	1.59	0.00	3.24	2.40	0.00

Ref.no.																				
Mode	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Stop	2.43	3.24	0.00	0.00	0.00	0.00	1.15	4.95	0.00	0.00	1.39	4.95	0.00	0.00	0.98	0.00	0.00	0.00	1.15	5.81
Play	2.43	3.24	0.00	0.00	0.00	0.00	0.95	4.96	0.00	0.00	1.39	4.95	0.00	0.00	0.98	0.00	0.00	0.00	0.95	5.81
REC	2.43	3.24	0.00	0.00	0.00	0.00	1.15	4.95	0.00	0.00	1.39	4.95	0.00	0.00	0.98	0.00	0.00	0.00	1.14	5.81

Ref.no.																				
Mode	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
Stop	0.00	5.81	0.98	5.81	0.00	0.00	0.00	3.26	0.00	3.26	0.00	3.26	0.00	3.26	0.00	1.42	0.00	0.68	0.00	0.00
Play	0.00	5.81	0.98	5.81	0.00	0.00	0.00	3.26	0.00	3.26	0.00	3.26	0.00	3.26	0.00	1.42	0.00	0.78	0.00	0.00
REC	0.00	5.81	0.98	5.81	0.00	0.00	0.00	3.26	0.00	3.25	0.00	3.26	0.00	3.25	0.00	1.42	0.00	0.76	0.00	0.00

Ref.no.																				
Mode	81	82	83	84	85	86	87	88												
Stop	0.00	1.42	2.03	1.43	0.00	1.42	2.10	1.42												
Play	0.00	1.42	2.03	1.42	0.00	1.42	2.09	1.42												
REC	0.00	1.42	2.04	1.42	0.00	1.42	2.10	1.42												

Ref.no.	Q9101			Q9106			Q9107			Q9107			Q9103			Q9104			Q9105		
Mode	E	B	C	E	B	C	1	2	3	4	5	6	E	B	C	E	B	C	E	B	C
Stop	1.40	1.90	2.80	3.20	3.50	5.60	1.30	1.30	10.50	12.10	1.30	1.30	0.00	4.80	0.00	0.00	0.80	2.70	0.00	0.00	4.30
Play	3.10	3.10	5.40	3.20	3.90	5.60	1.30	1.30	10.50	12.10	1.30	1.30	0.00	4.80	0.00	0.00	0.70	2.50	0.00	0.00	4.30
Rec	1.30	1.90	2.70	3.20	3.90	5.60	1.30	1.30	10.50	12.10	1.30	1.30	0.00	4.80	0.00	0.00	0.70	2.50	0.00	0.00	4.30

Ref.no.	QR9301			QR9304			QR9305			QR9310			QR9311			QR1202			E	B	C
Mode	E	B	C	E	B	C	E	B	C	E	B	C	E	B	C	E	B	C	E	B	C
Stop	5.70	2.70	0.00	0.00	5.60	0.00	0.00	5.60	0.00	0.00	0.00	1.70	0.00	0.00	1.70	0.00	0.80	0.00			
Play	5.70	5.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.80	0.00	0.00	1.80	0.00	4.80	0.00			
Rec	5.70	2.70	5.60	0.00	5.60	0.00	0.00	5.60	0.00	0.00	0.00	1.70	0.00	0.00	1.70	0.00	4.80	0.00			

Ref.no.	Q9701			Q9702			Q9703			Q9704			Q9705			Q9706			E	B	C
Mode	E	B	C	E	B	C	E	B	C	E	B	C	E	B	C	E	B	C	E	B	C
Stop	3.50	3.20	0.00	2.50	1.40	4.80	1.40	2.00	11.40	12.10	12.10	7.80	3.50	2.90	0.00	1.80	1.40	4.80			
Play	3.40	3.10	0.00	2.50	1.40	4.80	1.40	2.00	11.40	12.10	11.40	7.80	3.50	2.80	0.00	1.70	1.40	4.80			
Rec	0.00	2.20	0.00	2.50	1.40	4.80	1.40	2.00	11.40	12.10	11.40	7.80	3.50	2.80	0.00	1.70	1.40	4.80			

Ref.no.	QR9701			QR9702			QR9703												E	B	C
Mode	E	B	C	E	B	C	E	B	C	E	B	C	E	B	C	E	B	C	E	B	C
Stop	0.00	2.20	0.00	0.00	0.00	3.20	0.00	4.80	0.00												
Play	0.00	2.20	0.00	0.00	0.00	3.20	0.00	4.80	0.00												
Rec	0.00	2.20	0.00	0.00	0.00	3.20	0.00	4.80	0.00												

Ref.no.	Q3002			QR3001			QR3002			QR3003			QR3005			E	B	C	E	B	C
Mode	E	B	C	E	B	C	E	B	C	E	B	C	E	B	C	E	B	C	E	B	C
Stop	1.56	2.19	5.02	0.00	4.87	0.00	0.00	0.00	2.11	0.00	0.00	2.19	0.00	0.00	0.00						
Play	1.56	2.19	5.02	0.00	4.87	0.00	0.00	0.00	2.11	0.00	0.00	2.19	0.00	0.00	0.00						
Rec	1.56	2.20	5.02	0.00	4.86	0.00	0.00	0.00	2.11	0.00	0.00	2.19	0.00	0.00	0.00						

Ref.no.	Q3501			Q3502			Q3503									E	B	C	E	B	C
Mode	E	B	C	E	B	C	E	B	C	E	B	C	E	B	C	E	B	C	E	B	C
Stop	2.73	2.10	0.00	2.13	1.48	0.00	2.10	2.71	4.89												
Play	2.75	2.12	0.00	2.02	1.36	0.00	1.87	2.49	4.89												
Rec	2.50	1.86	0.00	2.13	1.48	0.00	2.09	2.72	4.88												

Ref.no.	Q3901			Q3902			Q3903			Q3904			QR3901			QR3902			E	B	C
Mode	E	B	C	E	B	C	E	B	C	E	B	C	E	B	C	E	B	C	E	B	C
Stop	4.50	0.00	0.00	0.00	0.00	4.50	4.50	4.89	4.50	4.50	4.90	4.50	0.00	0.00	4.46	0.00	0.00	4.95			
Play	4.50	0.00	0.00	0.00	0.00	4.50	4.50	4.89	4.50	4.50	4.90	4.50	0.00	0.00	4.45	0.00	0.00	4.95			
Rec	4.50	0.00	0.00	0.00	0.00	4.50	4.50	4.89	4.50	4.50	4.90	4.50	0.00	0.00	4.45	0.01	0.00	4.95			

Ref.no.	Q4001			Q4002			Q4003			Q4004			QR4003			QR4004			QR4005		
Mode	E	B	C	E	B	C	E	B	C	E	B	C	E	B	C	E	B	C	E	B	C
Stop	0.00	0.74	0.01	0.00	0.74	0.00	0.00	0.36	0.37	5.60	5.60	0.02	0.00	0.00	0.00	5.01	0.00	4.92	0.00	0.00	5.59
Play	0.00	0.74	0.01	0.00	0.74	0.00	0.00	0.34	0.35	5.58	5.58	0.32	0.00	0.00	0.00	5.00	0.00	4.91	0.00	0.00	5.58
Rec	0.00	-7.36	0.00	0.00	-7.33	0.00	0.00	0.37	1.12	5.56	2.91	1.29	0.00	0.00	0.00	4.98	4.84	-7.39	0.00	4.87	0.02

Ref.no.	Q4901			QR4901			QR4902			QR4903			QR4904			QR4905			QR4906		
Mode	E	B	C	E	B	C	E	B	C	E	B	C	E	B	C	E	B	C	E	B	C
Stop	12.01	11.28	11.94	0.00	0.00	4.95	4.96	4.95	0.00	0.00	0.00	0.07	0.00	0.00	-0.90	0.00	0.00	0.03	0.00	0.00	0.08
Play	12.00	11.28	11.95	0.00	0.00	4.95	4.96	4.95	0.00	0.00	0.00	0.06	0.00	0.00	-0.08	0.00	0.00	0.03	0.00	0.00	0.08
Rec	12.00	11.27	11.94	0.00	0.00	4.95	4.96	4.95	0.00	0.00	0.00	0.06	0.00	0.00	-0.08	0.00	0.00	0.02	0.00	0.00	0.08

Ref.no.	QR4911			QR4912			QR4913			QR4914						QR4901			Q4902		
Mode	E	B	C	E	B	C	E	B	C	E	B	C	E	B	C	E	B	C	E	B	C
Stop	4.79	0.01	4.73	0.01	4.73	0.01	0.00	4.73	0.01	0.00	4.46	0.04				0.00	4.67	0.01	11.97	11.25	11.92
Play	0.00	0.01	0.00	0.01	0.00	0.01	0.01	0.00	0.02	0.00	4.46	0.04				0.00	4.67	0.01	11.97	11.25	11.92
Rec	0.00	0.01	0.00	0.01	0.00	0.09	0.01	0.00	0.08	0.00	4.45	0.04				0.00	4.66	0.01	11.97	11.25	11.92

Ref.no.	Q6101			Q6102			Q6103			Q6104						Q6801			QR6801		
Mode	E	B	C	E	B	C	E	B	C	E	B	C	E	B	C	E	B	C	E	B	C
Stop	1.64	0.99	0.00	0.90	1.62	4.91	2.65	3.24	4.91	1.65	0.99	0.00				0.00	0.00	11.86	11.97	11.86	4.78
Play	1.64	0.99	0.00	0.97	1.60	4.91	2.62	3.28	4.91	1.64	0.98	0.00				0.00	0.00	11.86	11.97	11.86	4.78
Rec	1.48	0.81	0.00	0.83	1.46	4.91	2.56	3.20	4.91	1.48	0.83	0.00				0.00	0.00	11.86	11.97	11.86	4.77

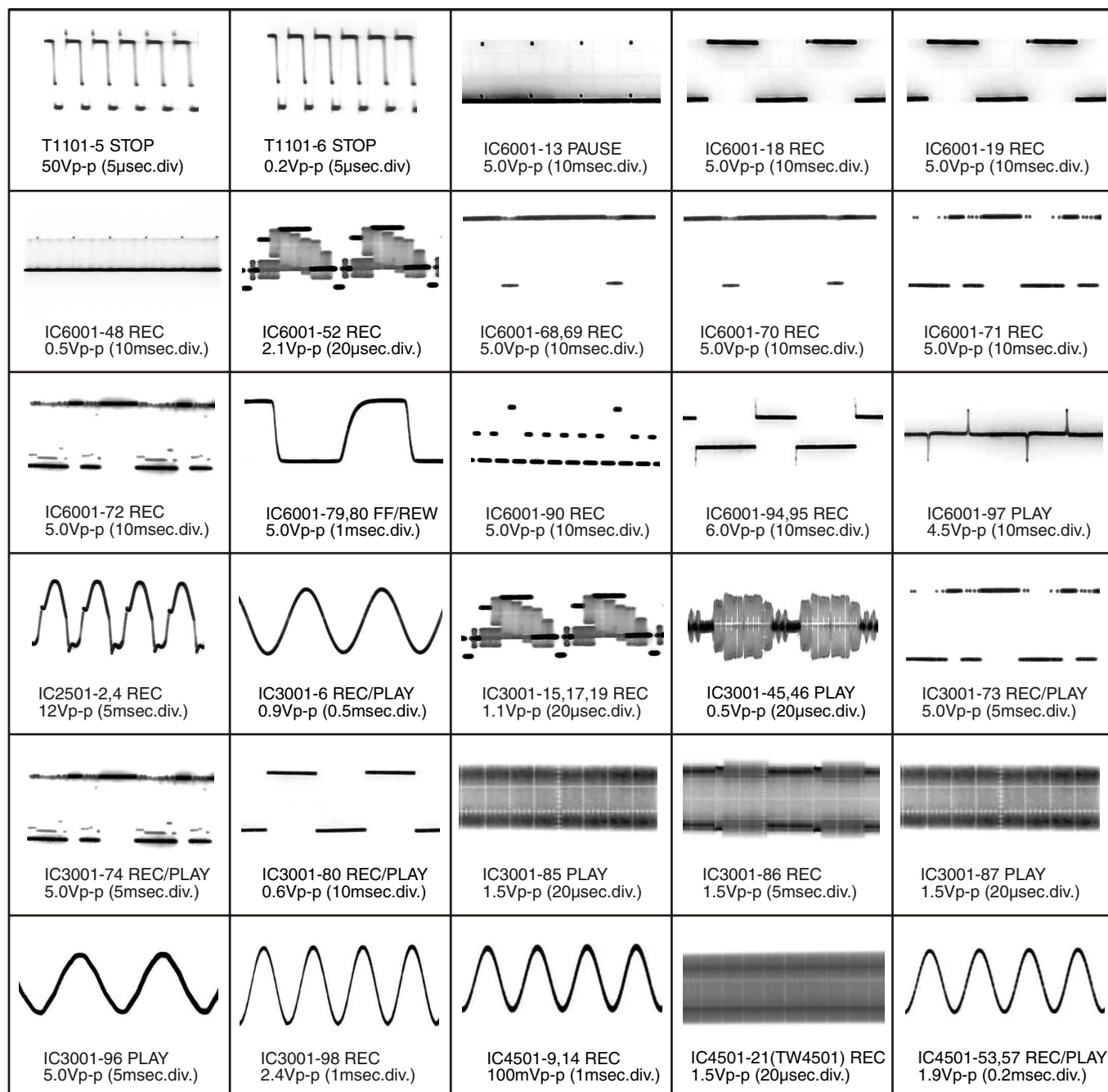
Ref.no.	Q6305			Q6401			Q6402			Q6403			Q6404			QR6402			QR6403		
Mode	E	B	C	E	B	C	E	B	C	E	B	C	E	B	C	E	B	C	E	B	C
Stop	4.94	5.69	5.63	0.00	0.00	11.94	0.00	0.00	0.00	0.01	0.55	0.00	0.00	0.00	4.83	0.01	0.00	4.50	0.00	4.92	0.00
Play	4.94	5.69	5.63	11.32	11.91	11.94	0.01	0.00	11.90	0.01	0.55	0.00	0.00	0.00	4.81	0.01	0.00	4.50	0.00	0.00	11.92
Rec	4.93	5.69	5.61	0.01	0.00	11.94	0.00	0.00	0.00	0.01	0.00	0.55	0.00	0.00	4.80	0.01	0.00	4.50	0.00	4.91	0.00

Ref.no.	Q7401			Q7403			Q7405			QR7401			QR7402			Q7402					
	E	B	C	E	B	C	E	B	C	E	B	C	E	B	C	E	B	C	E	B	C
Stop	0.00	0.62	0.06	1.83	1.15	0.00	0.00	0.56	0.00	36.16	0.06	36.11	36.20	0.06	36.15	0.00	0.06	0.06			
Play	0.00	0.62	0.06	1.83	1.15	0.00	0.00	0.56	0.00	36.16	0.06	36.11	36.21	0.06	36.16	0.00	0.61	0.06			
Rec	0.00	0.62	0.06	1.83	1.15	0.00	0.00	0.56	0.00	36.17	0.06	36.12	36.20	0.06	36.16	0.00	0.61	0.06			

## 20.1. WAVEFORM CHART

### NOTE:

The waveforms are measured with PAL colour bar signal.





# 21 ABBREVIATIONS

## 21.1. DVD

INITIAL/LOGO	ABBREVIATIONS
A	A0~UP ADDRESS ACLK AUDIO CLOCK AD0~UP ADDRESS BUS ADATA AUDIO PES PACKET DATA ALE ADDRESS LATCH ENABLE AMUTE AUDIO MUTE AREQ AUDIO PES PACKET REQUEST ARF AUDIO RF ASI SERVO AMP INVERTED INPUT ASO SERVO AMPOUTPUT ASYNC AUDIO WORD DISTINCTION SYNC
B	BCK BIT CLOCK (PCM) BCKIN BIT CLOCK INPUT BDO BLACK DROP OUT BLKCK SUB CODE BLOCK CLOCK BOTTOM CAP. FOR BOTTOM HOLD BYP BYPATH BYTCK BYTE CLOCK
C	CAV CONSTANT ANGULAR VELOCITY CBDO CAP. BLACK DROP OUT CD COMPACT DISC CDSCK CD SERIAL DATA CLOCK CDSRDATA CD SERIAL DATA CDRF CD RF (EFM) SIGNAL CDV COMPACT DISC-VIDEO CHNDATA CHANNEL DATA CKSL SYSTEM CLOCKSELECT CLV CONSTANT LINEAR VELOCITY COFTR CAP. OFF TRACK CPA CPU ADDRESS CPCS CPU CHIP SELECT CPDT CPU DATA CPUADR CPU ADDRESS LATCH CPUADT CPU ADDRESS DATA BUS CPUIRQ CPU INTERRUPT REQUEST CPRD CPU READ ENABLE CPWR CPU WRITE ENABLE CS CHIPSELECT CSYNCIN COMPOSITE SYNC IN CSYNCOUT COMPOSITE SYNC OUT
D	DACCK D/A CONVERTER CLOCK DEEMP DEEMPHASIS BIT ON/OFF DEMPH DEEMPHASIS SWITCHING DIG0~UP FL DIGIT OUTPUT DIN DATA INPUT DMSRCK DM SERIAL DATA READ CLOCK DMUTE DIGITAL MUTE CONTROL DO DROP OUT DOUT0~UP DATAOUTPUT DRF DATA SLICE RF (BIAS) DRPOUT DROP OUT SIGNAL DREQ DATA REQUEST DRESP DATA RESPONSE DSC DIGITAL SERVO CONTROLLER DSLF DATA SLICE LOOP FILTER DVD DIGITAL VIDEO DISC

INITIAL/LOGO	ABBREVIATIONS
E	EC ERROR TORQUE CONTROL ECR ERROR TORQUE CONTROL REFERENCE ENCSSEL ENCODER SELECT ETMCLK EXTERNAL M CLOCK (81MHz/40.5MHz) ETSCCLK EXTERNAL S CLOCK (54MHz)
F	FBAL FOCUS BALANCE FCLK FRAME CLOCK FE FOCUS ERROR FFI FOCUS ERROR AMP INVERTED INPUT FEO FOCUS ERROR AMP OUTPUT FG FREQUENCY GENERATOR FSC FREQUENCY SUB CARRIER FSCK FS (384 OVER SAMPLING) CLOCK
G	GND COMMON GROUNDING (EARTH)
H	HA0~UP HOST ADDRESS HD0~UP HOST DATA HINT HOST INTERRUPT HRXW HOST READ/WRITE
I	IECOUT IEC958 FORMAT DATA OUTPUT IPFRAG INTERPOLATION FLAG IREF I (CURRENT) REFERENCE ISEL INTERFACE MODE SELECT
L	LDON LASER DIODE CONTROL LPC LASER POWER CONTROL LRCK L CH/R CH DISTINCTION CLOCK
M	MA0~UP MEMORY ADDRESS MCK MEMORY CLOCK MCKI MEMORY CLOCK INPUT MCLK MEMORY SERIAL COMMAND CLOCK MDATA MEMORY SERIAL COMMAND DATA MDQ0~UP MEMORY DATA INPUT/OUTPUT MDQM MEMORY DATA I/O MASK MLD MEMORYSERIAL COMMAND LOAD MPEG MOVING PICTURE EXPERTS GROUP
O	ODC OPTICAL DISC CONTROLLER OFTR OFF TRACKING OSCI OSCILLATOR INPUT OSCO OSCILLATOR OUTPUT OSD ON SCREEN DISPLAY
P	P1~UP PORT PCD CD TRACKING PHASE DIFFERENCE PCK PLL CLOCK PDVD DVD TRACKING PHASE DIFFERENCE PEAK CAP. FOR PEAK HOLD PLLCLK CHANNEL PLL CLOCK PLLCK PLL LOCK PWMCTL PWM OUTPUT CONTROL PWMDA PULSE WAVE MOTOR DRIVEA PWMOA, B PULSE WAVE MOTOR OUT A, B

INITIAL/LOGO	ABBREVIATIONS
R	RE RFENV RFO RS RSEL RST RSV 
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 
T	TE TIBAL TID TIN TIP TIS TPSN TPSO TPSP TRCRS TRON TRSON 

INITIAL/LOGO	ABBREVIATIONS
V	VBLANK VCC  VCDCONT  VDD VFB VREF VSS 
W	WAIT WDCK WEH WSR 
X	X XALE XAREQ XCDROM XCS XCSYNC XDS XHSYNCO XHINT XI XINT XMW XO XRE XSRMCE XSRMOE XSRMWE XVCS XVDS XVSYNCO 

## 21.2. VHS

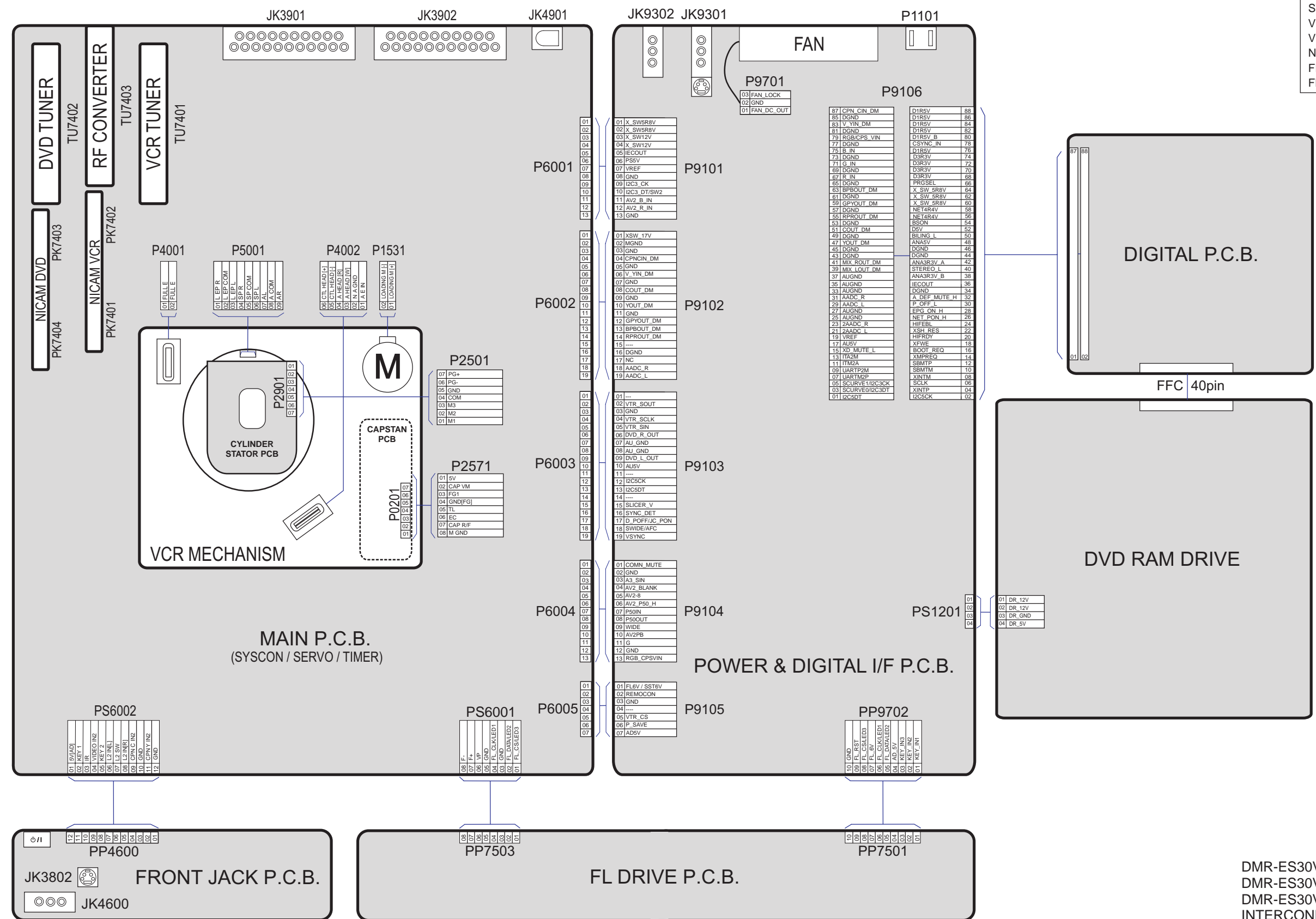
443NT [L]	4.43 NTSC ①	BIL	BILINGUAL
A. COMP	AUDIO COMPONENT SIGNAL	BIL [L]	BILINGUAL ①
A. COMPO	AUDIO COMPONENT SIGNAL	BIL. [H]	BILINGUAL ②
A. D.P [L]	AUDIO DUBBING PAUSE ①	BIL/M1 [L]	BILINGUAL ③
A. D/L [L]	AUDIO DUBBING PAUSE ①	BS CLOCK	BS CLOCK
A. DEF [S]	AUDIO DEFEAT	BS DATA	BS DATA
A. DEF [S] [L]	AUDIO DEFEAT	BS LCH IN	BS L CHANNEL INPUT
A. DUB P [L]	AUDIO DUBBING PAUSE ①	BS MIX [H]	BS MIX ④
A. DUB [H]	AUDIO DUBBING ②	BS MON [H]	BS MONITOR ⑤
A. ERASE	AUDIO ERASE	BS MONI [H]	BS MONITOR ⑥
A. H. SW	AUDIO HEAD SWITCHING PULSE	BS RCH IN	BS R CHANNEL INPUT
A. HEAD [R]	AUDIO HEAD (REC)	BS VIDEO	BS VIDEO SIGNAL
A. HEAD [W]	AUDIO HEAD (PLAY)	BS VIDEO/BS1	BS VIDEO SIGNAL
A. IN [L]	AUDIO INPUT (L)	BS [H]	BS ⑦
A. IN [R]	AUDIO INPUT (R)	BS. LEVEL	BS LEVEL
A. MUT [H]	AUDIO MUTE ③	BS. M [H]	BS MONITOR ⑧
A. MUTE [H]	AUDIO MUTE ③	BS/VTR [H]	BS/VTR ⑨
A. OUT [L]	AUDIO OUTPUT (L)	BUS CLK	BUS CLOCK
A. OUT [R]	AUDIO OUTPUT (R)	BUS LSN	BUS LISTEN
A. RF OUT	AUDIO RF SIGNAL OUTPUT	BUS TLK	BUS TALK
A/V/S. DATA	AV SW/SERIAL DATA	BUZZER	BUZZER
AC ONLINE	AC ONLINE	CAP EC	CAPSTAN TORQUE CONTROL
AC. O/EE. H	AC ONLINE/EE ④	CAP M GND	CAPSTAN MOTOR GND
AFC S C	AFC S CURVE	CAP. ET	CAPSTAN TORQUE CONTROL
AFC [S]	AFC S CURVE	CAP. FG1	CAPSTAN FG1 PULSE
AFC. DEF	AFC DEFEAT	CAP. FG2	CAPSTAN FG2 PULSE
ARFC OUT	AUDIO RF SIGNAL OUTPUT	CAS. SW	CASSETTE SW
ART. V	ARTIFICIAL VERTICAL SYNC SIGNAL	CCN	PLAYBACK CONTROL SIGNAL (-)
ART. V. MM	ARTIFICIAL VERTICAL SYNC SIGNAL MONO MULTI	CCP	PLAYBACK CONTROL SIGNAL (+)
	ARTIFICIAL VERTICAL SYNC SIGNAL ⑤/NORMAL	CHM	CONTROL SIGNAL (+)
ART. V/H/N	ARTIFICIAL VERTICAL SYNC SIGNAL	CHP	CONTROL SIGNAL (-)
	TEST/NORMAL/SERVICE	CINEM [L]	CINEMA ①
AT. V/H/N	TEST/NORMAL/SERVICE	CINEMA [L]	CINEMA ②
ATSW/TEST/NOR/SE	AUDIO INPUT (L)	CINEMA/MIX	CINEMA/MIX
AUDIO IN [L]	AUDIO INPUT (R)	CKL	RATCH LOCK
AUDIO IN [R]	AUDIO OUTPUT (L)	CKS	SHIFT LOCK
AUDIO OUT [L]	AUDIO OUTPUT (R)	CL	CLOCK
AUDIO OUT [R]	AUDIO SELECT ⑥	CLK	CLOCK
AUDIO SELECT [H]	AUDIO (L)	CLK (C.G)	CLOCK
AUDIO. L	AUDIO (R)	CLOCK. IN	CLOCK INPUT
AUDIO. R	AV CONTROL	CLP	CLAMP
AV CNT	AV CONTROL	COL/B/W/NOR	COLOUR/BLACK & WHITE/NORMAL
AV CTL	AV CONTROL/SERIAL CLOCK	COLOR [H]	COLOUR ③
AV CTL/S. CLK	AV CONTROL MODE	CONV	CONVERTOR
AV. C.M.	AV CONTROL/LEVEL METER (R)	CS	CHIP SELECT
AVCNT/METER. R	AV SW/LEVEL METER (L)	CTL GND	CONTROL GND
AVSW/METER. L	B MODE ⑦	CTL HEAD [+]	CONTROL HEAD (+)
B MODE. H	BURST GATE PULSE	CTL HEAD [-]	CONTROL HEAD (-)
B.G.P	BACK UP 5V	CTL [+]	CONTROL HEAD (+)
BACKUP 5V	BAND U	CTL [-]	CONTROL HEAD (-)
BAND. U.E.	BAND VL	CUE BIAS	CUE BIAS
BANDVL. D	BILINGUAL/MIX ⑧	CURRENT LIM	CURRENT LIMMITER
BI/MI [L]		CYL ET	CYLINDER TORQUE CONTROL

CYL GND	CYLINDER GND	FULL. E. 12V	FULL ERASE 12V
D.F.M. REC [H]	DELAIED FM RECORDING Ⓜ	GND [A]	GND (ANALOG)
D. FM REC [L]	DELAIED FM RECORDING Ⓛ	GND [TU]	GND (TUNER)
D. GND	DIGITAL GND	GND/N. SW. 12V	GND/NON SW 12V
D. REC [H]	DELAYED RECORDING Ⓜ	H. SYNC	HORIZONTAL SYNC
D4/S. LED	D4/STILL LED	H. AMP. SW	HEAD AMP SW PULSE
D4/STILLED	D4/STILL LED	H. P <R>	HEAD PHONE (R)
DAC [CLK]	TUNER DAC (CLOCK)	H. P <L>	HEAD PHONE (L)
DAC/FSCS	TUNER DAC/FS CHIP SELECT	H. P GND	HEAD PHONE GND
DAREC [H]	DELAYED AUDIO RECORDING Ⓜ	H. P OUT [L]	HEAD PHONE OUTPUT (L)
DATA	DATA	H. P OUT [R]	HEAD PHONE OUTPUT (R)
DECODER [L]	DECODER (L)	H. SW	HEAD SW PULSE
DECODER [R]	DECODER (R)	HEAD PHONE [L]	HEAD PHONE (L)
DEW	DEW	HEAD PHONE [R]	HEAD PHONE (R)
DEW SNS	DEW SENSOR	HEAD SW	HEAD SW
DFMRE [H]	DELAYED FM AUDIO RECORDING Ⓜ	HEATER [+]	HEATER (+)
E. REC 5V	EXCEPT RECORDING 5V	HEATER [-]	HEATER (-)
EC	ERROR TORQUE CONTROL	HSS	HORIZONTAL SYNC SIGNAL
ECR	ERROR TORQUE CONTROL	HTR [+]	HEATER (+)
	REFERENCE VOLTAGE	HTR [-]	HEATER (-)
EDT TRIG [L]	EDIT TRIGGER Ⓛ	I RFE	REFERENCE CURRENT
EDIT [H]	EDIT Ⓜ	ICL	CONTROL AGC CIRCUIT
EE [H]	EE Ⓜ	IF	INTERMEDIATE FREQUENCY
EE [H]/INS [M]	EE Ⓜ/INSERT Ⓜ	IN SELA1	INPUT SELECT A1 POSITION
EE. VV. TR	EE/VV/TRICK PLAY	IN SELA2	INPUT SELECT A2 POSITION
EJECT. PO	EJECT POSITION	IN SELA3	INPUT SELECT A3 POSITION
EJECT/VDET	EJECT/REVERSE SLOW LOCK	INS L/R [L]	INSERT Lch/Rch Ⓛ
ENV. SEL	ENVELOPE SELECT	INS. [H]	INSERT Ⓜ
ENVE. OUT	ENVELOPE OUTPUT	INSEL A1	INPUT SELECT A1 POSITION
ENVE. SEL	ENVELOPE SELECT	INSEL A2	INPUT SELECT A2 POSITION
ENV SELECT	ENVELOPE SELECT	INSERT	INSERT
EP [H]	LP Ⓜ	INSERT [H]	INSERT Ⓜ
EP/LP [H]	LP Ⓜ	IO CS	INPUT/OUTPUT CHIP SELECT
EP/LP/SP	LP/SP	JOG1	JOG1
EP/SS [H]	LP/SLOW/STILL/STOP Ⓜ	JOG S3 LED/FOWRD	JOG LED/FORWARD LED
EPROMCS	EPROM CHIP SELECT	JOG/F. LED	JOG LED/FORWARD LED
EX. REC 5V	EXCEPT RECORDING 5V	JSB [H]	JSB Ⓜ
FF/REW [L]	FIRST FORWARD/REWIND Ⓛ	JST. CLCK	JUST CLOCK
FG1 IN	FG1 PULSE INPUT	JST. CLK	JUST CLOCK
FG2 IN	FG2 PULSE INPUT	JST. CLOCK	JUST CLOCK
FILTER ADJUSTMENT	FILTER ADJUSTMENT	L. OUT	Lch OUTPUT
FLY ERASE [H]	FLYING ERASE HEAD ON Ⓜ	L. CH [H]	Lch Ⓜ
FLY ON [H]	FLYING ERASE HEAD ON Ⓜ	L. CH [L]	Lch Ⓛ
FLY. E [H]	FLYING ERASE HEAD ON Ⓜ	LED (MAIN)	LED (MAIN)
FM MUT [H]	FM AUDIO MUTE Ⓜ	LED (STEREO)	LED (STEREO)
FM MUTE [H]	FM AUDIO MUTE Ⓜ	LED (SUB)	LED (SUB)
FM OUT [L]	FM OUTPUT (L)	LED CKL	LED SERIAL CLOCK
FM OUT [R]	FM OUTPUT (R)	LED CKS	LED SERIAL CLOCK
FM PACK OUT [L]	FM PACK OUTPUT (L)	LED DATA	LED SERIAL DATA
FM PACK OUT [R]	FM PACK OUTPUT (R)	LINE IN 1 [L]	LINE INPUT 1 (L)
FM/BS SEL [L]	FM/BS SELECT (L)	LINE IN 1 [R]	LINE INPUT 1 (R)
FM/BS SEL [R]	FM/BS SELECT (R)	LINE IN 2 [L]	LINE INPUT 2 (L)
FS. CLK	FS CLOCK	LINE IN 2 [R]	LINE INPUT 2 (R)
FUL. E [H]	FULL ERASE HEAD ON Ⓜ	LINE IN V	LINE INPUT VIDEO
FULL. E [H]	FULL ERASE HEAD ON Ⓜ	LINE IN [L]	LINE INPUT (L)

LINE IN [R]	LINE INPUT (R)	P-OFF [H]	POWER OFF Ⓜ
LINE OUT [L]	LINE OUTPUT (L)	P-OFF [L]	POWER OFF Ⓛ
LINE OUT [R]	LINE OUTPUT (R)	P. FAIL	POWER FAILURE DETECT
LP [H]	LP Ⓜ	P. OFF [H]	POWER OFF Ⓜ
LPTRI [L]	LP TRICK PLAY Ⓛ	P. OFF [L]	POWER OFF Ⓛ
Lch/A. DUB	Lch/AUDIO DUBBING	PAL [H]	PAL Ⓜ
M GND	MOTOR GND	PAL [L]/NTSC [H]	PAL Ⓛ/NTSC Ⓜ
M REG	MOTOR REGULATOR	PB ADJ OUT	PLAYBACK ADJUST OUTPUT
MAIN OUT	MAIN OUTPUT	PB OUT	PLAYBACK OUTPUT
MAIN [L]	MAIN Ⓛ	PB. H	PLAYBACK Ⓜ
MAIN/MONO	MAIN/MONAUROAL	PFG	PG/FG
MAX IN	MAXIMAM INPUT	PHOTSN +B	PHOTO SENSOR +B
MES [H]	MESECAM Ⓜ	PICT. CNT	PICTURE CONTROL
MESE [H]	MESECAM Ⓜ	PLAY LED/RVS LED	PLAY LED/REVERSE LED
MESE [L]	MESECAM Ⓛ	PLAY. PO	PLAY POSITION
METER 5V	LEVEL METER 5V	PLAY/R. LED	PLAY LED/REVERSE LED
METER [L]	LEVEL METER (L)	PLY/DEW	PLAY/DEW Ⓜ
METER [R]	LEVEL METER (R)	POWER OFF [L]	POWER OFF Ⓛ
METER. L/AVS	LEVEL METER (L)	PREROLL [H]	PREROLL Ⓜ
METER. R/AVC	LEVEL METER (R)	PWRFAIL	POWER FAILURE DETECT
MI/BI [L]	MIX Ⓜ/BILIGUAL	R. CH [H]	Rch Ⓜ
MIC GND	MIC GND	R. CH [L]	Rch Ⓛ
MIC IN	MIC INPUT	R. ST	RESET
MIC IN [L]	MIC INPUT (L)	R/S/F	REVERSE Ⓜ/STOP Ⓜ/FORWARD Ⓛ
MIC IN [R]	MIC INPUT (R)	RCH [H]	Rch Ⓜ
MIC [H]	MIC Ⓜ	REC 12V	RECORDING 12V
MIX [H]	MIX Ⓜ	REC CHROMA	RECORDING CHROMINANCE SIGNAL
MIX [H]/CINEMA [L]	MIX Ⓜ/CINEMA SOUND Ⓛ	REC H	RECORDING Ⓜ
MIX/CINE	MIX Ⓜ/CINEMA SOUND Ⓛ	REC IN	RECORDING INPUT
MIX/CINEMA [L]	MIX Ⓜ/CINEMA SOUND Ⓛ	REC OUT [L]	RECORDING OUTPUT Ⓛ
MN. H/M. L	MONAUROAL Ⓜ/MAIN Ⓛ	REC START	RECORDING START
MN. H/MAI. L	MONAUROAL Ⓜ/MAIN Ⓛ	REC VR [C]	RECORDING VOLUME (COMMON)
MN2/MES. L	MONAUROAL 2/MESECAM Ⓛ	REC VR [L]	RECORDING VOLUME (L)
MODE SEL	AUDIO MODE SELECT	REC VR [R]	RECORDING VOLUME (R)
MODE SW	AUDIO MODE SW	REC Y	RECORDING LUMINANCE SIGNAL
MODE. S. IN	AUDIO MODE SELECT INPUT	REC [H]	RECORDING Ⓜ
MODE. S. OUT	AUDIO MODE SELECT OUTPUT	REC. C	RECORDING CHROMINANCE SIGNAL
MONO [H]	MONAUROAL Ⓜ	REC. Y	RECORDING LUMINANCE SIGNAL
MONO [H]/MAIN [L]	MONAUROAL Ⓜ/MAIN Ⓛ	REC/EE CTL	RECORDING/EE CONTROL
MONO2 [L]	MONAUROAL 2	REEL-T	REEL PULSE (TAKE-UP)
MONO2/MESE [FM(L)]	MONAUROAL 2/MESECAM (FM Ⓛ)	REEL-S	REEL PULSE (SUPPLY)
MOTOR GND	MOTOR GND	REGULATOR FILTER	REGULATOR FILTER
MUTE	MUTE	RESET	RESET
N. A. REC [L]	NORMAL AUDIO RECORDING	REV M F/R	REVIEW MOTOR
N. SW 12V	NON SW 12V		FORWARD/REVERSE
N. SW. 5. DET	NON SW 5V DETECT	REV M V1	REVIEW MOTOR V1
NICAM	NICAM	REV M V2	REVIEW MOTOR V2
NICAM [L]	NICAM Ⓛ	REV MOTOR F/R	REVIEW MOTOR
NOL [H]	PAL Ⓜ/4.43 NTSC Ⓜ/3.58 NTSC Ⓛ		FORWARD/REVERSE
NOR/SOFT [H]	NORMAL/SOFT TAPE PLAY Ⓜ	REV MOTOR V1	REVIEW MOTOR V1
NORMAL [H]	NORMAL Ⓜ	REV MOTOR V2	REVIEW MOTOR V2
NR BIAS	NR BIAS	REV MOTOR [+]	REVIEW MOTOR (+)
NTSC [L]	NTSC Ⓛ	REV MOTOR [-]	REVIEW MOTOR (-)
OCH	CONTROL AGC CIRCUIT	REV. M. GND	REVIEW MOTOR GND
OUT	OUTPUT	RF. CHROMA	RF CHROMINANCE SIGNAL

RF OUT	RF OUTPUT	SYSCON 5V	SYSTEM CONTROL 5V
RF Y	RF LUMINANCE SIGNAL	SYSTEM	SYSTEM SW
RF. Y. IN	RF LUMINANCE SIGNAL INPUT	T-PHOTO	TAKE-UP PHOTO TRANSISTOR
RF. Y. OUT	RF LUMINANCE SIGNAL OUTPUT	T-RL. PLS	TAKE-UP REEL PULSE
ROTAR. SW	ROTARY SW	T. BUSCLK	TIMER BUS CLOCK
ROTARY	ROTARY SW	T. BUSLSN	TIMER BUS LISTEN
RST	RESET	T. BUSTLK	TIMER BUS TALK
RST [L]	RESET $\textcircled{L}$	T. END [L]	TAPE END $\textcircled{L}$
Rch/INST	Rch/INSERT	T. PHOTO	TAKE-UP PHOTO TRANSISTOR
S IN	SERIAL DATA INPUT	TAPE END [L]	TAPE END $\textcircled{L}$
S OUT	SERIAL DATA OUTPUT	TAPE END [L]/CAM	TAPE END $\textcircled{L}$ /CAMERA PAUSE
S-PHOTO	SUPPLY PHOTO TRANSISTOR	TEST	TEST MODE
S-RL. PLS	SUPPLY REEL PULSE	TPZ	TRAPEZOIDAL WAVE CIRCUIT
S. CLK	SERIAL CLOCK	TRIC [L]	TRIC PLAY $\textcircled{L}$
S. CLK/AV	SERIAL CLOCK/AV	TRICK [L]	TRIC PLAY $\textcircled{L}$
S. DATA	SERIAL DATA	TRK. ENV	AUTO TRACKING ENVELOPE DETECT
S. DATA/A	SERIAL DATA	TU. AUDIO	TUNER AUDIO
S. PHOTO	SUPPLY PHOTO TRANSISTOR	TU. GND	TUNER GND
S. TAB [L]	SAFETY TAB SW ON $\textcircled{L}$	TU. V. IN	TUNER VIDEO SIGNAL INPUT
S/P/N	SECAM/PAL/NTSC	TU. VIDEO	TUNER VIDEO
SC IN	SERIAL CLOCK INPUT	TUN NOR IN	TUNER NORMAL INPUT
SC OUT	SERIAL CLOCK OUTPUT	TUN R	TUNER AUDIO (R)
SCK SELECT	SERIAL CLOCK SELECT	TUN. AUDIO IN	TUNER AUDIO INPUT
SEL OUT [L]	SELECT OUTPUT (L)	TUNER 12V	TUNER 12V
SEL OUT [R]	SELECT OUTPUT (R)	TUNER L	TUNER AUDIO (L)
SHUTTLE 1	SHUTTLE 1	TUNER V IN	TUNER VIDEO SIGNAL INPUT
SIF	SOUND INTERMEDIATE FREQUENCY	TUNER [L]	TUNER AUDIO (L)
SLMUT [H]	INPUT SELECT MUTE $\textcircled{H}$	TUNER [N]	TUNER AUDIO (NORMAL)
SLNID [H]	SOLENOID (+)	TUNER [R]	TUNER AUDIO (R)
SLNID [-]	SOLENOID (-)	TUNER. 12	TUNER 12V
SLW TR. MM	SLOW TRACKING MONO MULTI	TUOFF [H]	TUNER OFF $\textcircled{H}$
SLW TR. REF	SLOW TRACKING REFERENCE	TV. AUDIO	TV AUDIO
	VOLTAGE	TV/VTR	TV/VTR
SNS. GND	SENSOR GND	TXTON [L]	TEXT ON $\textcircled{L}$
SOFT [H]	SOFT TAPE PLAY $\textcircled{H}$	U. REG45V	UNREGULATOR 45V
SOFT [H]/NORMAL	SOFT TAPE PLAY $\textcircled{H}$ /NORMAL $\textcircled{H}$	UNREG	UNREGULATOR
SOLENOID ON [L]	SOLENOID ON $\textcircled{L}$	UNREG19V	UNREGULATOR 19V
SP [H]	SP $\textcircled{H}$	V. REF	REFERENCE VOLTAGE
SP/L/SLP	SP/LP	V. EE [H]	VIDEO EE $\textcircled{H}$
SSS [L]	SLOW/STILL/STOP	V. EE [L]	VIDEO EE $\textcircled{L}$
STEREO LED	STEREO LED	VCO REF	REFERENCE OSCILLATER
STEREO [H]	STEREO $\textcircled{H}$	VD. IN	VIDEO SIGNAL INPUT
STEREO [L]	STEREO $\textcircled{L}$	VD. OUT	VIDEO SIGNAL OUTPUT
STOP. PO	STOP POSITION	VIDEO EE [L]	VIDEO EE $\textcircled{L}$
STOP/5V	STOP POSITION/5V	VIDEO IN	VIDEO SIGNAL INPUT
STOP1/TAPE SEL	STOP1 POSITION/TAPE SELECT	VIDEO OUT	VIDEO SIGNAL OUTPUT
STOP1/PAL:ST	STOP1 POSITION/PAL	VM	MOTOR VOLTAGE
STOP2. PO	STOP 2 POSITION	VM DOWN [L]	MOTOR VOLTAGE DOWN $\textcircled{L}$
STOP2/S-TAB	STOP 2 POSITION/SAFETY TAB SW	VSS	VERTICAL SYNC SIGNAL
STREO [H]	STEREO $\textcircled{H}$	VTR [H]	VTR $\textcircled{H}$
SUB BIAS	SUB BIAS	VTR. 12V	VTR 12V
SUB. SW	SUB SW	X IN	OSCILLATOR INPUT
SVHS CAS [L]	S-VHS CASSETTE $\textcircled{L}$	X OUT	OSCILLATOR OUTPUT
SW. 5. DET	SW 5V DETECT		
SYNC [L]	SYNC $\textcircled{L}$		

22 INTERCONNECTION DIAGRAM



- NAVIGATION
- POWER SUPPLY
  - DVD OUTPUT
  - INTERFACE
  - IO/TUNER
  - SYSCON/SERVO/TIMER
  - VHS AUDIO
  - VIDEO
  - NICAM DECODER
  - FRONT JACK
  - FL DRIVE

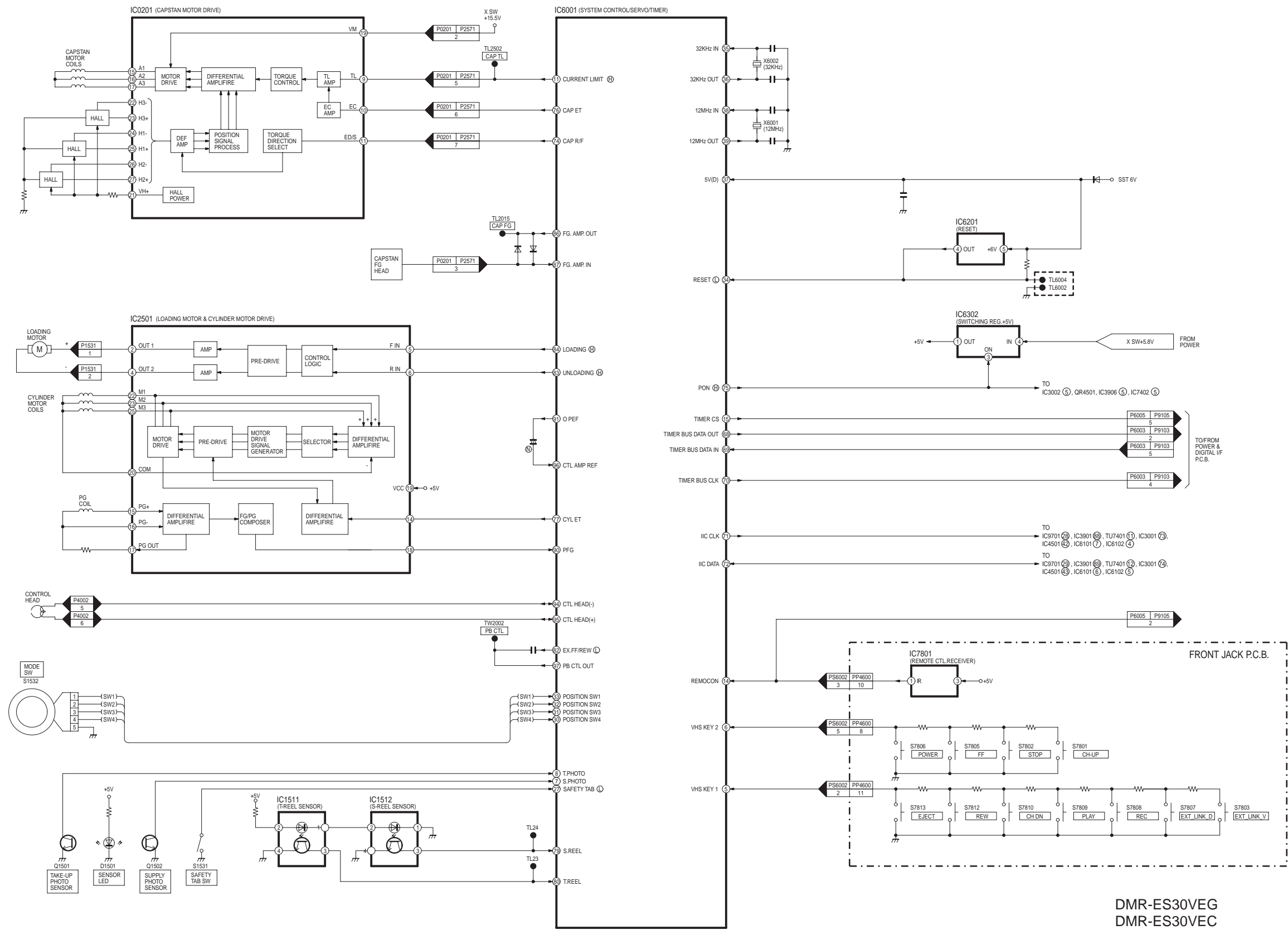
DMR-ES30VEG  
DMR-ES30VEC  
DMR-ES30VEB  
INTERCONNECTION DIAGRAM



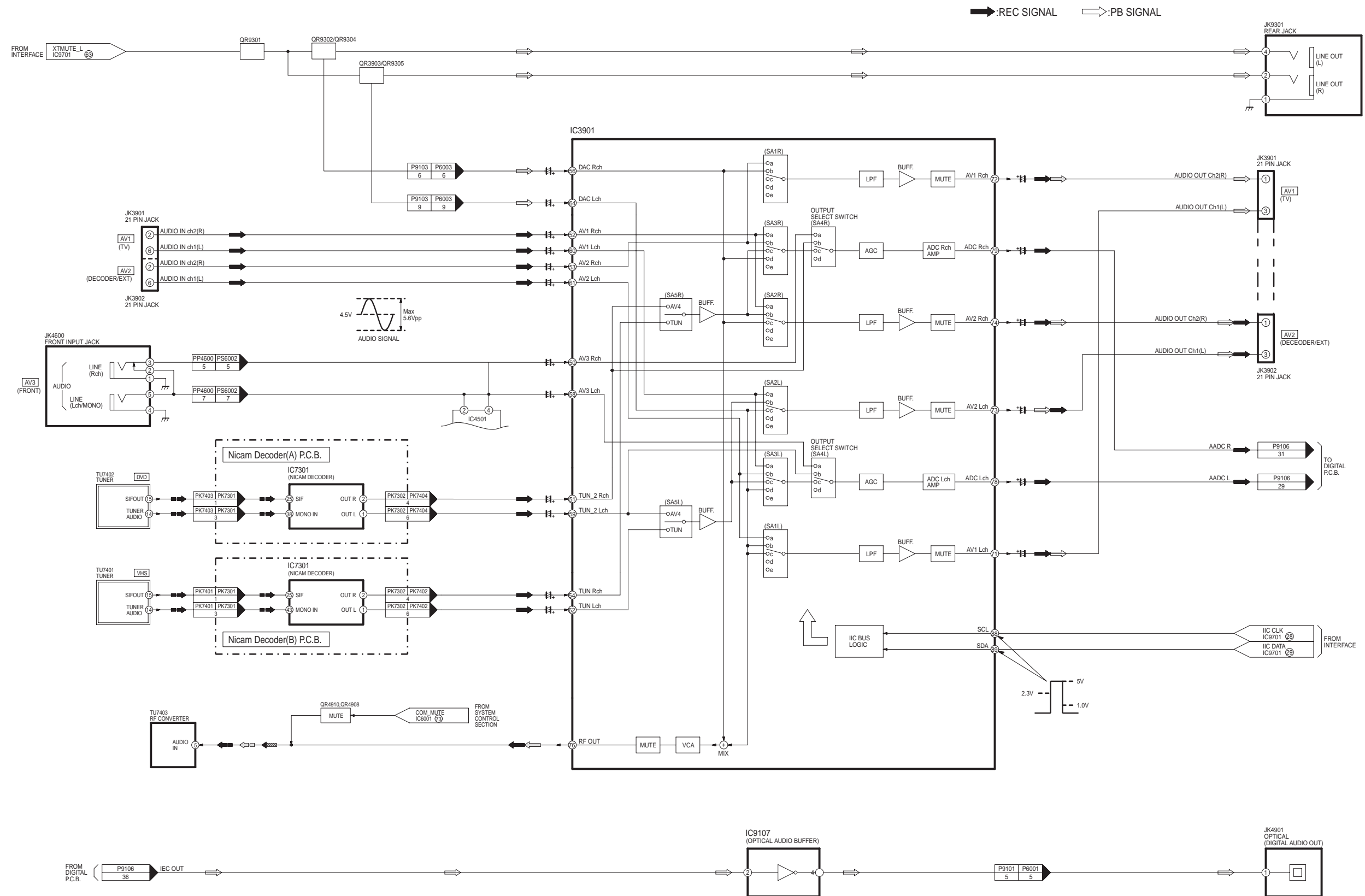




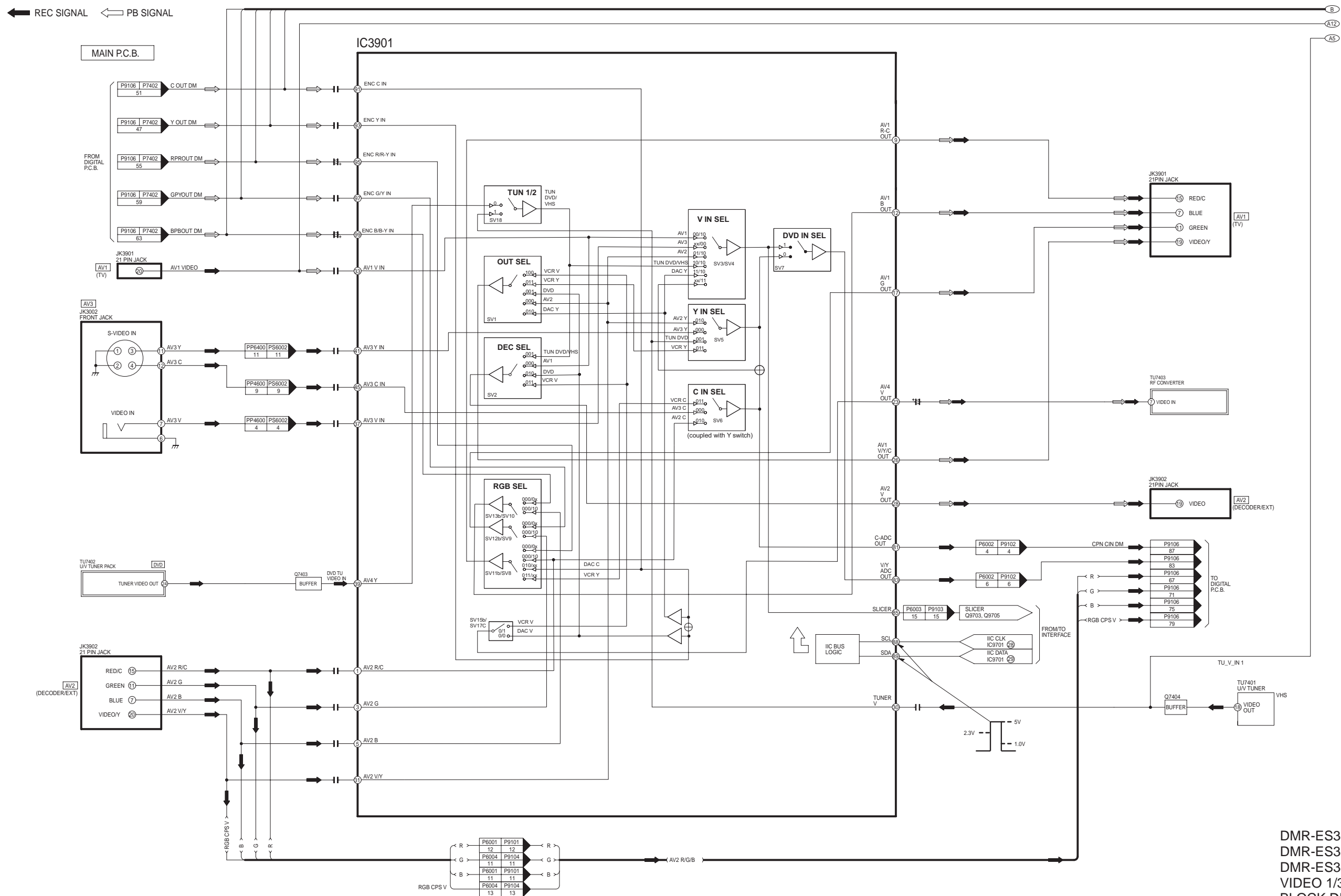
23.2. SYSTEM CONTROL, SERVO & TIMER BLOCK DIAGRAM



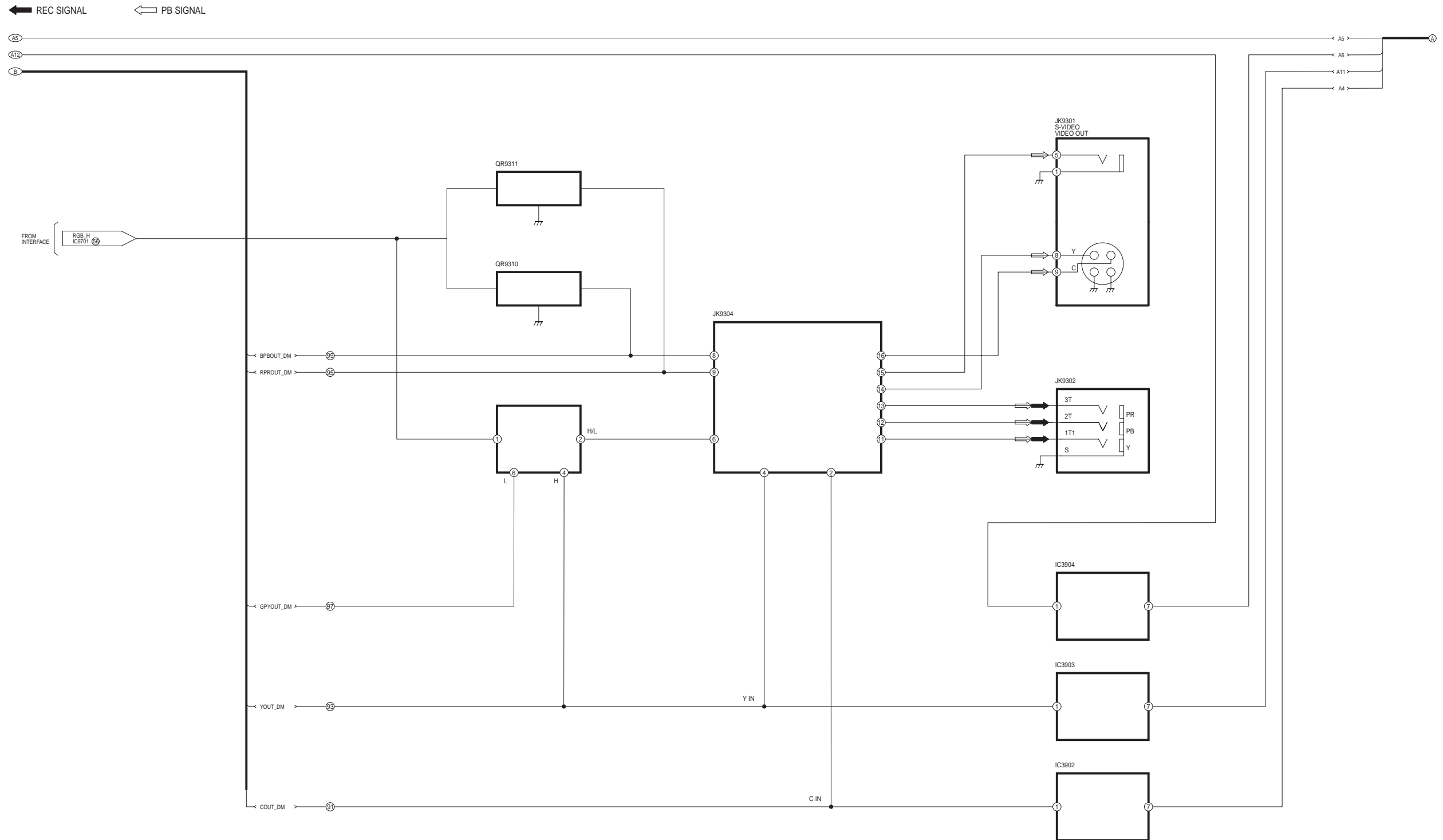
## 23.3. AUDIO BLOCK DIAGRAM

DMR-ES30VEG  
DMR-ES30VEC  
DMR-ES30VEB  
AUDIO  
BLOCK DIAGRAM

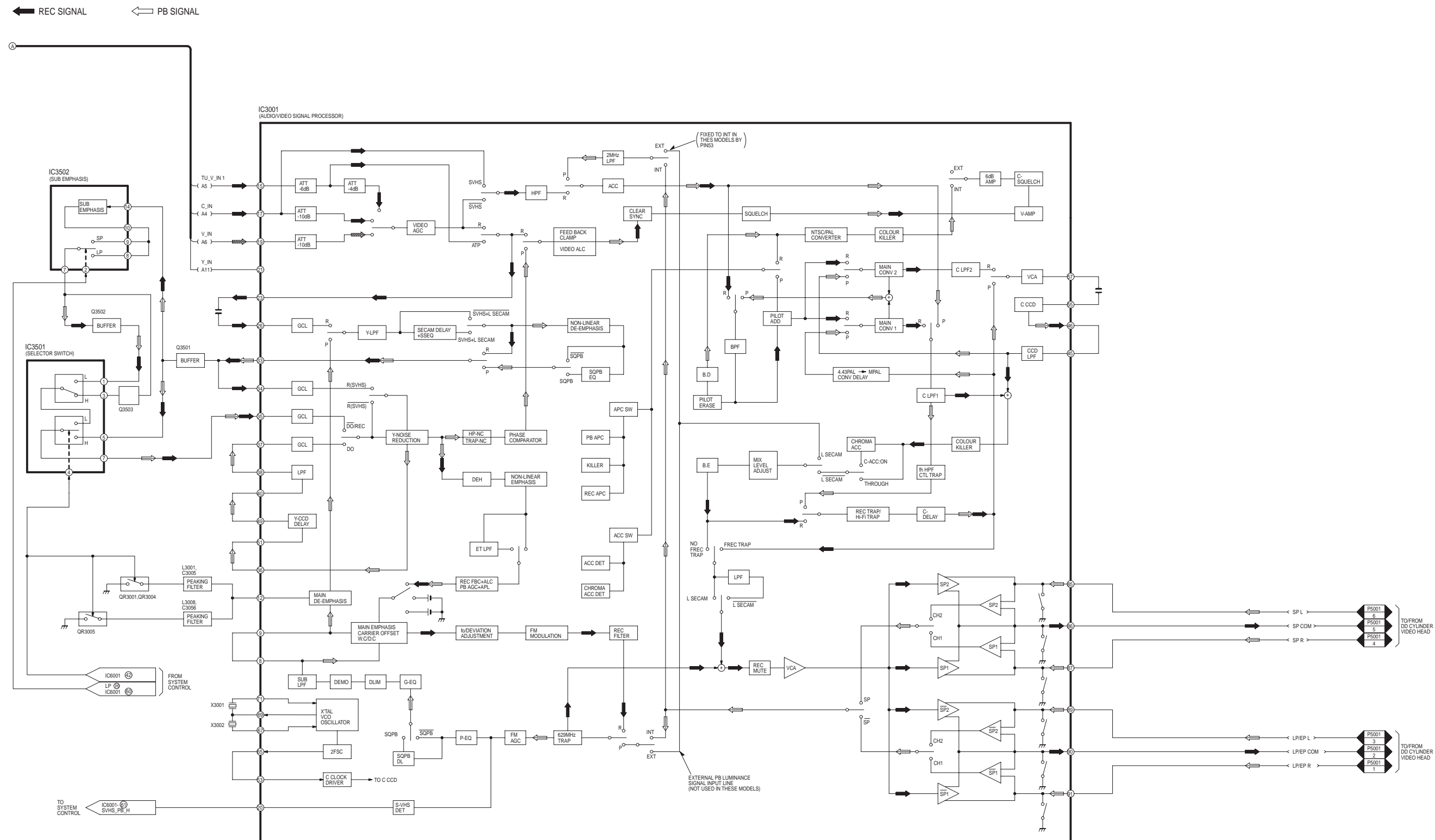
## 23.4. VIDEO BLOCK DIAGRAM



DMR-ES30VEG  
DMR-ES30VEC  
DMR-ES30VEB  
VIDEO 1/3  
BLOCK DIAGRAM

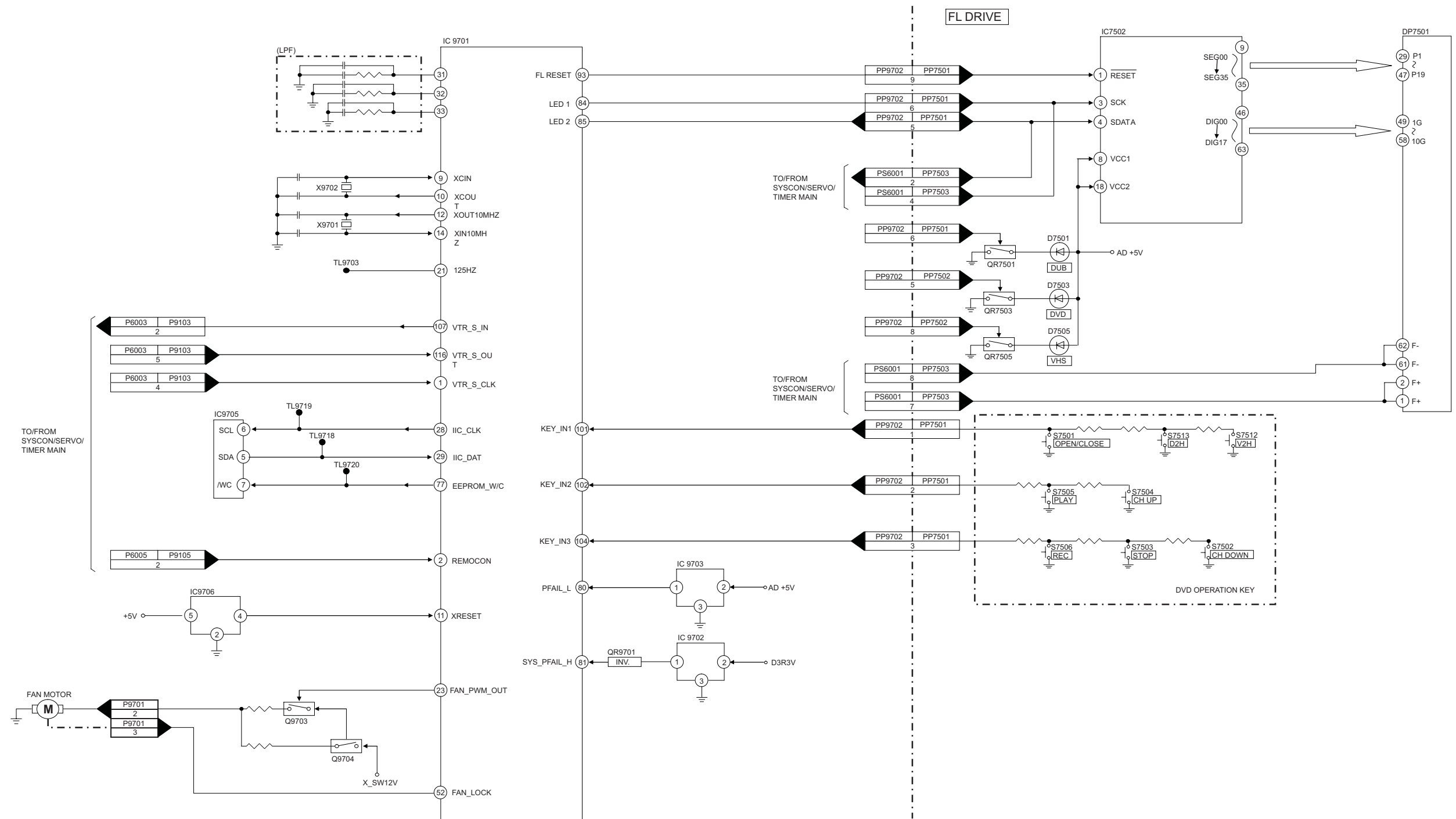


DMR-ES30VEG  
DMR-ES30VEC  
DMR-ES30VEB  
VIDEO 2/3  
BLOCK DIAGRAM



DMR-ES30VEG  
DMR-ES30VEC  
DMR-ES30VEB  
VIDEO 3/3  
BLOCK DIAGRAM

## 23.5. DIGITAL I/F P.C.B. BLOCK DIAGRAM



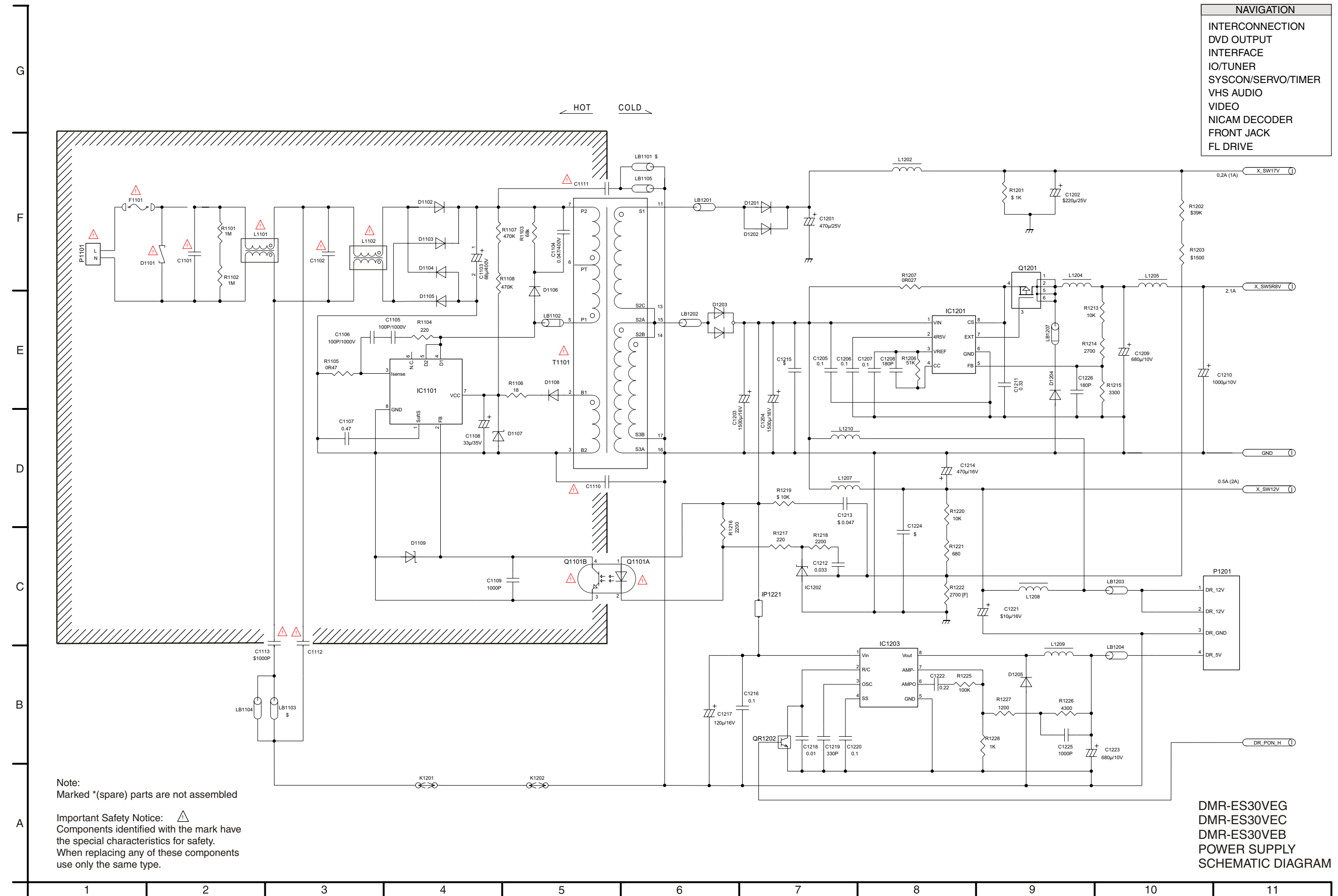
DMR-ES30VEG  
DMR-ES30VEC  
DMR-ES30VEB  
DIGITAL I/F P.C.B.  
BLOCK DIAGRAM



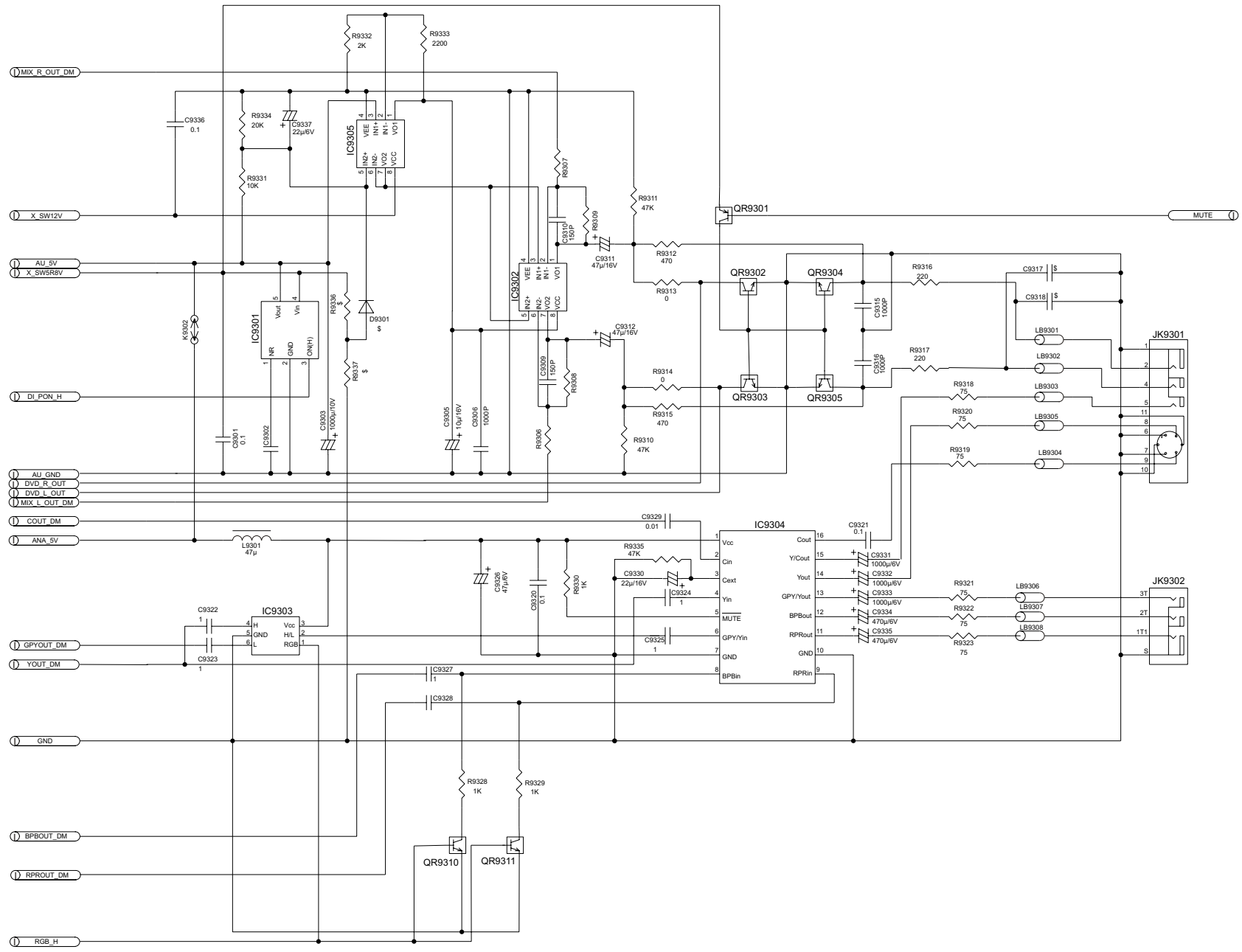


# 24 SCHEMATIC DIAGRAM

## 24.1. POWER SUPPLY




## 24.2. DVD OUTPUT



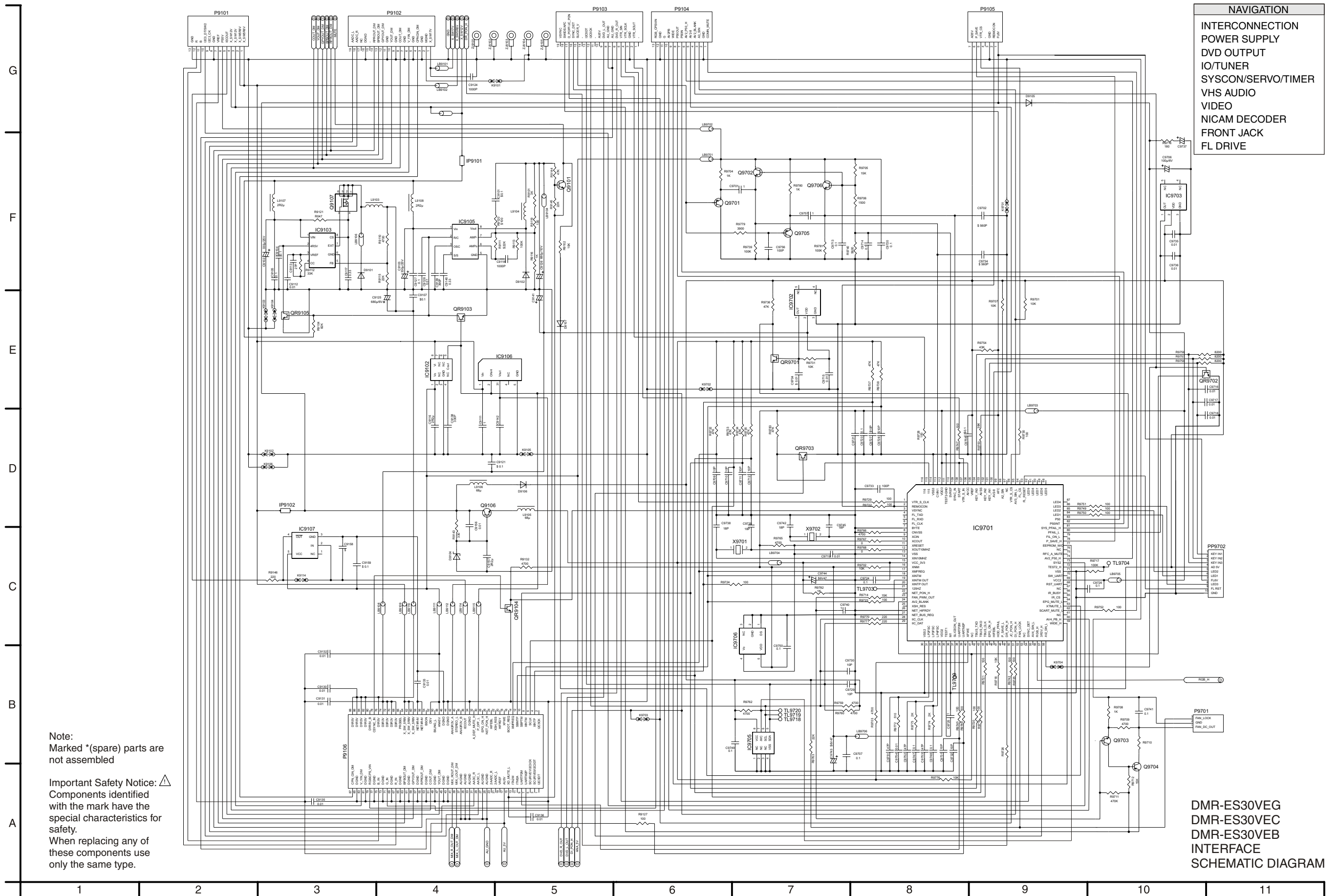
NAVIGATION
INTERCONNECTION
POWER SUPPLY
INTERFACE
IO/TUNER
SYSCON/SERVO/TIMER
VHS AUDIO
VIDEO
NICAM DECODER
FRONT JACK
FL DRIVE

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.

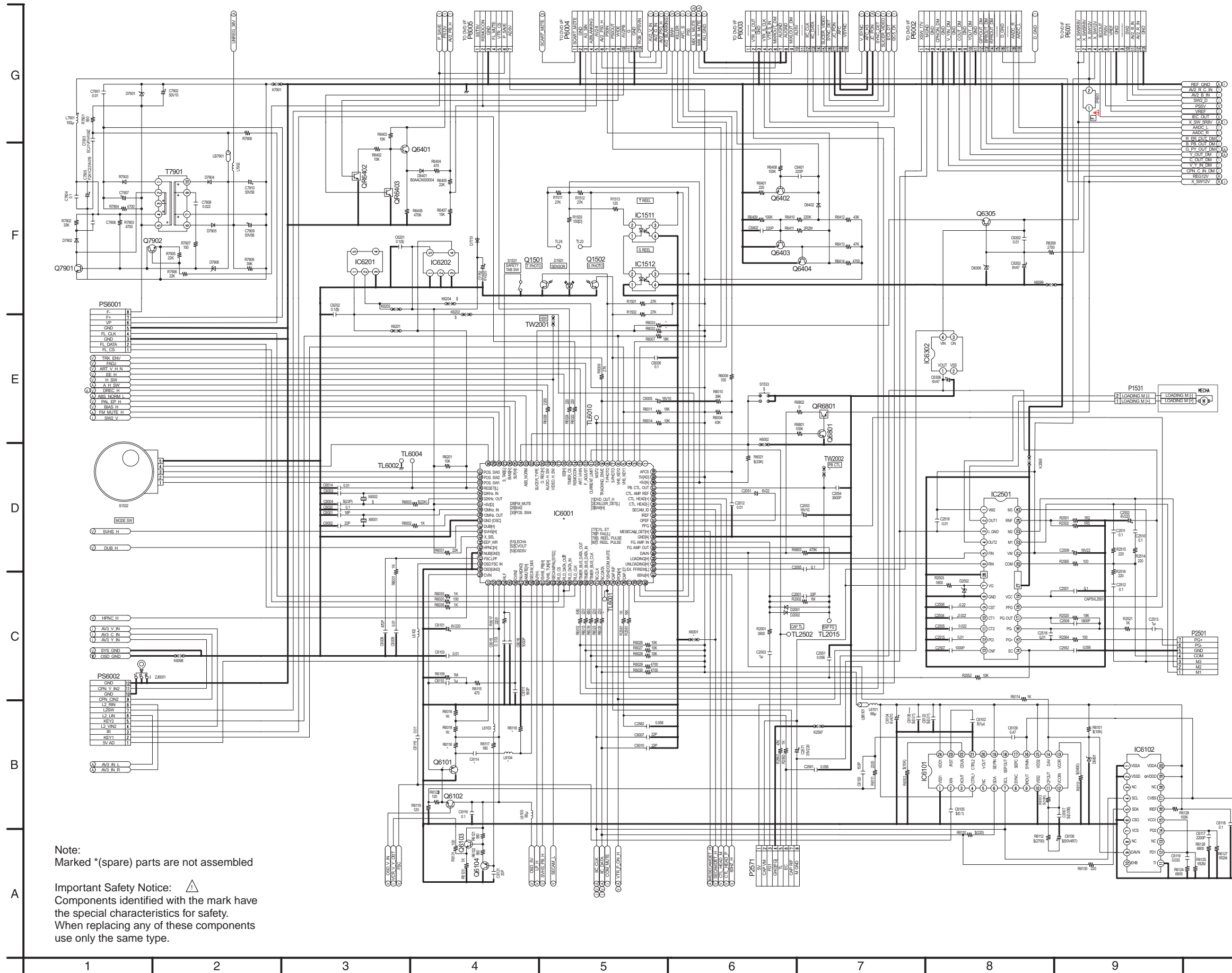
DMR-ES30VEG  
DMR-ES30VEC  
DMR-ES30VEB  
DVD OUTPUT  
SCHEMATIC DIAGRAM

## 24.3. INTERFACE






## 24.5. SYSCON / SERVO / TIMER MAIN



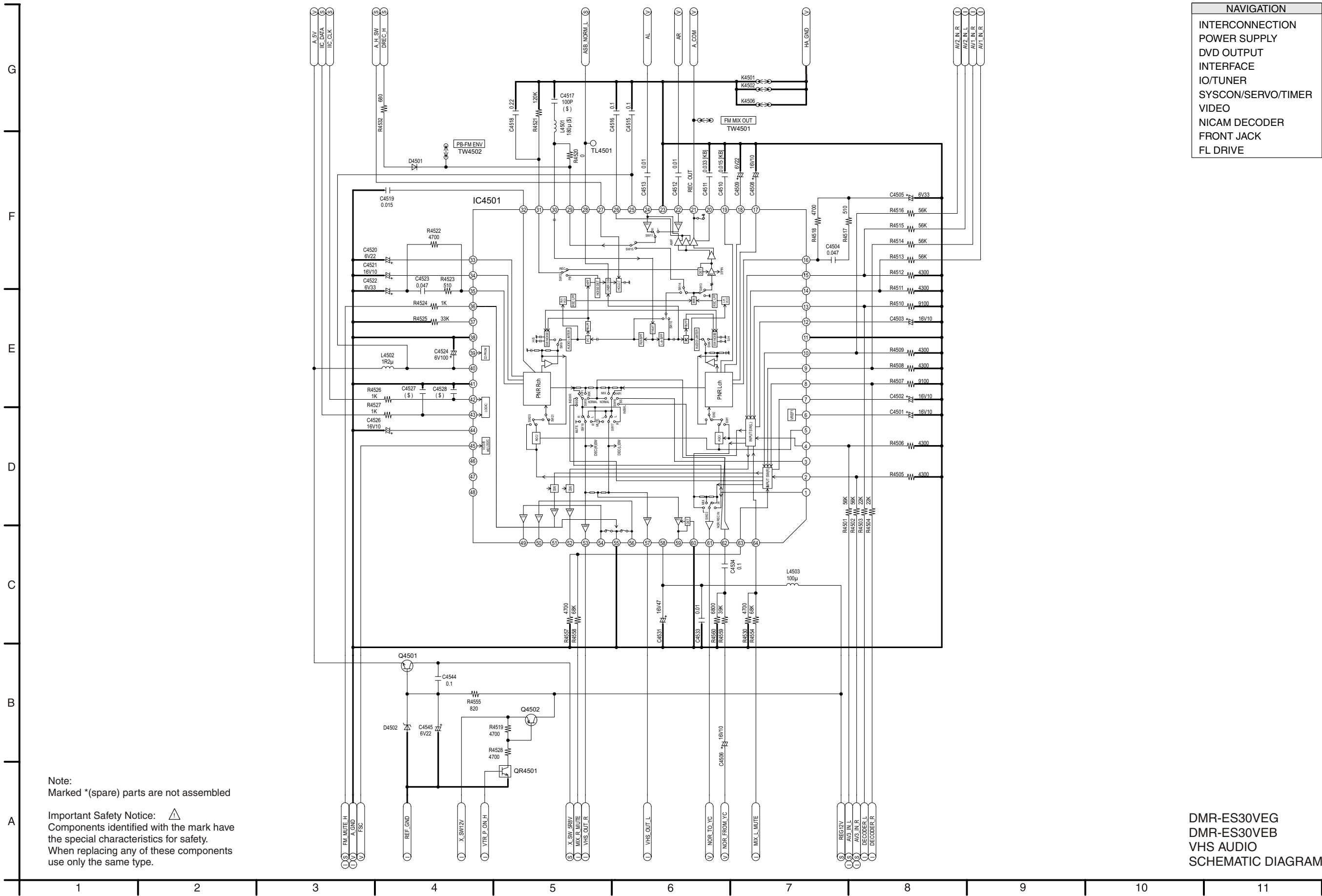
Note:  
Marked \*(spare) parts are not assembled

**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
POWER SUPPLY
DVD OUTPUT
INTERFACE
IO/TUNER
VHS AUDIO
VIDEO
NICAM DECODER
FRONT JACK
FL DRIVE

DMR-ES30VEG  
DMR-ES30VEC  
DMR-ES30VEB  
SYSCON / SERVO / TIMER  
SCHEMATIC DIAGRAM

24.6. VHS AUDIO

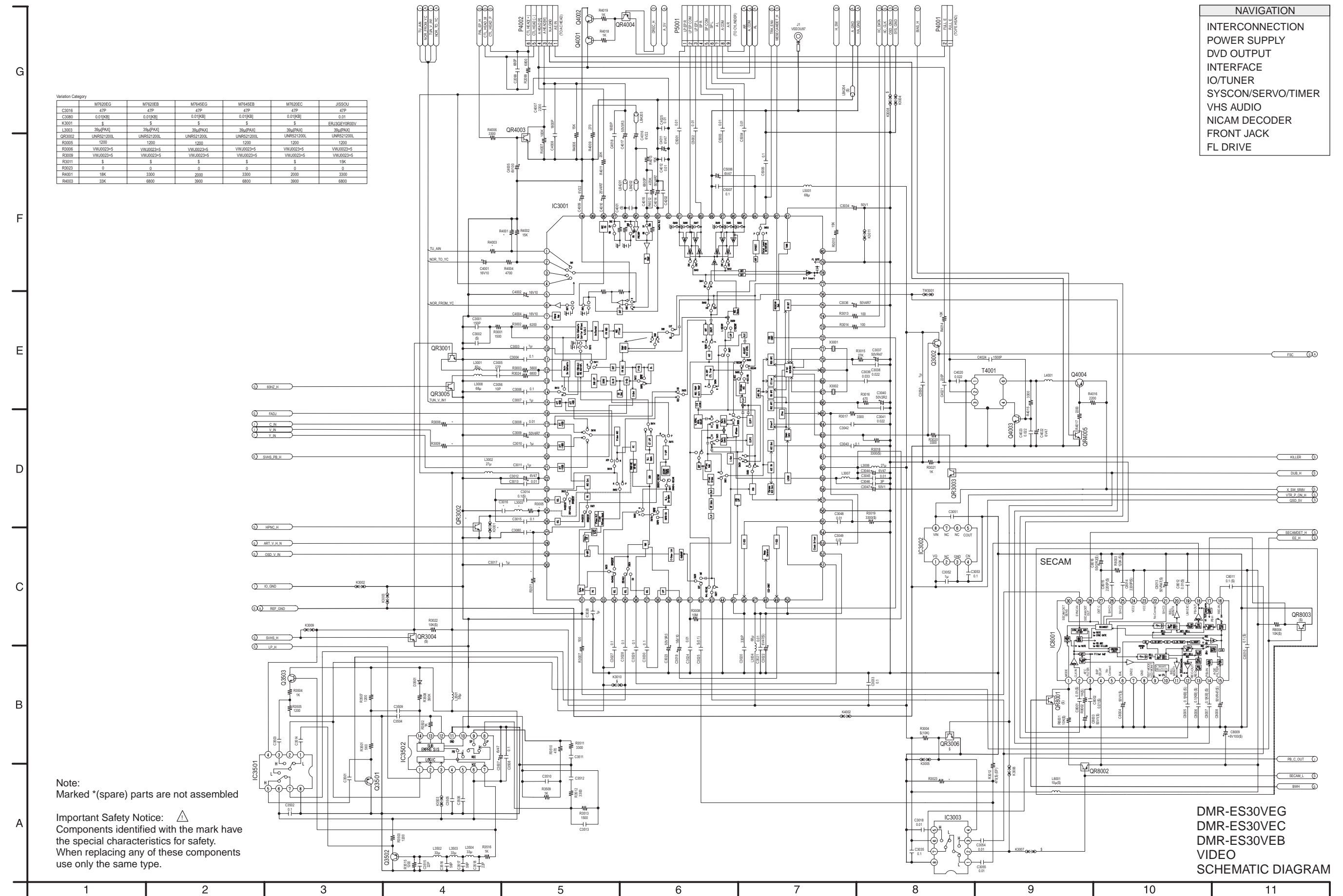


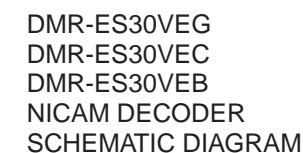
NAVIGATION
INTERCONNECTION
POWER SUPPLY
DVD OUTPUT
INTERFACE
IO/TUNER
SYSCON/SERVO/TIMER
VIDEO
NICAM DECODER
FRONT JACK
FL DRIVE

DMR-ES30VEG  
DMR-ES30VEC  
VHS AUDIO  
SCHEMATIC DIAGRAM



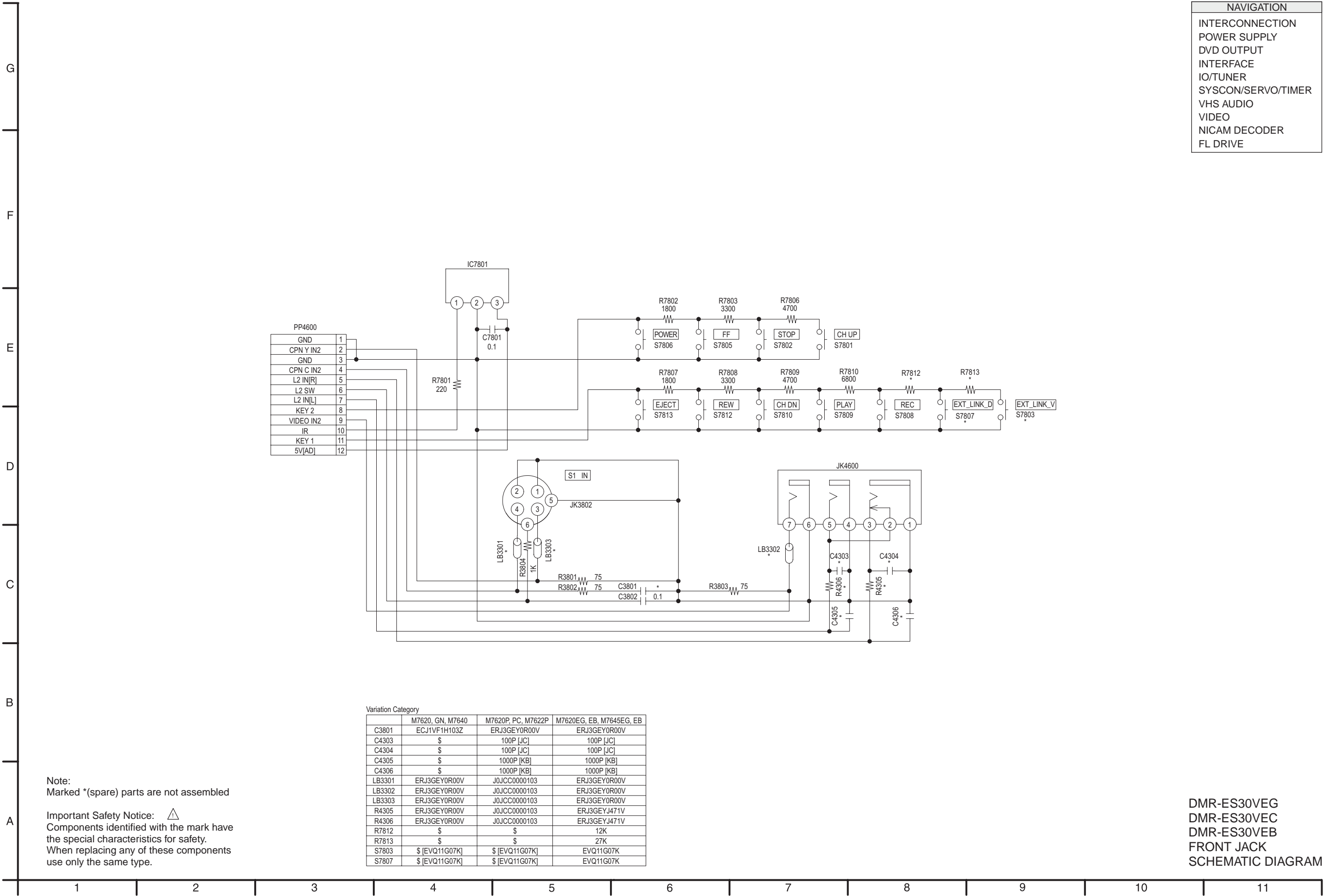
## 24.7. VIDEO







24.9. FRONT JACK

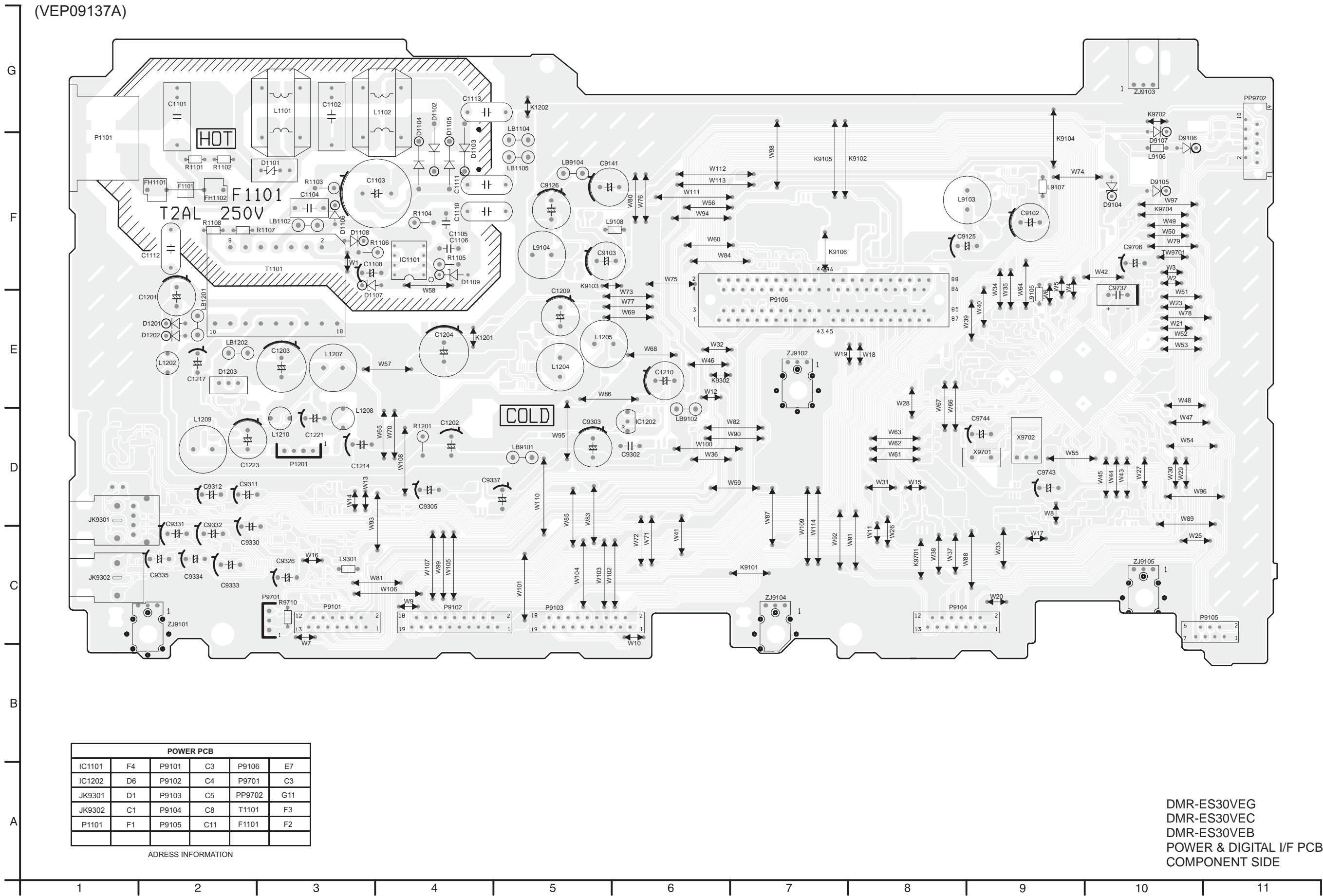




25 PRINTED CIRCUIT BOARD

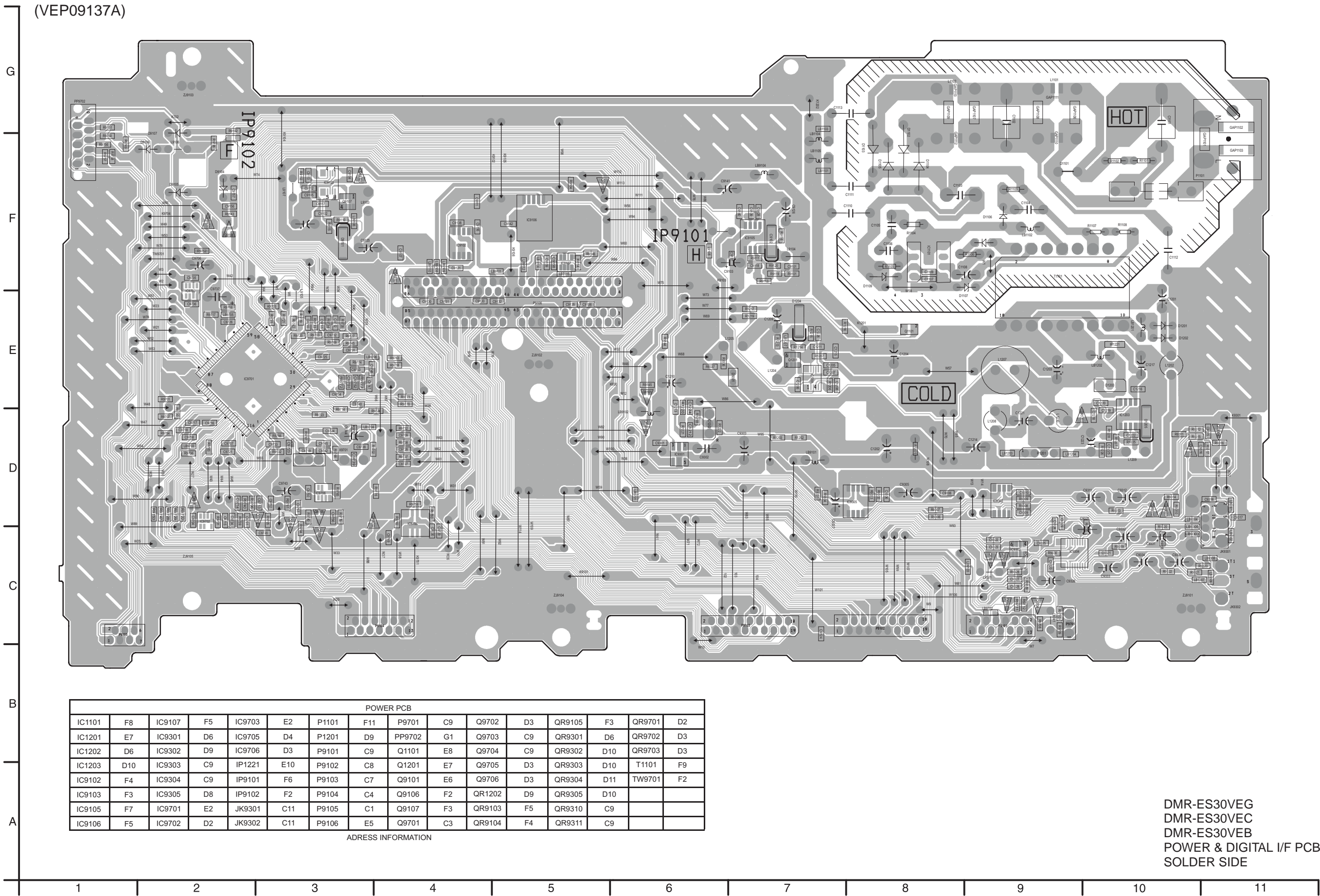
25.1. POWER & DIGITAL I/F P.C.B. (COMPONENT SIDE)

(VEP09137A)



DMR-ES30VEG  
DMR-ES30VEC  
DMR-ES30VEB  
POWER & DIGITAL I/F PCB  
COMPONENT SIDE

25.2. POWER & DIGITAL I/F P.C.B. (SOLDER SIDE)







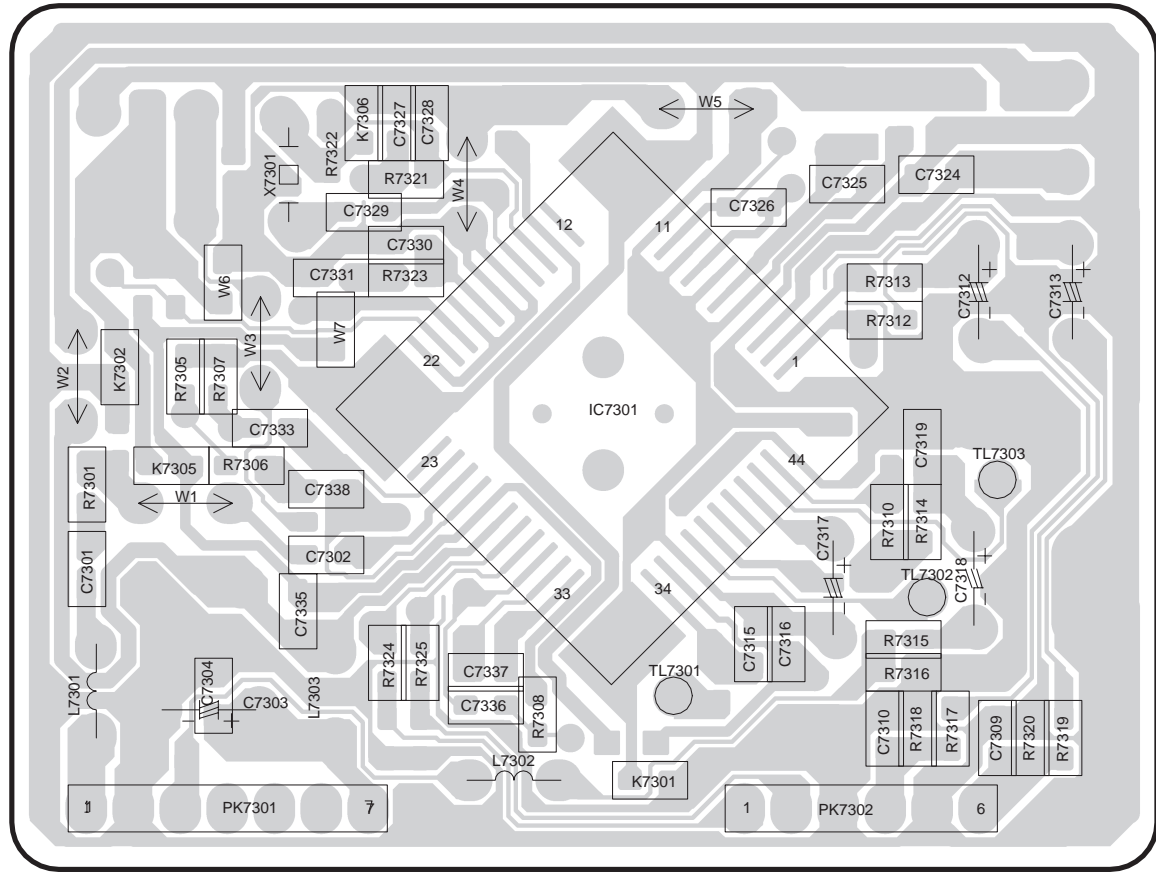








## Nicam Decoder P.C.B. (VEP07A51E)



VEP07A51E	
IC7301	D3
IC7302	F1
PK7301	C2
PK7302	C4
TL7301	D3
TL7302	C5
TL7303	D5
X7301	E2
ADDRESS INFORMATION	

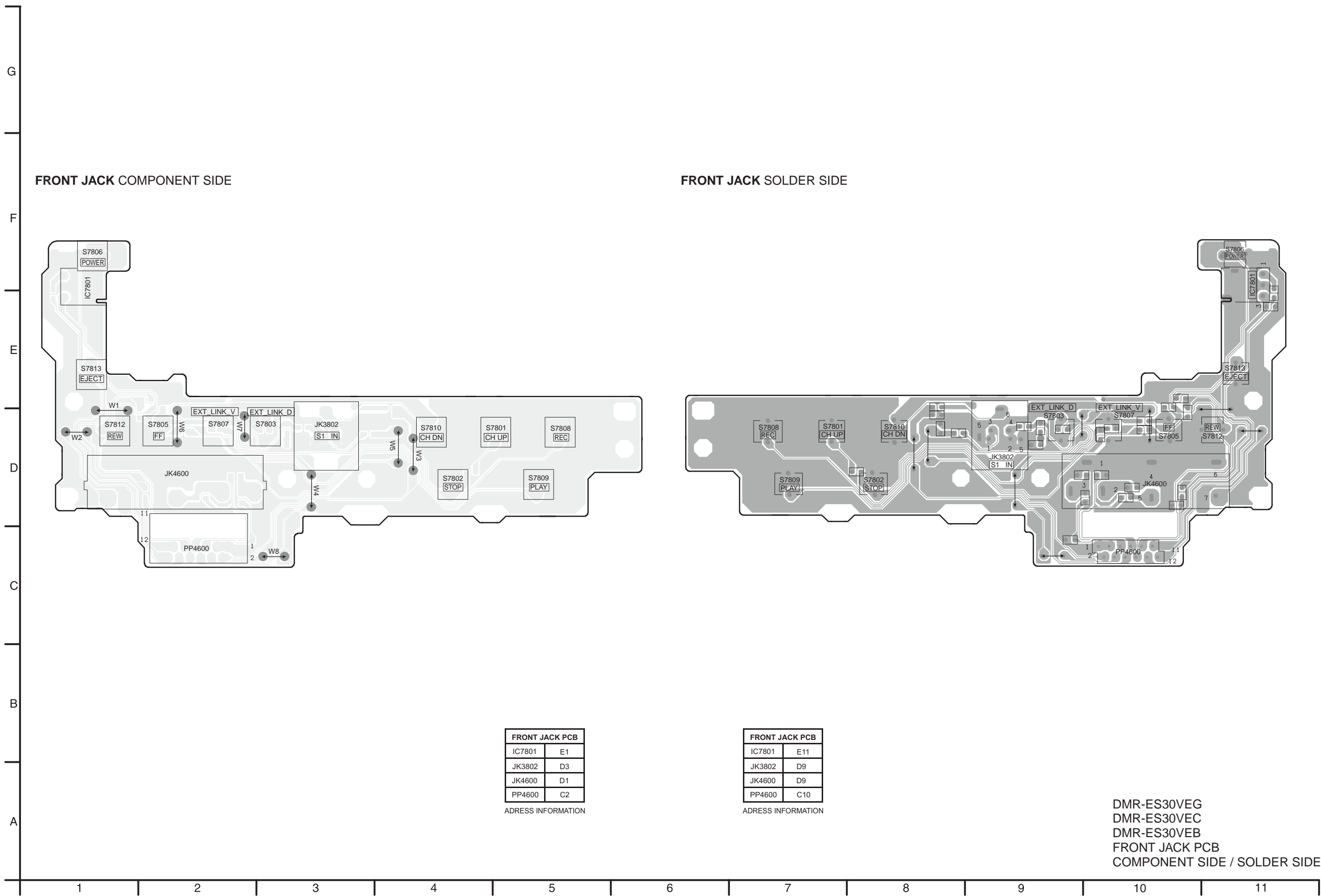
DMR-ES30VEG  
NICAM DECODER PCB  
COMPONENT SIDE

VEP07A51F	
IC7301	D9
IC7302	F7
PK7301	C8
PK7302	C10
TL7301	D9
TL7302	C10
TL7303	D11
X7301	E8
ADDRESS INFORMATION	

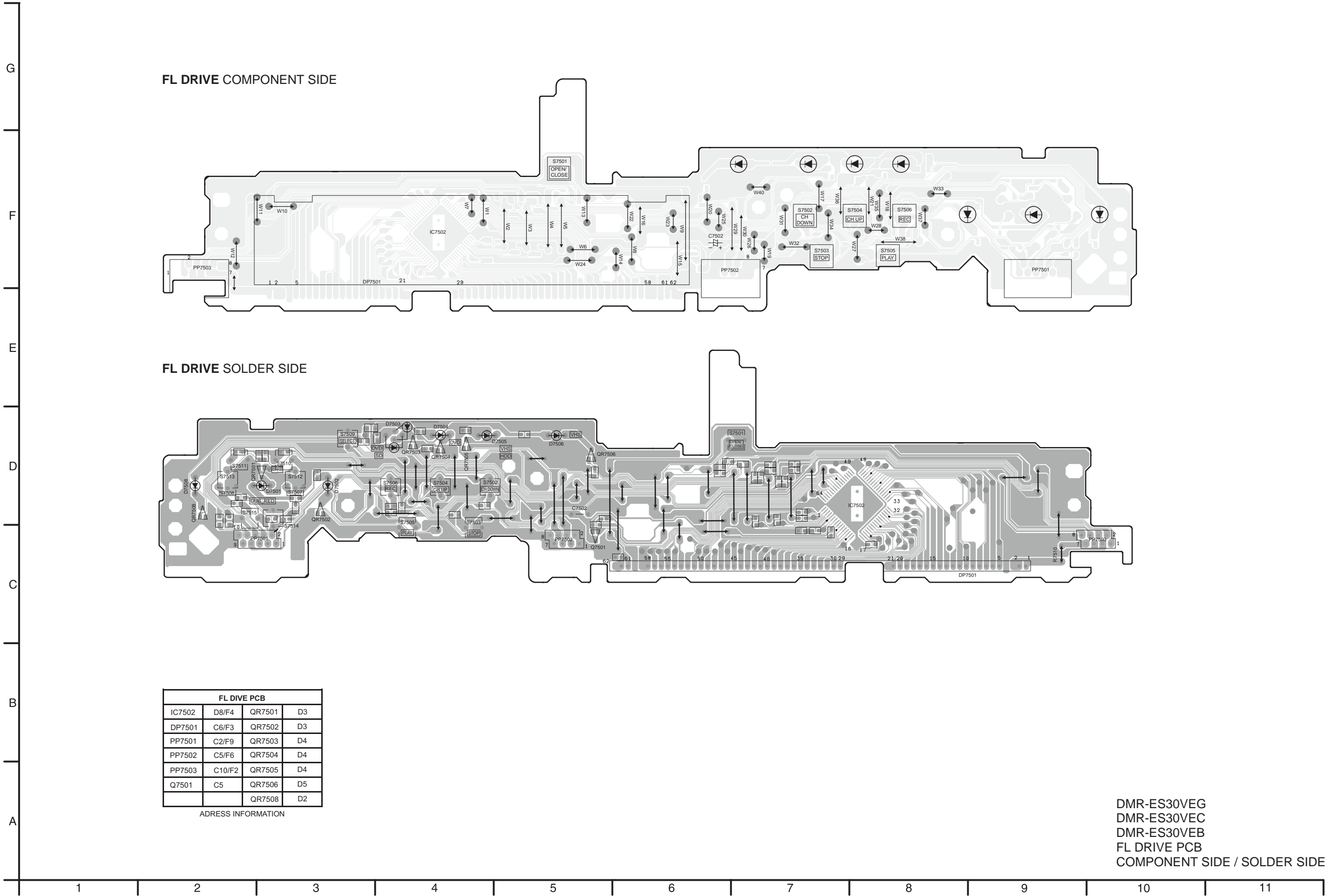
DMR-ES30VEC  
NICAM DECODER PCB  
COMPONENT SIDE



25.7. FRONT JACK P.C.B.

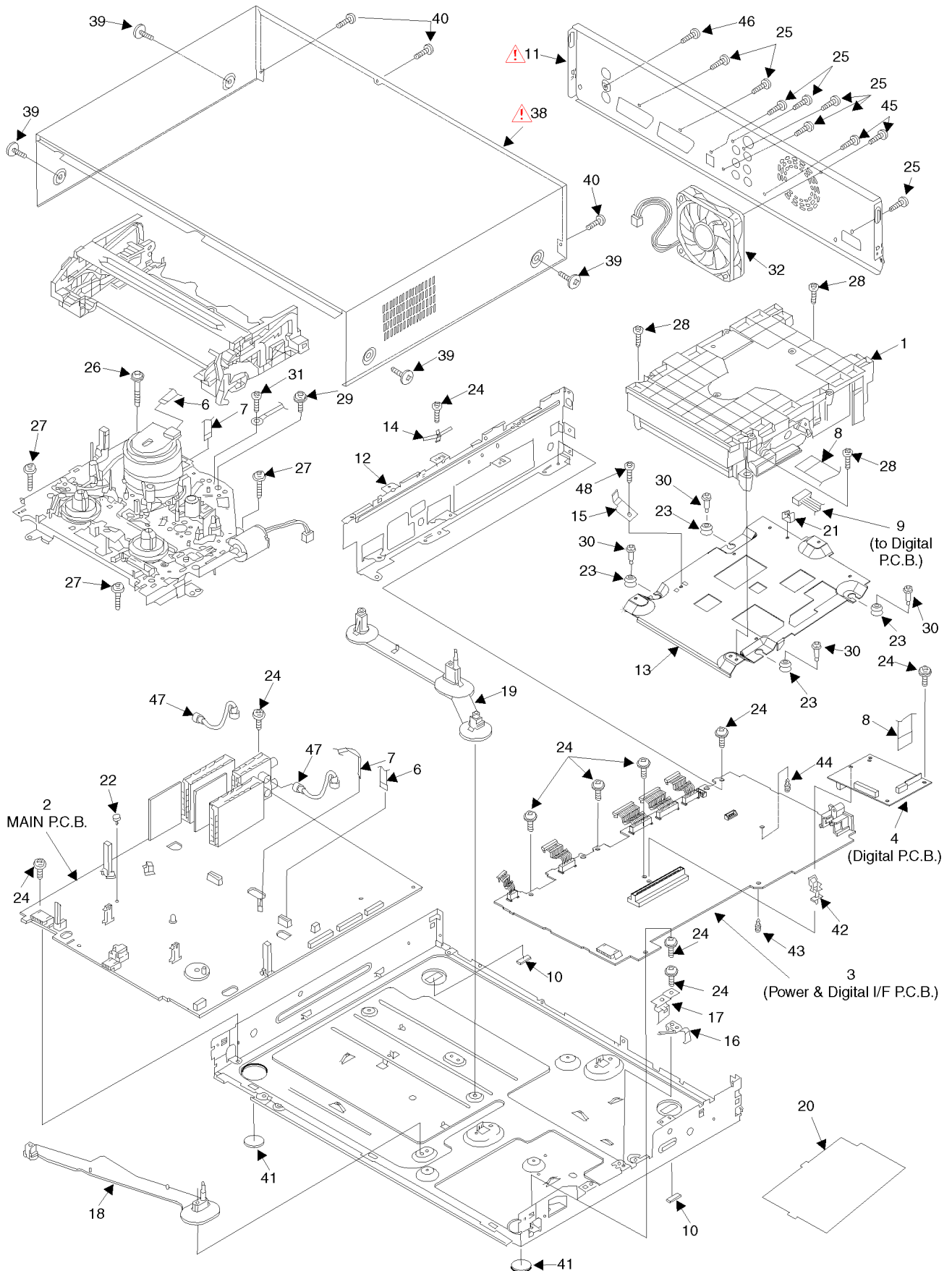


25.8. FL DRIVE P.C.B.

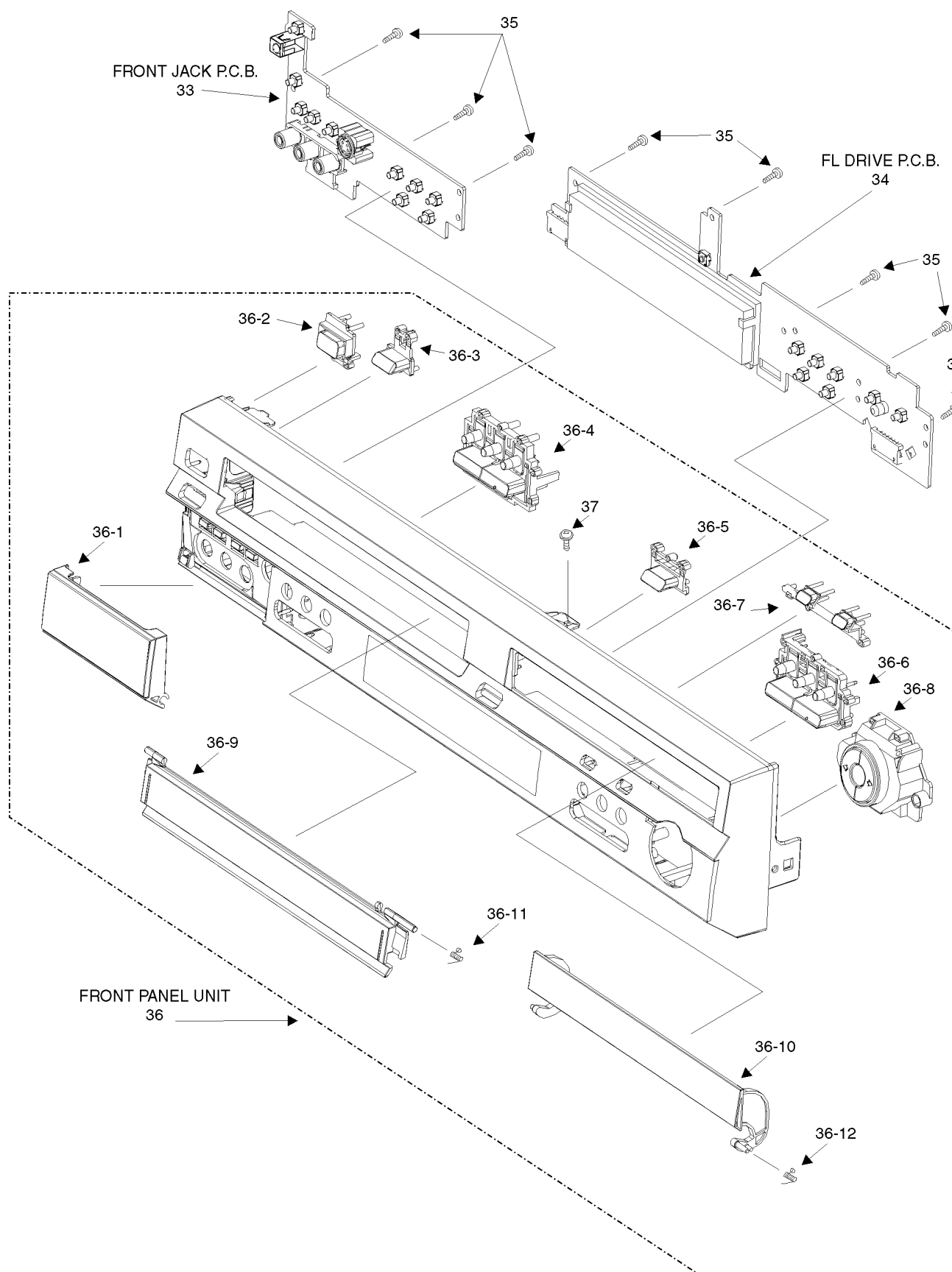


## 26 EXPLODED VIEWS

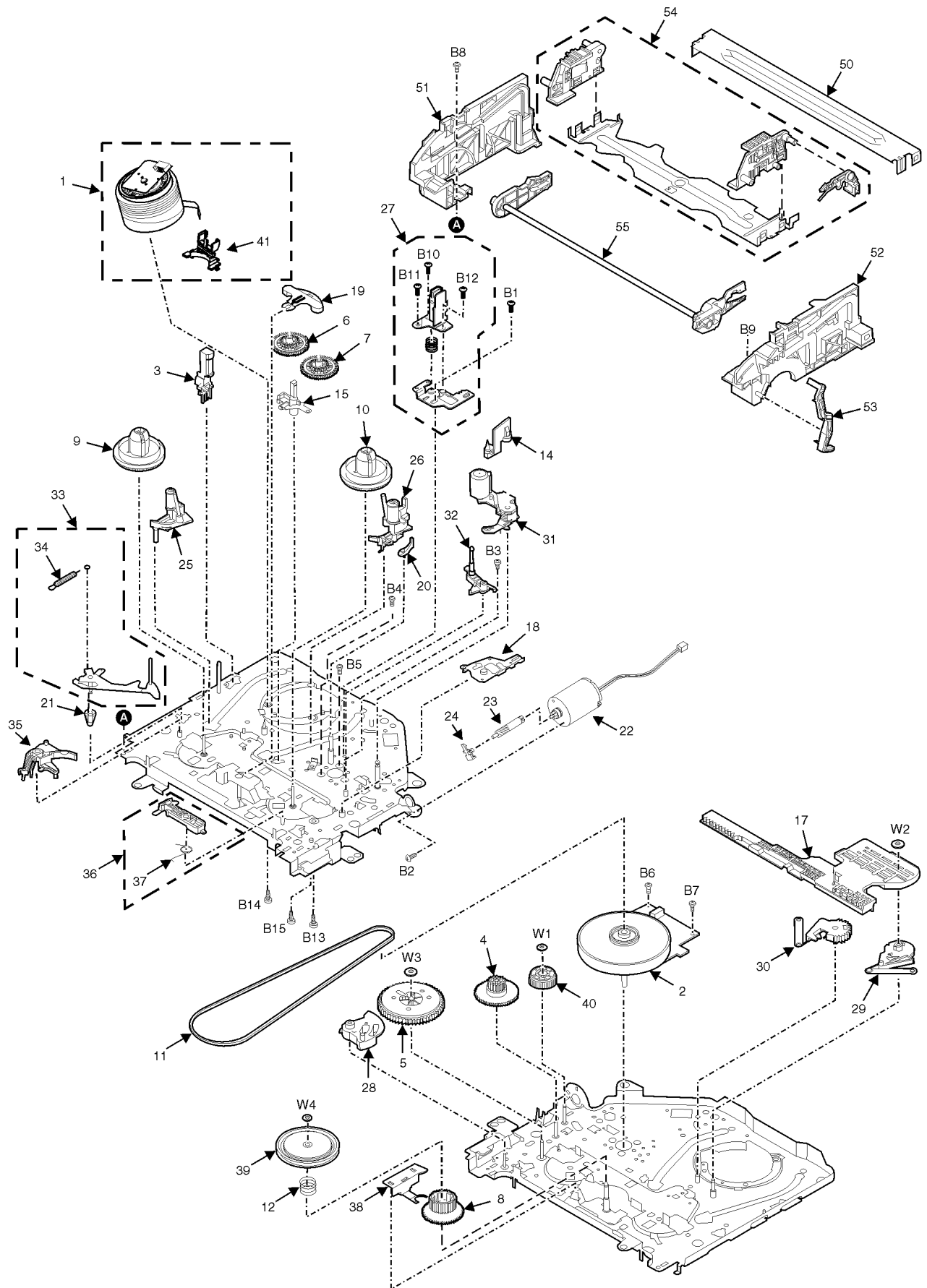
### 26.1. MECHANISM & CASING PARTS



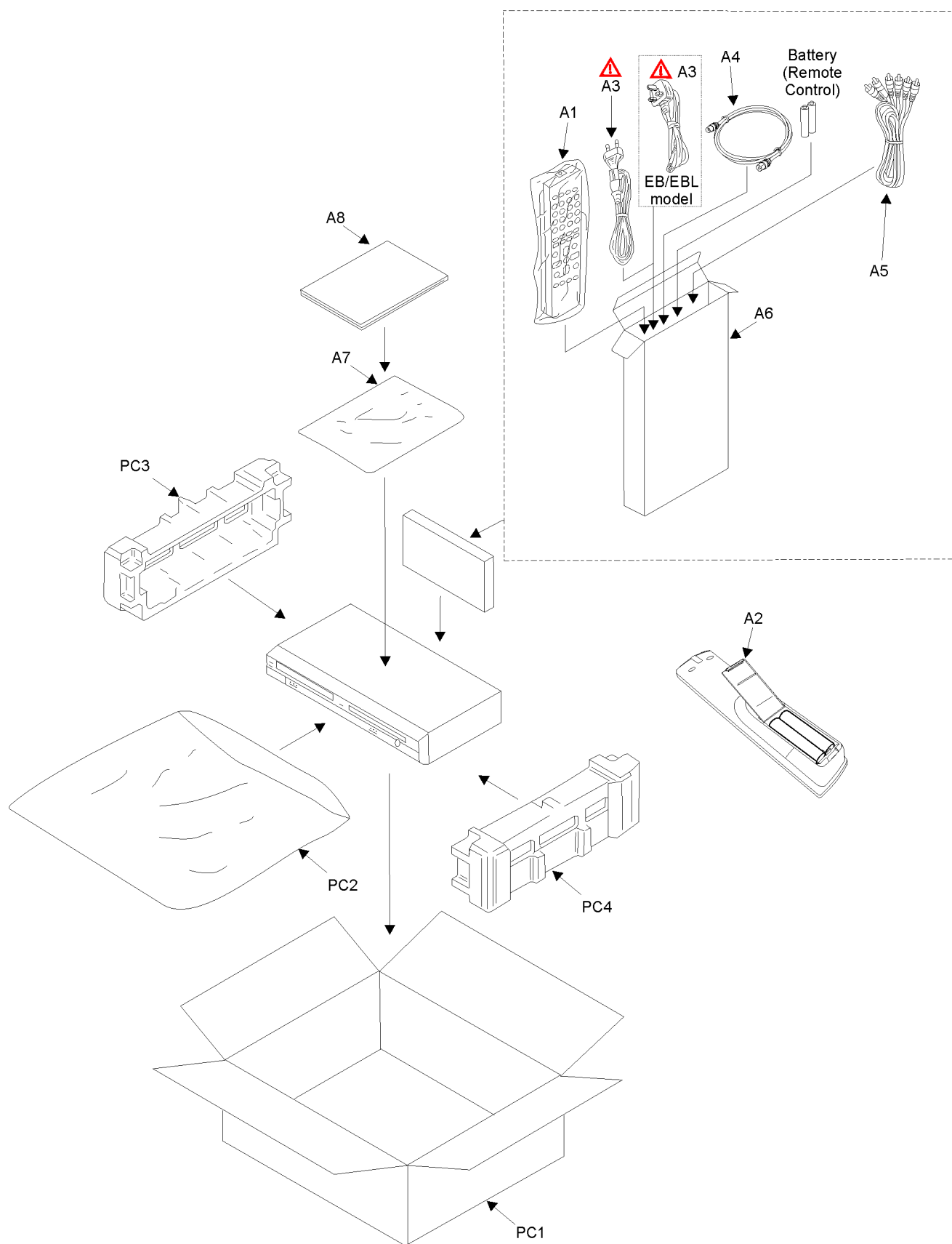
## 26.2. FRONT PANEL PARTS



## 26.3. VHS MECHANISM PARTS



## 26.4. PACKING & ACCESSORIES



## 27 REPLACEMENT PARTS LIST

### NOTES:

\*Important safety notice:

Components identified by  $\triangle$  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.

\*Warning: This product uses a laser diode.

Refer to caution statements.

\*Capacity values are in microfarads ( $\mu$ F) unless specified otherwise, P=Pico-farads (pF), F=Farads (F).

\*Resistance values are in ohms, unless specified otherwise, 1K=1,000 (OHM), 1M=1,000k (OHM).

\*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.

\*Printed Circuit Board's are identified by "n" character.

\*All parts except parts mentioned [SPC] in the Remarks column are supplied from PAVCG.

\*Parts mentioned [SPC] are supplied from PAVC.

The \*1, \*2, \*3 in the Remarks column shows the models as follows:

\*1 = DMR-ES30VEB

\*2 = DMR-ES30VEC

\*3 = DMR-ES30VEG

No indication = all models

Ref. No.	Part No.	Part Name & Description	PCS	Remarks
30	VXL3108	TAKE UP LOADING ARM UNIT	1	
31	VXL3109-4	PINCH ARM UNIT	1	
32	VXL3110	P5 ARM UNIT	1	
33	VXL3111-1	TENSION ARM UNIT	1	
34	VMB3547-3	TENSION SPRING	1	
35	VXL3112	SUPPLY BRAKE ARM UNIT	1	
36	VXL3113	TAKE UP BRAKE ARM UNIT	1	
37	VMB3548-2	TAKE UP BRAKE SPRING	1	
38	VXL3124-2	CHANGE LEVER UNIT	1	
39	VXP2133-1	CENTRE CLUTCH UNIT	1	
40	VXP2168	TORQUE CLUTCH UNIT	1	
41	VMD4983	FPC HOLDER	1	
50	VMA0L25	TOP PLATE	1	
51	VMD4255-4	SIDE PLATE (L) UNIT	1	
52	VMD4254-4	SIDE PLATE (R) UNIT	1	
53	VML3706-1	OPENER LEVER	1	
54	VXA7110-3	CASSETTE HOLDER UNIT	1	
55	VXL3160	MAIN SHAFT UNIT	1	
B1	VHD1044	SCREW	1	
B2	XSN3+35	SCREW	1	
B3	XTN26+7J	SCREW	1	
B4	XTN26+7J	SCREW	1	
B5	XTN26+7J	SCREW	1	
B6	XTV26+5F	SCREW	1	
B7	XTV26+5F	SCREW	1	
B8	XTV26+8FR	SCREW	1	
B9	XTV26+8FR	SCREW	1	
B10	VHD1066	SCREW	1	
B11	VHD1066	SCREW	1	
B12	VHD1185	SCREW	1	
B13	VHD1095-1	SCREW	1	
B14	VHD1117-1	SCREW	1	
B15	VHD1117-1	SCREW	1	
W1	VMX2208	WASHER	1	
W2	VMX3196	WASHER	1	
W3	VMX2699	WASHER	1	
W4	VMX3196	WASHER	1	

### 27.1. VHS MECHANISM PARTS

Ref. No.	Part No.	Part Name & Description	PCS	Remarks
1	VEG1648-DT	RDD CYLINDER	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	

### 27.2. MECHANISM & CASING PARTS

Ref. No.	Part No.	Part Name & Description	PCS	Remarks
1	VXY1867	RAM DRIVE UNIT	1	$\triangle$ [SPC]
2 n	VEP06F87B	MAIN P.C.B.	1	1* RTL
2 n	VEP06F87E	MAIN P.C.B.	1	2* RTL
2 n	VEP06F87A	MAIN P.C.B.	1	3* RTL
3 n	VEP09137A	POWER DIGITAL INTERFACE P.C.B.	1	RTL
4 n	RFKBES30VEB	DIGITAL P.C.B.	1	1* RTL
4 n	RFKBES30VEC	DIGITAL P.C.B.	1	2* RTL
4 n	VEP79104F	DIGITAL P.C.B.	1	3* RTL
6	VWJ1727	FFC	1	
7	VWJ1728	FFC	1	
8	VWJ1776	FFC 40P	1	
9	REED0001	DRIVE POWER CABLE U	1	
10	VKA0382	LEG CUSHION	2	
11	RGR0356A-B1	REAR PANEL	1	$\triangle$ 1*
11	RGR0356A-A1	REAR PANEL	1	$\triangle$ 2*, 3*
12	RMA1897	CENTER ANGLE	1	
13	RMA1905	DVD ANGLE	1	
14	RMCO632	EARTH SPRING (T)	1	
15	RMCO637	EARTH SPRING (C)	1	
16	RMCO622	EARTH SPRING (DI)	1	
17	RMA1914	DIGITAL ANGLE	1	
18	VMX3398	MECHA SPACER (F)	1	
19	VMX3229	MECHA SPACER (R)	1	

Ref. No.	Part No.	Part Name & Description	PCS	Remarks
20	VMZ3452	BARRIER	1	
21	VKC0412	MINI CLAMPER	1	
22	VKC0554	P.C.B. SUPPORT 4 (MECHA)	1	
23	RMG0677-K	DAMPER	4	
24	RHD30111	SCREW	10	
25	VHD0690-1	SCREW	8	
26	VHD1452-2	SCREW (R4MECH L)	1	
27	VHD1453-2	SCREW (R4MECH S)	3	
28	RHD30115	SCREW DRIVE	3	
29	VHD1092-1	SCREW (BT3+10)	1	
30	VHD1662	SCREW (DAMPER)	4	
31	XTV26+6FFJ	SCREW	1	
32	L6FAKCE0004	FAN DVD-REC	1	
33 n	VEP04885C	FRONT JACK P.C.B.	1	RTL
34 n	VEP07A78C	FL DRIVE P.C.B.	1	RTL
35	RHD26045	SCREW (PANEL)	8	
36	RYP1278D-S1	FRONT PANEL	1	1*
36	RYP1278C-S1	FRONT PANEL	1	2*, 3*
36-1	RKF0724-S	DOOR	1	
36-2	RGU2369-W	POWER BUTTON	1	
36-3	RGU2370-S	EJECT BUTTON ES30V	1	
36-4	RGU2372D-S	PLAY BUTTON VHS	1	
36-5	RGU2371-S	OPEN BUTTON DVD	1	
36-6	RGU2373D-S	PLAY BUTTON DVD	1	
36-7	RGL0673-W	PANEL LIGHT	1	
36-8	RXQ1300	DUB BUTTON UNIT	1	
36-9	RKF0722A-S	BLINDER PANEL	1	
36-10	RKF0723-S1	TRAY DOOR	1	
36-11	VMB2521	BLINDER SPRING (VHS)	1	
36-12	VMB3410	BLINDER SPRING (DVD)	1	
37	RHD30111	SCREW	1	
38	VGM2077	TOP PANEL	1	△
39	RHD30113	SCREW TOP CASE SIDE	4	
40	VHD0690-1	SCREW	3	
41	RKA0178-X	LEG	2	
42	VKC0612	P.C.B. SPACER	1	
43	VKC0295	MINI CARD SPACER	1	
44	VKC0295	MINI CARD SPACER	1	
45	VHD0690-1	SCREW (FAN)	2	
46	XSN3+4FJK	SCREW (TUNER)	1	
47	K2KA29A00013	COAX CABLE	2	
48	RHD30111	SCREW	1	

## 27.3. PRINTED CIRCUIT BOARDS INCLUDED IN MAIN P.C.B.

Ref. No.	Part No.	Part Name & Description	PCS	Remarks
TU7401	ENG37A08GF	TUNER	1	△ 1*
TU7402	ENG37A08GF	TUNER	1	△ 1*
TU7401	ENG37A07GF	TUNER	1	△ 2*
TU7402	ENG37A14GF	TUNER	1	△ 2*
TU7401	ENG37A17GF	TUNER	1	△ 3*
TU7402	ENG37A17GF	TUNER	1	△ 3*
DE7402 n	VEP07A51A	DECODER P.C.B.	1	1* RTL
DE7401 n	VEP07A51B	DECODER P.C.B.	1	1* RTL
DE7401 n	VEP07A51F	DECODER P.C.B.	1	2* RTL
DE7402 n	VEP07A51F	DECODER P.C.B.	1	2* RTL
DE7401 n	VEP07A51E	DECODER P.C.B.	1	3* RTL
DE7402 n	VEP07A51E	DECODER P.C.B.	1	3* RTL

## 27.4. PACKING & ACCESSORIES PARTS

Ref. No.	Part No.	Part Name & Description	PCS	Remarks
A1	EUR7720KT0	REMOTE CONTROL	1	1*
A1	EUR7720KS0	REMOTE CONTROL	1	2*, 3*
A2	UR77EC2003	BATTERY COVER	1	
A3	RJA0043-1C	POWERCORD	1	△ 2*, 3*
A3	RJA0044-3C	POWER CORD	1	△ 1*
A4	K1TWACC00001	RF CABLE	1	
A5	K2KA6CA00001	AV CORD	1	
A6	VPK2246	ACC. BOX	1	
A7	RPFD0003	PAPER BAG	1	1*
A7	RPFD0001	PE-BAG	1	2*, 3*
A8	RQTD0159-1B	O/I BOOK (ES30V/EB) A5	1	1*
A8	RQTD0151-1D	O/I BOOK (ES30V/EG) A5	1	2*, 3*
A8	RQTD0152-1V	O/I BOOK (ES30V/EG) A5	1	2*, 3*
A8	RQTD0153-1H	O/I BOOK (ES30V/EG) A5	1	2*, 3*
A8	RQTD0155-1A	O/I BOOK (ES30V/EG) A5	1	2*, 3*
A8	RQTD0154-1C	O/I BOOK (ES30V/EG) A5	1	2*
A8	RQTD0156-1M	O/I BOOK (ES30V/EG) A5	1	2*
A8	RQTD0157-1Z	O/I BOOK (ES30V/EG) A5	1	2*
A8	RQTD0158-1J	O/I BOOK (ES30V/EG) A5	1	2*
A8	RQCAD0020	QUICK START GUIDE	1	1*
PC1	RP67555-1	PACKING CASE ES30VEB	1	1*
PC1	RP67628-1	PACKING CASE ES30VEC	1	2*
PC1	RP67554-1	PACKING CASE ES30VEG	1	3*
PC2	RPFD0004	MIRAMAT BAG	1	
PC3	RPN1797A	CUSHION (LEFT)	1	
PC4	RPN1797B	CUSHION (RIGHT)	1	

## 27.5. ELECTRICAL PARTS

Ref. No.	Part No.	Part Name & Description	PCS	Remarks
C1101	ECQU2A683MLC	X2 CAPACITOR	1	△
C1102	ECQU2A683MLC	X2 CAPACITOR	1	△
C1103	EEUED2G680E	CAPACITOR	1	
C1104	F0C2G473A022	CAPACITOR	1	
C1105	ECKN3A101KBP	CERAMIC CAPACITOR	1	
C1106	ECKN3A101KBP	CERAMIC CAPACITOR	1	
C1107	F1H1C474A095	CHIP CAPACITOR	1	
C1108	F2A1V3300027	ALU ELEC CAPACITOR	1	
C1109	F1H1H1020005	CHIP CAPACITOR	1	
C1110	ECKWNA101MBV	CERAMIC CAPACITOR	1	△
C1111	ECKWNA101MBV	CERAMIC CAPACITOR	1	△
C1112	F1BAF471A013	CERAMIC CAPACITOR	1	△
C1201	EEUFM1E471B	CAPACITOR	1	
C1203	EEUFM1C152B	CAPACITOR	1	
C1204	EEUFM1C152B	CAPACITOR	1	
C1205	F1H1H104A220	CHIP CAPACITOR	1	
C1206	F1H1H104A220	CHIP CAPACITOR	1	
C1207	F1H1C104A042	CHIP CAPACITOR	1	
C1208	ECJ1VC1H181J	CHIP CAPACITOR	1	
C1209	F2A1A681A540	ALU ELEC CAPACITOR	1	
C1210	ECA1AHG102B	ALU ELEC CAPACITOR	1	
C1211	ECJ2FB1C334K	CHIP CAPACITOR	1	
C1212	F1H1C333A041	CHIP CAPACITOR	1	
C1214	ECA1CHG471B	ALU ELEC CAPACITOR	1	
C1216	F1H1H104A220	CHIP CAPACITOR	1	
C1217	EEUFM1C121B	ALU ELEC CAPACITOR	1	
C1218	F1H1H1030007	CHIP CAPACITOR	1	
C1219	ECJ1VB1H331K	CHIP CAPACITOR	1	
C1220	F1H1C104A042	CHIP CAPACITOR	1	



Ref. No.	Part No.	Part Name & Description	PCS	Remarks
C1222	F1H1C224A074	CHIP CAPACITOR	1	
C1223	F2A1A681A540	ALU ELEC CAPACITOR	1	
C1225	F1H1H1020005	CHIP CAPACITOR	1	
C1226	ECJ1VC1H181J	CHIP CAPACITOR	1	
C2001	F1H1H330A736	CHIP CAPACITOR	1	
C2003	F1H1A1050029	CHIP CAPACITOR	1	
C2051	ECEA0JKN220B	ALU ELEC CAPACITOR	1	
C2053	ECEA1CKA100B	ALU ELEC CAPACITOR	1	
C2054	ECJ1VB1H392K	CHIP CAPACITOR	1	
C2055	F1H1C104A008	CHIP CAPACITOR	1	
C2099	ECJ1VC1H681J	CHIP CAPACITOR	1	
C2501	F1H1C104A008	CHIP CAPACITOR	1	
C2502	ECEA0JKA221B	ALU ELEC CAPACITOR	1	
C2504	F1H1E223A029	CHIP CAPACITOR	1	
C2505	F1H1E223A029	CHIP CAPACITOR	1	
C2506	F1H1A2240004	CHIP CAPACITOR	1	
C2507	F1H1H1020005	CHIP CAPACITOR	1	
C2508	F1H1H182A219	CHIP CAPACITOR	1	
C2509	ECEA1CKA220B	ALU ELEC CAPACITOR	1	
C2510	F1H1C104A042	CHIP CAPACITOR	1	
C2511	F1H1C104A042	CHIP CAPACITOR	1	
C2512	F1H1C104A042	CHIP CAPACITOR	1	
C2513	F1H1A1050029	CHIP CAPACITOR	1	
C2515	F1H1H1030007	CHIP CAPACITOR	1	
C2518	F1H1H1030007	CHIP CAPACITOR	1	
C2519	F1H1H1030007	CHIP CAPACITOR	1	
C2551	ECJ1VB1C563K	CHIP CAPACITOR	1	
C2552	ECJ1VB1C563K	CHIP CAPACITOR	1	
C2561	ECJ1VB1C563K	CHIP CAPACITOR	1	
C2562	ECJ1VB1C563K	CHIP CAPACITOR	1	
C2571	ECA1VM221B	ALU ELEC CAPACITOR	1	
C3001	F1H1H1510001	CHIP CAPACITOR	1	
C3003	ECJ1VB1A105K	CHIP CAPACITOR	1	
C3004	F1H1C104A042	CHIP CAPACITOR	1	
C3005	F1H1H2700003	CHIP CAPACITOR	1	
C3006	F1H1C104A042	CHIP CAPACITOR	1	
C3007	ECJ1VB1A105K	CHIP CAPACITOR	1	
C3008	F1H1H1030006	CHIP CAPACITOR	1	
C3009	ECEA1HKA4R7B	ALU ELEC CAPACITOR	1	
C3010	ECJ1VB1A105K	CHIP CAPACITOR	1	
C3011	ECJ1VB1A105K	CHIP CAPACITOR	1	
C3012	ECEA0JKA470B	ALU ELEC CAPACITOR	1	
C3013	F1H1H1030007	CHIP CAPACITOR	1	
C3015	F1H1C104A042	CHIP CAPACITOR	1	
C3016	F1H1H4700004	CHIP CAPACITOR	1	
C3017	ECJ1VB1A105K	CHIP CAPACITOR	1	
C3018	F1H1H1030006	CHIP CAPACITOR	1	
C3019	ECEA1CKA100B	ALU ELEC CAPACITOR	1	
C3020	ECJ1VC1H331J	CHIP CAPACITOR	1	
C3021	F1H1H1030007	CHIP CAPACITOR	1	
C3023	ECEA1HKA3R3B	ALU ELEC CAPACITOR	1	
C3024	F1H1H1030006	CHIP CAPACITOR	1	
C3026	ECJ1VB1A105K	CHIP CAPACITOR	1	
C3027	F1H1C104A042	CHIP CAPACITOR	1	
C3028	F1H1C104A042	CHIP CAPACITOR	1	
C3029	F1H1C104A042	CHIP CAPACITOR	1	
C3030	F1H1C104A042	CHIP CAPACITOR	1	
C3033	F1H1C104A042	CHIP CAPACITOR	1	
C3034	ECEA1HKA010B	ALU ELEC CAPACITOR	1	
C3035	F1H1C104A042	CHIP CAPACITOR	1	
C3036	ECEA1HKA4R7B	ALU ELEC CAPACITOR	1	
C3037	ECEA1HKA4R7B	ALU ELEC CAPACITOR	1	
C3038	F1H1E223A029	CHIP CAPACITOR	1	
C3039	F1H1C333A041	CHIP CAPACITOR	1	
C3040	ECEA1HKA2R2B	ALU ELEC CAPACITOR	1	
C3041	F1H1E223A029	CHIP CAPACITOR	1	
C3042	ECJ2YB0J335K	CHIP CAPACITOR	1	
C3043	F1H1C104A042	CHIP CAPACITOR	1	
C3044	ECEA0JKA470B	ALU ELEC CAPACITOR	1	
C3045	F1H1H1030007	CHIP CAPACITOR	1	
C3046	ECJ1VC1H030C	CHIP CAPACITOR	1	
C3047	ECEA1HKA010B	ALU ELEC CAPACITOR	1	
C3048	F1H1H1030007	CHIP CAPACITOR	1	

Ref. No.	Part No.	Part Name & Description	PCS	Remarks
C3049	F1H1H1030007	CHIP CAPACITOR	1	
C3050	F1H1A1050029	CHIP CAPACITOR	1	
C3051	ECJ1VB1A105K	CHIP CAPACITOR	1	
C3052	ECJ1VB1A105K	CHIP CAPACITOR	1	
C3053	F1H1C104A042	CHIP CAPACITOR	1	
C3054	F1H1H1030006	CHIP CAPACITOR	1	
C3055	F1H1H1030006	CHIP CAPACITOR	1	
C3056	ECJ1VC1H100D	CHIP CAPACITOR	1	
C3080	F1H1H1030006	CHIP CAPACITOR	1	
C3501	F1J0J475A002	CHIP CAPACITOR	1	
C3502	F1H1C104A042	CHIP CAPACITOR	1	
C3503	F1J0J475A002	CHIP CAPACITOR	1	
C3504	F1H1H271A832	CHIP CAPACITOR	1	
C3505	F1J0J475A002	CHIP CAPACITOR	1	
C3506	F1J0J475A002	CHIP CAPACITOR	1	
C3507	ECEA0JKA470B	ALU ELEC CAPACITOR	1	
C3508	F1H1C104A008	CHIP CAPACITOR	1	
C3509	F1J0J475A002	CHIP CAPACITOR	1	
C3510	F1H1H8200004	CHIP CAPACITOR	1	
C3511	F1H1H271A832	CHIP CAPACITOR	1	
C3512	F1H1H271A832	CHIP CAPACITOR	1	
C3513	F1H1H221A832	CHIP CAPACITOR	1	
C3514	F1J0J475A002	CHIP CAPACITOR	1	
C3515	ECJ1VC1H220J	CHIP CAPACITOR	1	
C3516	ECJ1VC1H560J	CHIP CAPACITOR	1	
C3517	ECJ1VC1H560J	CHIP CAPACITOR	1	
C3518	ECJ1VC1H220J	CHIP CAPACITOR	1	
C3801	D0YBR0000002	CHIP RESISTOR	1	
C3802	F1H1C104A008	CHIP CAPACITOR	1	
C3901	F1H1H1030006	CHIP CAPACITOR	1	
C3904	F1H1H1030006	CHIP CAPACITOR	1	
C3905	ECJ1VB1A105K	CHIP CAPACITOR	1	
C3906	F1H1C104A042	CHIP CAPACITOR	1	
C3907	F1H1C104A042	CHIP CAPACITOR	1	
C3908	F1H1C104A042	CHIP CAPACITOR	1	
C3909	F1H1C104A042	CHIP CAPACITOR	1	
C3910	F1H1H1030006	CHIP CAPACITOR	1	
C3911	ECEA0JKA221B	ALU ELEC CAPACITOR	1	
C3912	F1H1C104A042	CHIP CAPACITOR	1	
C3913	ECEA1CKA100B	ALU ELEC CAPACITOR	1	
C3914	F1H1H1030006	CHIP CAPACITOR	1	
C3915	F1H1C104A042	CHIP CAPACITOR	1	
C3916	F1H1C104A042	CHIP CAPACITOR	1	
C3920	F1H1H1030006	CHIP CAPACITOR	1	
C3921	F1H1C104A042	CHIP CAPACITOR	1	
C3922	F1H1H1030006	CHIP CAPACITOR	1	
C3923	F1H1H1030006	CHIP CAPACITOR	1	
C3924	F1H1C104A042	CHIP CAPACITOR	1	
C3925	F1H1C104A042	CHIP CAPACITOR	1	
C3926	F1H1C104A042	CHIP CAPACITOR	1	
C3927	F1H1H1030006	CHIP CAPACITOR	1	
C3928	F1H1C104A042	CHIP CAPACITOR	1	
C3929	ECEA0JKA221B	ALU ELEC CAPACITOR	1	
C3930	F1H1H1030006	CHIP CAPACITOR	1	
C3931	F1H1C104A042	CHIP CAPACITOR	1	
C3932	F1H1H1030006	CHIP CAPACITOR	1	
C3933	F1H1C104A042	CHIP CAPACITOR	1	
C3934	F1H1C104A042	CHIP CAPACITOR	1	
C3935	F1H1C104A042	CHIP CAPACITOR	1	
C3936	F1H1C104A042	CHIP CAPACITOR	1	
C3937	ECJ1VB1A105K	CHIP CAPACITOR	1	
C3938	ECJ1VB1A105K	CHIP CAPACITOR	1	
C3939	F1H1C104A042	CHIP CAPACITOR	1	
C3943	F1H1C104A042	CHIP CAPACITOR	1	
C3945	F1H1C104A042	CHIP CAPACITOR	1	
C3946	F1H1C104A042	CHIP CAPACITOR	1	
C3947	F1H1C104A042	CHIP CAPACITOR	1	
C3948	F1H1C104A042	CHIP CAPACITOR	1	
C3952	F1H1C104A042	CHIP CAPACITOR	1	
C3953	F1H1C104A042	CHIP CAPACITOR	1	
C4001	ECEA1CKA100B	ALU ELEC CAPACITOR	1	
C4002	ECEA1CKA100B	ALU ELEC CAPACITOR	1	
C4004	ECEA1CKA100B	ALU ELEC CAPACITOR	1	

Ref. No.	Part No.	Part Name & Description	PCS	Remarks
C4005	ECEA0JKA101B	ALU ELEC CAPACITOR	1	
C4007	F1H1H222A219	CHIP CAPACITOR	1	
C4008	F1H1H182A219	CHIP CAPACITOR	1	
C4009	ECEA0JKA220B	ALU ELEC CAPACITOR	1	
C4010	ECEA1EKA4R7B	ALU ELEC CAPACITOR	1	
C4014	ECEA1HKA4R7B	ALU ELEC CAPACITOR	1	
C4015	F1H1H682A219	CHIP CAPACITOR	1	
C4016	ECEA0JKA220B	ALU ELEC CAPACITOR	1	
C4017	ECEA1HKA3R3B	ALU ELEC CAPACITOR	1	
C4018	F1H1H182A219	CHIP CAPACITOR	1	
C4020	ECQB1H223JF3	PLAST FILM CAPACITOR	1	
C4021	ECJ1VC1H221J	CHIP CAPACITOR	1	
C4022	ECEA0JKA470B	ALU ELEC CAPACITOR	1	
C4023	F1H1E223A029	CHIP CAPACITOR	1	
C4024	ECJ1VB1H152K	CHIP CAPACITOR	1	
C4025	ECJ2VF1H103Z	CHIP CAPACITOR	1	
C4101	ECJ1VC1H471J	CHIP CAPACITOR	1	
C4102	ECJ1VC1H471J	CHIP CAPACITOR	1	
C4105	F1H1H1010005	CHIP CAPACITOR	1	
C4106	F1H1H1010005	CHIP CAPACITOR	1	
C4107	ECJ1VC1H471J	CHIP CAPACITOR	1	
C4108	ECJ1VC1H471J	CHIP CAPACITOR	1	
C4111	F1H1H1010005	CHIP CAPACITOR	1	
C4112	F1H1H1010005	CHIP CAPACITOR	1	
C4303	F1H1H1010005	CHIP CAPACITOR	1	
C4304	F1H1H1010005	CHIP CAPACITOR	1	
C4305	F1H1H1020005	CHIP CAPACITOR	1	
C4306	F1H1H1020005	CHIP CAPACITOR	1	
C4501	ECEA1CKA100B	ALU ELEC CAPACITOR	1	
C4502	ECEA1CKA100B	ALU ELEC CAPACITOR	1	
C4503	ECEA1CKA100B	ALU ELEC CAPACITOR	1	
C4504	ECQB1H473JF3	PLAST FILM CAPACITOR	1	
C4505	ECEA0JKA330B	ALU ELEC CAPACITOR	1	
C4506	ECEA1CKA100B	ALU ELEC CAPACITOR	1	
C4508	ECEA1CKA100B	ALU ELEC CAPACITOR	1	
C4509	ECEA0JKA220B	ALU ELEC CAPACITOR	1	
C4510	ECQB1H153JF3	PLAST FILM CAPACITOR	1	
C4511	F1H1C333A041	CHIP CAPACITOR	1	
C4512	F1H1H1030007	CHIP CAPACITOR	1	
C4513	F1H1H1030007	CHIP CAPACITOR	1	
C4515	F1H1C104A008	CHIP CAPACITOR	1	
C4516	F1H1C104A042	CHIP CAPACITOR	1	
C4518	F1H1A2240004	CHIP CAPACITOR	1	
C4519	ECQB1H153JF3	PLAST FILM CAPACITOR	1	
C4520	ECEA0JKA220B	ALU ELEC CAPACITOR	1	
C4521	ECEA1CKA100B	ALU ELEC CAPACITOR	1	
C4522	ECEA0JKA330B	ALU ELEC CAPACITOR	1	
C4523	ECQB1H473JF3	PLAST FILM CAPACITOR	1	
C4524	ECEA0JKA101B	ALU ELEC CAPACITOR	1	
C4526	ECEA1CKA100B	ALU ELEC CAPACITOR	1	
C4531	ECEA1CKA470B	ALU ELEC CAPACITOR	1	
C4533	F1H1H1030007	CHIP CAPACITOR	1	
C4534	F1H1C104A042	CHIP CAPACITOR	1	
C4544	F1H1C104A008	CHIP CAPACITOR	1	
C4545	ECEA0JKA220B	ALU ELEC CAPACITOR	1	
C4915	F1H1C104A042	CHIP CAPACITOR	1	
C4916	F2A0J470A599	ALU ELEC CAPACITOR	1	
C4917	ECEA1CKA100B	ALU ELEC CAPACITOR	1	
C4918	ECEA1CKA100B	ALU ELEC CAPACITOR	1	
C4919	F2A1V100A534	ALU ELEC CAPACITOR	1	
C4920	F2A1V100A534	ALU ELEC CAPACITOR	1	
C4921	ECEA0JKA220B	ALU ELEC CAPACITOR	1	
C4922	F2A1V100A534	ALU ELEC CAPACITOR	1	
C4923	F2A1V100A534	ALU ELEC CAPACITOR	1	
C4924	F2A1V100A534	ALU ELEC CAPACITOR	1	
C4925	F2A1V100A534	ALU ELEC CAPACITOR	1	
C4927	F2A1E1010067	ALU ELEC CAPACITOR	1	
C4928	F2A1H1R0A236	ALU ELEC CAPACITOR	1	
C4929	F2A1H1R0A236	ALU ELEC CAPACITOR	1	
C4930	F2A1H1R0A236	ALU ELEC CAPACITOR	1	
C4931	F2A1H1R0A236	ALU ELEC CAPACITOR	1	
C4932	F2A1H1R0A236	ALU ELEC CAPACITOR	1	
C4933	F2A1H1R0A236	ALU ELEC CAPACITOR	1	

Ref. No.	Part No.	Part Name & Description	PCS	Remarks
C4934	F2A1H1R0A236	ALU ELEC CAPACITOR	1	
C4935	F2A1E1010067	ALU ELEC CAPACITOR	1	
C4936	F2A1H1R0A236	ALU ELEC CAPACITOR	1	
C4937	F2A1H1R0A236	ALU ELEC CAPACITOR	1	
C4938	F2A1H1R0A236	ALU ELEC CAPACITOR	1	
C4939	F2A1H1R0A236	ALU ELEC CAPACITOR	1	
C4940	F2A1H1R0A236	ALU ELEC CAPACITOR	1	
C4941	F2A1H1R0A236	ALU ELEC CAPACITOR	1	
C4942	F1H1C104A008	CHIP CAPACITOR	1	
C4943	F2A1H1R0A236	ALU ELEC CAPACITOR	1	
C4944	F2A1C470A637	ALU ELEC CAPACITOR	1	
C4945	F2A1C221A637	ALU ELEC CAPACITOR	1	
C4949	ECEA1CKA100B	ALU ELEC CAPACITOR	1	
C5001	F1H1H1030006	CHIP CAPACITOR	1	
C5002	F1H1H1030006	CHIP CAPACITOR	1	
C5003	F1H1H1030006	CHIP CAPACITOR	1	
C5004	F1H1H1030006	CHIP CAPACITOR	1	
C5005	F1H1C104A008	CHIP CAPACITOR	1	
C5006	ECEA0JKA470B	ALU ELEC CAPACITOR	1	
C5007	F1H1C104A042	CHIP CAPACITOR	1	
C6001	ECJ1VC1H180J	CHIP CAPACITOR	1	
C6002	ECJ1VC1H220J	CHIP CAPACITOR	1	
C6003	D0YBR0000002	CHIP RESISTOR	1	
C6005	ECEA1CKA100B	ALU ELEC CAPACITOR	1	
C6006	F1H1C104A008	CHIP CAPACITOR	1	
C6007	ECJ1VC1H220J	CHIP CAPACITOR	1	
C6008	ECJ1VC1H471J	CHIP CAPACITOR	1	
C6009	F1H1H1030007	CHIP CAPACITOR	1	
C6010	ECJ1VC1H220J	CHIP CAPACITOR	1	
C6012	F1H1H1030007	CHIP CAPACITOR	1	
C6014	F1H1H1030007	CHIP CAPACITOR	1	
C6015	F1H1C333A041	CHIP CAPACITOR	1	
C6016	F1H1H1020005	CHIP CAPACITOR	1	
C6020	F1J1H1040007	CHIP CAPACITOR	1	
C6101	ECEA0JKA221B	ALU ELEC CAPACITOR	1	
C6103	F1H1A1050029	CHIP CAPACITOR	1	
C6104	ECEA0JKA470B	ALU ELEC CAPACITOR	1	
C6109	ECJ1VF1C474Z	CHIP CAPACITOR	1	
C6110	F1H1A1050029	CHIP CAPACITOR	1	
C6111	ECJ1VC1H561J	CHIP CAPACITOR	1	
C6114	F1H1H330A736	CHIP CAPACITOR	1	
C6115	F1H1H1030007	CHIP CAPACITOR	1	
C6116	F1H1C104A042	CHIP CAPACITOR	1	
C6117	F1H1H222A219	CHIP CAPACITOR	1	
C6118	F1H1C104A008	CHIP CAPACITOR	1	
C6119	F1H1C333A041	CHIP CAPACITOR	1	
C6120	F1H1H1010005	CHIP CAPACITOR	1	
C6121	F1H1H330A736	CHIP CAPACITOR	1	
C6302	F1H1H1030007	CHIP CAPACITOR	1	
C6303	ECEA0JKA470B	ALU ELEC CAPACITOR	1	
C6308	ECEA0JKA470B	ALU ELEC CAPACITOR	1	
C6401	ECJ1VC1H221J	CHIP CAPACITOR	1	
C6402	ECJ1VC1H221J	CHIP CAPACITOR	1	
C7301	F1H1C104A008	CHIP CAPACITOR	1	
C7301	F1H1H1030006	CHIP CAPACITOR	1	
C7302	D0YBR0000002	CHIP RESISTOR	1	
C7303	ECEA0JKA101B	ALU ELEC CAPACITOR	1	
C7304	F1H1C104A008	CHIP CAPACITOR	1	
C7305	ECEA0JKA101B	ALU ELEC CAPACITOR	1	
C7306	F1H1H1030007	CHIP CAPACITOR	1	
C7307	ECJ1VC1H100D	CHIP CAPACITOR	1	
C7308	ECJ1VC1H100D	CHIP CAPACITOR	1	
C7309	F1H1H1010005	CHIP CAPACITOR	1	
C7309	ECJ1VB1H152K	CHIP CAPACITOR	1	
C7310	F1H1H1010005	CHIP CAPACITOR	1	
C7310	ECJ1VB1H152K	CHIP CAPACITOR	1	
C7311	F1H1H1010005	CHIP CAPACITOR	1	
C7312	ECEA1CKA100B	ALU ELEC CAPACITOR	1	
C7313	ECEA1CKA100B	ALU ELEC CAPACITOR	1	
C7314	F1H1C104A008	CHIP CAPACITOR	1	
C7315	ECJ1VB1A474K	CHIP CAPACITOR	1	3*
C7316	F1H1H472A219	CHIP CAPACITOR	1	3*
C7317	ECEA1CKA470B	ALU ELEC CAPACITOR	1	

Ref. No.	Part No.	Part Name & Description	PCS	Remarks
C7318	ECEA1CKA100B	ALU ELEC CAPACITOR	1	
C7319	ECJ1VB1H152K	CHIP CAPACITOR	1	
C7323	ECJ1VC1H102J	CHIP CAPACITOR	1	
C7323	F1H1H1020005	CHIP CAPACITOR	1	
C7324	F1H1C104A008	CHIP CAPACITOR	1	
C7324	F1H1H1030006	CHIP CAPACITOR	1	
C7325	F1H1H1030006	CHIP CAPACITOR	1	
C7326	ECJ1VB1A474K	CHIP CAPACITOR	1	3*
C7327	ECJ1VB1H123K	CHIP CAPACITOR	1	3*
C7328	ECJ1VC1H681J	CHIP CAPACITOR	1	
C7329	D0YBR0000002	CHIP RESISTOR	1	
C7330	D0GB822JA002	CHIP RESISTOR	1	
C7330	ECJ1VC1H681J	CHIP CAPACITOR	1	
C7331	ECJ1VB1H123K	CHIP CAPACITOR	1	3*
C7332	F1H1C104A008	CHIP CAPACITOR	1	
C7333	F1H1C104A042	CHIP CAPACITOR	1	
C7333	ECJ1VB1A474K	CHIP CAPACITOR	1	3*
C7334	ECEA1HKA2R2B	ALU ELEC CAPACITOR	1	
C7335	F1H1C104A008	CHIP CAPACITOR	1	
C7335	F1H1H1030006	CHIP CAPACITOR	1	
C7336	F1H1C104A042	CHIP CAPACITOR	1	
C7337	ECJ1VB1A474K	CHIP CAPACITOR	1	3*
C7338	ECJ1VB1A474K	CHIP CAPACITOR	1	3*
C7401	ECJ1VB1A105K	CHIP CAPACITOR	1	
C7402	F1H1C104A042	CHIP CAPACITOR	1	
C7403	F1J1A105A003	CHIP CAPACITOR	1	
C7404	ECJ1VB1A105K	CHIP CAPACITOR	1	
C7405	F1H1C104A042	CHIP CAPACITOR	1	
C7406	F1H1C104A042	CHIP CAPACITOR	1	
C7407	F1J1A105A003	CHIP CAPACITOR	1	
C7411	ECEA1HKA2R2B	ALU ELEC CAPACITOR	1	
C7412	F1H1H330A736	CHIP CAPACITOR	1	
C7413	F1H1H330A736	CHIP CAPACITOR	1	
C7414	ECEA0JKA470B	ALU ELEC CAPACITOR	1	
C7415	ECEA1HKA010B	ALU ELEC CAPACITOR	1	
C7417	ECEA0JKA101B	ALU ELEC CAPACITOR	1	
C7418	F1H1H1030006	CHIP CAPACITOR	1	
C7422	F1H1H1030006	CHIP CAPACITOR	1	
C7424	ECEA1HKA010B	ALU ELEC CAPACITOR	1	
C7425	ECEA0JKA470B	ALU ELEC CAPACITOR	1	
C7426	ECJ1VC1H471J	CHIP CAPACITOR	1	
C7428	ECEA0JKA470B	ALU ELEC CAPACITOR	1	
C7430	ECEA0JKA470B	ALU ELEC CAPACITOR	1	
C7431	F1H1H1030006	CHIP CAPACITOR	1	
C7432	F1H1H1030006	CHIP CAPACITOR	1	
C7432	D0YBR0000002	CHIP RESISTOR	1	
C7433	ECEA0JKA470B	ALU ELEC CAPACITOR	1	
C7434	F1H1H1030006	CHIP CAPACITOR	1	
C7435	ECEA0JKA470B	ALU ELEC CAPACITOR	1	
C7436	ECEA1HKA2R2B	ALU ELEC CAPACITOR	1	
C7437	D0YBR0000002	CHIP RESISTOR	1	
C7438	D0YBR0000002	CHIP RESISTOR	1	
C7439	D0YBR0000002	CHIP RESISTOR	1	
C7441	ECJ1VC1H471J	CHIP CAPACITOR	1	
C7442	F1H1H330A736	CHIP CAPACITOR	1	
C7443	F1H1H330A736	CHIP CAPACITOR	1	
C7445	ECEA0JKA101B	ALU ELEC CAPACITOR	1	
C7446	F1H1H1030006	CHIP CAPACITOR	1	
C7448	ECJ1VC1H471J	CHIP CAPACITOR	1	
C7449	ECEA0JKA470B	ALU ELEC CAPACITOR	1	
C7450	F1H1H1030006	CHIP CAPACITOR	1	
C7452	ECEA0JKA470B	ALU ELEC CAPACITOR	1	
C7453	F1H1H1030006	CHIP CAPACITOR	1	
C7454	ECJ1VB1A105K	CHIP CAPACITOR	1	
C7455	F1H1C104A042	CHIP CAPACITOR	1	
C7456	F1H1C104A042	CHIP CAPACITOR	1	
C7457	F1J1A105A003	CHIP CAPACITOR	1	
C7465	ECJ1VC1H471J	CHIP CAPACITOR	1	
C7466	ECJ1VC1H471J	CHIP CAPACITOR	1	
C7476	ECJ1VC1H471J	CHIP CAPACITOR	1	
C7477	ECJ1VC1H471J	CHIP CAPACITOR	1	
C7478	F1H1H9R0A735	CHIP CAPACITOR	1	3*
C7479	F1H1H9R0A735	CHIP CAPACITOR	1	3*

Ref. No.	Part No.	Part Name & Description	PCS	Remarks
C7501	F1H1C104A008	CHIP CAPACITOR	1	
C7502	ECEA0JKA470B	ALU ELEC CAPACITOR	1	
C7525	F1H1H1010005	CHIP CAPACITOR	1	
C7752	F2A0J221A016	ALU ELEC CAPACITOR	1	
C7801	F1H1C104A008	CHIP CAPACITOR	1	
C7901	F1H1H1030007	CHIP CAPACITOR	1	
C7902	ECEA1HKA100B	ALU ELEC CAPACITOR	1	
C7903	F1H1H104A220	CHIP CAPACITOR	1	
C7904	F1H1C104A042	CHIP CAPACITOR	1	
C7905	F2A1C221A019	ALU ELEC CAPACITOR	1	
C7906	ECQB1H473JF4	PLAST FILM CAPACITOR	1	
C7907	F2A1A1010072	ALU ELEC CAPACITOR	1	
C7908	ECQB1H223JF3	PLAST FILM CAPACITOR	1	
C7909	F2A1H5600009	ALU ELEC CAPACITOR	1	
C7910	F2A1H5600009	ALU ELEC CAPACITOR	1	
C9102	F2A1E3310051	ALU ELEC CAPACITOR	1	
C9103	F2A1E3310051	ALU ELEC CAPACITOR	1	
C9104	F1H1H104A220	CHIP CAPACITOR	1	
C9105	F1H1H104A220	CHIP CAPACITOR	1	
C9111	F1H1A1050029	CHIP CAPACITOR	1	
C9112	F1H1H1030006	CHIP CAPACITOR	1	
C9113	F1H1H2700003	CHIP CAPACITOR	1	
C9116	F1J0J2250003	CHIP CAPACITOR	1	
C9117	ECJ2FB1C334K	CHIP CAPACITOR	1	
C9118	F1H1H1020005	CHIP CAPACITOR	1	
C9124	F1H1H1020005	CHIP CAPACITOR	1	
C9125	F2A0J681A550	ALU ELEC CAPACITOR	1	
C9126	F2A1A681A540	ALU ELEC CAPACITOR	1	
C9127	F1H1H104A220	CHIP CAPACITOR	1	
C9128	F1H1H1030007	CHIP CAPACITOR	1	
C9130	F1H1H1030006	CHIP CAPACITOR	1	
C9131	F1H1H1030006	CHIP CAPACITOR	1	
C9132	F1H1H1030006	CHIP CAPACITOR	1	
C9133	F1H1H1030006	CHIP CAPACITOR	1	
C9135	F1H1H1030006	CHIP CAPACITOR	1	
C9136	F1H1H1030006	CHIP CAPACITOR	1	
C9138	ECJ1VB1H331K	CHIP CAPACITOR	1	
C9139	ECJ1VC1H391J	CHIP CAPACITOR	1	
C9140	ECJ1VB1A334K	CHIP CAPACITOR	1	
C9142	F1J0J106A014	CHIP CAPACITOR	1	
C9156	F1H1H1030007	CHIP CAPACITOR	1	
C9157	F1J0J2250003	CHIP CAPACITOR	1	
C9301	F1H1H104A220	CHIP CAPACITOR	1	
C9302	ECQV1H104JL3	PLAST FILM CAPACITOR	1	
C9303	ECA1AM102B	ALU ELEC CAPACITOR	1	
C9305	ECEA1CKA100B	ALU ELEC CAPACITOR	1	
C9306	ECJ1VC1H102J	CHIP CAPACITOR	1	
C9309	F1H1H1510001	CHIP CAPACITOR	1	
C9310	F1H1H1510001	CHIP CAPACITOR	1	
C9311	F2A1C470A637	ALU ELEC CAPACITOR	1	
C9312	F2A1C470A637	ALU ELEC CAPACITOR	1	
C9315	F1H1H1020005	CHIP CAPACITOR	1	
C9316	F1H1H1020005	CHIP CAPACITOR	1	
C9320	F1H1H104A748	CHIP CAPACITOR	1	
C9321	F1H1H104A748	CHIP CAPACITOR	1	
C9322	ECJ1VB1A105K	CHIP CAPACITOR	1	
C9323	ECJ1VB1A105K	CHIP CAPACITOR	1	
C9324	ECJ1VB1A105K	CHIP CAPACITOR	1	
C9325	ECJ1VB1A105K	CHIP CAPACITOR	1	
C9326	ECEA1CKA470B	ALU ELEC CAPACITOR	1	
C9327	ECJ1VB1A105K	CHIP CAPACITOR	1	
C9328	ECJ1VB1A105K	CHIP CAPACITOR	1	
C9329	F1H1H1030006	CHIP CAPACITOR	1	
C9330	ECEA1CKA220B	ALU ELEC CAPACITOR	1	
C9331	F2A0J102A016	ALU ELEC CAPACITOR	1	
C9332	F2A0J102A016	ALU ELEC CAPACITOR	1	
C9333	F2A0J102A016	ALU ELEC CAPACITOR	1	
C9334	F2A0J471A016	ALU ELEC CAPACITOR	1	
C9335	F2A0J471A016	ALU ELEC CAPACITOR	1	
C9336	F1H1H104A220	CHIP CAPACITOR	1	
C9337	ECEA0JKA220B	ALU ELEC CAPACITOR	1	
C9701	ECJ1VB1A105K	CHIP CAPACITOR	1	
C9706	ECEA0JKA101B	ALU ELEC CAPACITOR	1	

Ref. No.	Part No.	Part Name & Description	PCS	Remarks
C9707	F1H1H104A220	CHIP CAPACITOR	1	
C9709	F1H1H100A735	CHIP CAPACITOR	1	
C9710	F1H1H100A735	CHIP CAPACITOR	1	
C9711	F1H1H100A735	CHIP CAPACITOR	1	
C9712	F1H1H100A735	CHIP CAPACITOR	1	
C9713	F1H1H104A748	CHIP CAPACITOR	1	
C9714	F1H1H104A748	CHIP CAPACITOR	1	
C9715	F1H1H1030007	CHIP CAPACITOR	1	
C9716	F1H1H1030007	CHIP CAPACITOR	1	
C9717	F1H1H1030007	CHIP CAPACITOR	1	
C9718	F1H1H1030007	CHIP CAPACITOR	1	
C9719	F1H1H1030007	CHIP CAPACITOR	1	
C9720	F1H1H104A220	CHIP CAPACITOR	1	
C9723	F1H1H104A220	CHIP CAPACITOR	1	
C9724	F1H1H104A220	CHIP CAPACITOR	1	
C9725	F1H1A1050029	CHIP CAPACITOR	1	
C9726	F1H1H104A220	CHIP CAPACITOR	1	
C9729	F1H1H100A735	CHIP CAPACITOR	1	
C9730	F1H1H100A735	CHIP CAPACITOR	1	
C9731	F1H1H100A735	CHIP CAPACITOR	1	
C9732	F1H1H100A735	CHIP CAPACITOR	1	
C9733	F1H1H1010005	CHIP CAPACITOR	1	
C9735	F1H1H1030007	CHIP CAPACITOR	1	
C9736	F1H1H1030007	CHIP CAPACITOR	1	
C9737	F4D55473A013	ALU ELEC CAPACITOR	1	
C9738	ECJ1VC1H180J	CHIP CAPACITOR	1	
C9739	ECJ1VC1H180J	CHIP CAPACITOR	1	
C9740	F1H1A1050029	CHIP CAPACITOR	1	
C9741	F1H1H104A220	CHIP CAPACITOR	1	
C9742	ECJ1VC1H180J	CHIP CAPACITOR	1	
C9745	ECJ1VC1H180J	CHIP CAPACITOR	1	
C9747	F1H1H104A220	CHIP CAPACITOR	1	
C9748	F1H1H104A220	CHIP CAPACITOR	1	
C9749	F1H1H104A220	CHIP CAPACITOR	1	
C9750	F1H1H104A220	CHIP CAPACITOR	1	
C9751	F1H1H4700004	CHIP CAPACITOR	1	
C9752	F1H1H4700004	CHIP CAPACITOR	1	
C9753	F1H1H4700004	CHIP CAPACITOR	1	
C9754	F1H1H1030007	CHIP CAPACITOR	1	
C9756	F1H1H1010005	CHIP CAPACITOR	1	
C9757	ECJ1VB1A105K	CHIP CAPACITOR	1	
D1101	ERZVA5V471	SURGE ABSORBER	1	△
D1102	B0EALR000016	DIODE	1	
D1103	B0EALR000016	DIODE	1	
D1104	B0EALR000016	DIODE	1	
D1105	B0EALR000016	DIODE	1	
D1106	B0HADV000001	DIODE	1	
D1107	MAZ42000MF	DIODE	1	
D1108	B0HAGM000008	DIODE	1	
D1109	MAZ73000BF	ZENER DIODE	1	
D1201	B0JAMK000015	DIODE	1	
D1202	B0JAMK000015	DIODE	1	
D1203	B0JBSL000002	DIODE	1	
D1204	B0JCPE000015	DIODE	1	
D1205	B0JCPE000015	DIODE	1	
D1501	B3EA00000072	DIODE	1	
D2001	B0AACK000004	SWITCHING DIODE	1	
D2002	B0AACK000004	SWITCHING DIODE	1	
D2502	MAZ4160NMF	DIODE	1	
D3501	B0AACK000004	SWITCHING DIODE	1	
D3901	B0AACK000004	SWITCHING DIODE	1	
D4501	B0AACK000004	SWITCHING DIODE	1	
D4502	MAZ4056NHF	DIODE	1	
D4901	MA2J11200L	DIODE	1	
D6306	MAZ4056NHF	DIODE	1	
D6401	B0AACK000004	SWITCHING DIODE	1	
D6402	B0ACCK000005	DIODE	1	
D7401	MAZ4300NMF	DIODE	1	
D7402	MAZ4300NMF	DIODE	1	
D7501	B3AAA0000752	DIODE	1	
D7503	B3ACA0000273	DIODE	1	
D7505	B3ADA0000173	DIODE	1	
D7751	B0AACK000004	SWITCHING DIODE	1	

Ref. No.	Part No.	Part Name & Description	PCS	Remarks
D7901	MAZ4220NMF	DIODE	1	
D7902	B0AAGM000007	DIODE	1	
D7903	B0JAME000025	DIODE	1	
D7904	MA2C18500E	DIODE	1	
D7905	MA2C18500E	DIODE	1	
D7906	MAZ4300NMF	DIODE	1	
D9101	B0JCPE000015	DIODE	1	
D9102	B0JCPE000015	DIODE	1	
D9104	MAZ40390HF	DIODE	1	
D9105	B0AACK000004	SWITCHING DIODE	1	
D9106	B0AACK000004	SWITCHING DIODE	1	
D9107	B0AACK000004	SWITCHING DIODE	1	
DP7501	A2BB00000145	FL DISPLAY	1	
F1101	K5D202BK0005	FUSE	1	△
FH1101	EYF52BCY	FUSE HOLDER	1	
FH1102	EYF52BCY	FUSE HOLDER	1	
IC1101	C0DACZZ00009	INTEGRATED CIRCUIT	1	
IC1201	C0DBAKG00005	INTEGRATED CIRCUIT	1	
IC1202	C0DAEMZ00001	VOLTAGE REGULATOR	1	
IC1203	C0DAAJG00007	POWER SUPPLY IC	1	
IC1511	B3NAA0000049	PHOTO COUPLER	1	
IC1512	B3NAA0000049	PHOTO COUPLER	1	
IC2501	C1AB00001767	MOTOR DRIVE IC	1	
IC3001	C1AB00002080	INTEGRATED CIRCUIT	1	
IC3002	C0CBCDD00007	POWER SUPPLY IC	1	
IC3003	C1AB00001681	INTEGRATED CIRCUIT	1	
IC3501	C1AB00001681	INTEGRATED CIRCUIT	1	
IC3502	AN3293S-E2V	INTEGRATED CIRCUIT	1	
IC3901	C1AB00002100	INTEGRATED CIRCUIT	1	
IC3902	C1AB00001681	INTEGRATED CIRCUIT	1	
IC3903	C1AB00001682	INTEGRATED CIRCUIT	1	
IC3904	C1AB00001682	INTEGRATED CIRCUIT	1	
IC3906	C0CBCDD00006	INTEGRATED CIRCUIT	1	
IC4501	AN3656NFBPBV	INTEGRATED CIRCUIT	1	
IC6001	C2CBJG000493	INTEGRATED CIRCUIT	1	
IC6102	C1AB00001293	INTEGRATED CIRCUIT	1	
IC6201	C0EBH0000172	INTEGRATED CIRCUIT	1	
IC6302	C0CBCDC00020	POWER SUPPLY IC	1	
IC7301	C1AB00002225	INTEGRATED CIRCUIT	1	1*, 2*
IC7301	C0ZBZ0001081	INTEGRATED CIRCUIT	1	3*
IC7302	C0EAH0000051	RESET IC	1	1*, 2*
IC7401	C0CBCDD00006	INTEGRATED CIRCUIT	1	
IC7402	C0CBCDD00006	INTEGRATED CIRCUIT	1	
IC7405	C0CBCDD00006	INTEGRATED CIRCUIT	1	
IC7502	C0HBB0000048	INTEGRATED CIRCUIT	1	
IC7801	PNA4618M13VT	INTEGRATED CIRCUIT	1	
IC9102	C0CBCDD00006	INTEGRATED CIRCUIT	1	
IC9103	C0DBAKG00005	INTEGRATED CIRCUIT	1	
IC9105	C0DAAJG00007	POWER SUPPLY IC	1	
IC9106	C0DBEGD00002	POWER SUPPLY IC	1	
IC9301	C0DBAHD00013	VOLTAGE REGULATOR	1	
IC9302	C0ABBB000216	AMPLIFIERS	1	
IC9303	C1AB00001486	INTEGRATED CIRCUIT	1	
IC9304	C9ZB00000498	INTERGRATED CIRCUIT	1	
IC9305	C0ABBB000119	INTEGRATED CIRCUIT	1	
IC9701	C2CBKH000134	INTEGRATED CIRCUIT	1	
IC9702	C0EBE0000194	VOLTAGE RESET IC	1	
IC9703	C0EBH0000172	INTEGRATED CIRCUIT	1	
IC9705	C3EBJC000055	INTEGRATED CIRCUIT	1	
IC9706	C0EBE0000504	INTEGRATED CIRCUIT	1	
IP1221	ERJ8GEY0R00V	CHIP RESISTOR	1	
IP4901	K5H5012A0010	FUSE	1	
IP9101	K5H1022A0011	FUSE	1	
IP9102	K5H5012A0010	FUSE	1	
J1	VEE0U97	EARTH WIRE	1	
JK3802	K1CB106A0012	CONNECTOR	1	
JK3901	K1FB121B0018	CONNECTOR	1	
JK3902	K1FB121B0018	CONNECTOR	1	
JK4600	K2HA307A0009	CONNECTOR	1	
JK4901	B3AZA0000017	OPTICAL LINK	1	
JK9301	K1U412B00005	TERMINAL JACK	1	
JK9302	K1CB306B0001	TERMINAL JACK	1	
K3005	D0YBR0000002	CHIP RESISTOR	1	

Ref. No.	Part No.	Part Name & Description	PCS	Remarks
K3006	D0YBR0000002	CHIP RESISTOR	1	
K3009	D0YBR0000002	CHIP RESISTOR	1	
K4502	D0YBR0000002	CHIP RESISTOR	1	
K6002	D0YBR0000002	CHIP RESISTOR	1	
K6201	D0YBR0000002	CHIP RESISTOR	1	
K7301	D0YBR0000002	CHIP RESISTOR	1	
K7302	D0YBR0000002	CHIP RESISTOR	1	
K7303	D0YBR0000002	CHIP RESISTOR	1	
K7305	D0YBR0000002	CHIP RESISTOR	1	
K7306	D0YBR0000002	CHIP RESISTOR	1	
K7401	D0YBR0000002	CHIP RESISTOR	1	
K7403	D0YBR0000002	CHIP RESISTOR	1	
K7405	D0YBR0000002	CHIP RESISTOR	1	
K7503	D0YBR0000002	CHIP RESISTOR	1	
K7506	D0YBR0000002	CHIP RESISTOR	1	
K7507	D0YBR0000002	CHIP RESISTOR	1	
K7512	D0YBR0000002	CHIP RESISTOR	1	
K7513	D0YBR0000002	CHIP RESISTOR	1	
K7514	D0YBR0000002	CHIP RESISTOR	1	
K7515	D0YBR0000002	CHIP RESISTOR	1	
K7516	D0YBR0000002	CHIP RESISTOR	1	
K9114	D0YBR0000002	CHIP RESISTOR	1	
L1101	G0B233D00001	LINE FILTER	1	△
L1102	G0B233D00001	LINE FILTER	1	△
L1202	G0A220GA0026	CHOKE COIL RADIAL	1	
L1204	G0A220ZA0042	CHOKE COIL	1	
L1205	G0A100H00025	CHOKE COIL	1	
L1207	G0A100H00025	CHOKE COIL	1	
L1209	G0A470ZA0042	CHOKE COIL	1	
L1210	G0A220GA0026	CHOKE COIL RADIAL	1	
L3001	G0C820JA0019	CHOKE COIL AXIAL	1	
L3002	G0C270JA0019	CHOKE COIL AXIAL	1	
L3003	G0C390JA0019	CHOKE COIL AXIAL	1	
L3004	G0C680JA0019	CHOKE COIL AXIAL	1	
L3006	G0C270JA0019	CHOKE COIL AXIAL	1	
L3007	ELJFA120KF	CHIP INDUCTOR	1	
L3008	G0C680JA0019	CHOKE COIL AXIAL	1	
L3501	G0C560JA0019	CHOKE COIL AXIAL	1	
L3502	G0C330JA0019	CHOKE COIL AXIAL	1	
L3503	G0C330JA0019	CHOKE COIL AXIAL	1	
L3504	G0C330JA0019	CHOKE COIL AXIAL	1	
L4001	G0C471KA0065	FIXED INDUCTOR	1	
L4502	G0C1R2J00004	CHOKE COIL AXIAL	1	
L4503	G0C101JA0019	CHOKE COIL AXIAL	1	
L5001	G0C680JA0019	CHOKE COIL AXIAL	1	
L6101	G0C680JA0019	CHOKE COIL AXIAL	1	
L6103	G0C1R5JA0019	CHOKE COIL	1	
L6104	G0C330JA0019	CHOKE COIL AXIAL	1	
L6105	G0C680JA0019	CHOKE COIL AXIAL	1	
L7303	G0C1R0JA0019	CHOKE COIL AXIAL	1	1*, 2*
L7401	G0C2R2JA0019	CHOKE COIL AXIAL	1	
L7401	G0C470JA0019	CHOKE COIL AXIAL	1	
L7403	G0C270JA0019	CHOKE COIL AXIAL	1	
L7404	G0C2R2JA0019	CHOKE COIL AXIAL	1	
L7404	G0C470JA0019	CHOKE COIL AXIAL	1	
L7901	G0A101EA0017	CHOKE COIL	1	
L9103	G0A220ZA0042	CHOKE COIL	1	
L9104	G0A330ZA0042	CHOKE COIL	1	
L9105	G0C680JA0019	CHOKE COIL AXIAL	1	
L9106	G0C680JA0019	CHOKE COIL AXIAL	1	
L9107	G0C2R2JA0019	CHOKE COIL AXIAL	1	
L9108	G0C2R2JA0019	CHOKE COIL AXIAL	1	
L9301	G0C470JA0019	CHOKE COIL AXIAL	1	
LB1102	EXCELDR35V	BEAD CORES	1	
LB1105	EXCELDR35V	BEAD CORES	1	
LB1203	D0YDR0000006	CHIP RESISTOR	1	
LB1204	D0YDR0000006	CHIP RESISTOR	1	
LB1207	J0JHC0000012	BEAD CORE	1	
LB3301	D0YBR0000002	CHIP RESISTOR	1	
LB3302	D0YBR0000002	CHIP RESISTOR	1	
LB3303	D0YBR0000002	CHIP RESISTOR	1	
LB3902	J0JGC0000020	BEAD CORE	1	
LB4101	J0JBC0000041	BEAD CORE	1	

Ref. No.	Part No.	Part Name & Description	PCS	Remarks
LB4102	J0JBC0000041	BEAD CORE	1	
LB4103	J0JBC0000041	BEAD CORE	1	
LB4104	J0JBC0000041	BEAD CORE	1	
LB4105	J0JBC0000041	BEAD CORE	1	
LB4106	J0JBC0000041	BEAD CORE	1	
LB4201	J0JBC0000070	CHIP INDUCTOR	1	
LB4202	J0JBC0000070	CHIP INDUCTOR	1	
LB4203	D0YBR0000002	CHIP RESISTOR	1	
LB6101	D0YBR0000002	CHIP RESISTOR	1	
LB7301	J0JCC0000124	BEAD CORE	1	1*, 2*
LB7302	J0JCC0000124	BEAD CORE	1	1*, 2*
LB7303	J0JCC0000080	BEAD CORE	1	1*, 2*
LB7401	J0JHC0000032	BEAD CORE	1	
LB7402	J0JHC0000032	BEAD CORE	1	
LB7403	J0JHC0000032	BEAD CORE	1	
LB7404	J0JHC0000032	BEAD CORE	1	
LB7405	J0JHC0000032	BEAD CORE	1	
LB7406	D0YBR0000002	CHIP RESISTOR	1	
LB7407	J0JHC0000032	BEAD CORE	1	
LB7408	J0JHC0000032	BEAD CORE	1	
LB7409	D0YBR0000002	CHIP RESISTOR	1	
LB7410	J0JHC0000032	BEAD CORE	1	
LB7411	J0JHC0000032	BEAD CORE	1	
LB7412	D0YBR0000002	CHIP RESISTOR	1	
LB7413	D0YBR0000002	CHIP RESISTOR	1	
LB7414	J0JHC0000032	BEAD CORE	1	
LB7415	D0YBR0000002	CHIP RESISTOR	1	
LB7416	J0JHC0000032	BEAD CORE	1	
LB7417	J0JHC0000032	BEAD CORE	1	
LB7901	J0JKB0000028	BEAD CORE	1	
LB9103	D0YDR0000006	CHIP RESISTOR	1	
LB9104	J0JKB0000003	BEAD CORE	1	
LB9106	J0JHC0000012	BEAD CORE	1	
LB9108	D0YBR0000002	CHIP RESISTOR	1	
LB9109	J0JHC0000032	BEAD CORE	1	
LB9110	J0JHC0000032	BEAD CORE	1	
LB9111	J0JHC0000032	BEAD CORE	1	
LB9112	J0JHC0000032	BEAD CORE	1	
LB9114	J0JCC0000103	BEAD CORE	1	
LB9115	J0JCC0000103	BEAD CORE	1	
LB9301	D0YBR0000002	CHIP RESISTOR	1	
LB9302	D0YBR0000002	CHIP RESISTOR	1	
LB9303	D0YBR0000002	CHIP RESISTOR	1	
LB9304	D0YBR0000002	CHIP RESISTOR	1	
LB9305	D0YBR0000002	CHIP RESISTOR	1	
LB9306	D0YBR0000002	CHIP RESISTOR	1	
LB9307	D0YBR0000002	CHIP RESISTOR	1	
LB9308	D0YBR0000002	CHIP RESISTOR	1	
LB9702	D0YBR0000002	CHIP RESISTOR	1	
LB9703	D0YBR0000002	CHIP RESISTOR	1	
LB9704	D0YBR0000002	CHIP RESISTOR	1	
LB9705	D0YBR0000002	CHIP RESISTOR	1	
LB9706	J0JCC0000060	BEAD CORE	1	
P1101	K2AA2H000007	AC INLET	1	△
P1201	K1KA04AA0180	CONNECTOR	1	
P1531	K1KA02AA00375	CONNECTOR	1	
P2501	K1MN07A00019	CONNECTOR	1	
P2571	K1KA08AA00290	CONNECTOR	1	
P4001	K1M202A00003	CONNECTOR	1	
P4002	K1MN06A00033	CONNECTOR	1	
P5001	K1MN09A00022	CONNECTOR	1	
P6001	K1KB13AA0032	CONNECTOR 13POL.	1	
P6002	K1KB19AA0032	CONNECTOR 19POL.	1	
P6003	K1KB19AA0032	CONNECTOR 19POL.	1	
P6004	K1KB13AA0032	CONNECTOR 13POL.	1	
P6005	K1KB07AA0032	CONNECTOR	1	
P9101	K1KA13A00074	CONNECTOR	1	
P9102	K1KA19A00007	CONNECTOR	1	
P9103	K1KA19A00007	CONNECTOR	1	
P9104	K1KA13A00074	CONNECTOR	1	
P9105	K1KA07A00083	CONNECTOR	1	
P9106	K1KA88A00003	CONNECTOR	1	
P9701	K1KA03AA0180	CONNECTOR	1	

Ref. No.	Part No.	Part Name & Description	PCS	Remarks
PK7301	K1MM07B00002	CONNECTOR	1	
PK7302	K1MM06B00002	CONNECTOR	1	
PP4600	K1KA12B00129	CONNECTOR	1	
PP7501	K1KA10B00176	CONNECTOR	1	
PP7503	K1KA08B00210	CONNECTOR	1	
PP9702	K1KB10B00045	CONNECTOR	1	
PS6001	K1KB08B00043	CONNECTOR	1	
PS6002	K1KB12B00040	CONNECTOR	1	
Q1101	B3PBA0000237	PHOTO COUPLER	1	△
Q1201	B1DHDD000022	TRANSISTOR	1	
Q1501	PNB2302MF	PHOTO TRANSISTOR	1	
Q1502	PNB2302MF	PHOTO TRANSISTOR	1	
Q3002	2SD1819ARL	TRANSISTOR	1	
Q3501	2SB1218ARL	SS-TRANSISTOR	1	
Q3502	2SB1218ARL	SS-TRANSISTOR	1	
Q3503	2SD1819ARL	TRANSISTOR	1	
Q3901	2SD132800L	CHIP TRANSISTOR	1	
Q3902	2SD132800L	CHIP TRANSISTOR	1	
Q3903	2SD132800L	CHIP TRANSISTOR	1	
Q3904	2SD132800L	CHIP TRANSISTOR	1	
Q4001	2SD114900L	TRANSISTOR	1	
Q4002	2SD1819ARL	TRANSISTOR	1	
Q4003	2SD0602ARL	TRANSISTOR	1	
Q4004	2SB0710ARL	TRANSISTOR	1	
Q4501	B1AAGD000016	TRANSISTOR	1	
Q4502	2SB0710ARL	TRANSISTOR	1	
Q4901	2SB0710ARL	TRANSISTOR	1	
Q6101	2SB1218ARL	SS-TRANSISTOR	1	
Q6102	2SD1819ARL	TRANSISTOR	1	
Q6103	2SD1819ARL	TRANSISTOR	1	
Q6104	2SB1218ARL	SS-TRANSISTOR	1	
Q6305	2SD0601ARN	TRANSISTOR	1	
Q6401	2SD1819ARL	TRANSISTOR	1	
Q6402	2SD1819ARL	TRANSISTOR	1	
Q6403	2SD1819ARL	TRANSISTOR	1	
Q6404	2SD1819ARL	TRANSISTOR	1	
Q7401	2SD1819ARL	TRANSISTOR	1	
Q7402	2SD1819ARL	TRANSISTOR	1	
Q7403	2SB1218ARL	SS-TRANSISTOR	1	
Q7405	2SD1819ARL	TRANSISTOR	1	
Q7501	2SD1819ARL	TRANSISTOR	1	
Q7901	2SD21770SA	TRANSISTOR	1	
Q7902	2SD1819ARL	TRANSISTOR	1	
Q9101	2SD1819ARL	TRANSISTOR	1	
Q9106	2SD0601ARN	TRANSISTOR	1	
Q9107	B1DHDD000022	TRANSISTOR	1	
Q9701	2SB1218ARL	SS-TRANSISTOR	1	
Q9702	2SD1819ARL	TRANSISTOR	1	
Q9703	2SD1819ARL	TRANSISTOR	1	
Q9704	2SB0709ARL	TRANSISTOR	1	
Q9705	2SB1218ARL	SS-TRANSISTOR	1	
Q9706	2SD1819ARL	TRANSISTOR	1	
QR1202	UNR521300L	TRANSISTOR	1	
QR3001	UNR521300L	TRANSISTOR	1	
QR3002	UNR521200L	TRANSISTOR	1	
QR3003	UNR521200L	TRANSISTOR	1	
QR3005	UNR521200L	TRANSISTOR	1	
QR3901	UNR521100L	TRANSISTOR	1	
QR3902	UNR521300L	TRANSISTOR	1	
QR4003	UNR521100L	TRANSISTOR	1	
QR4004	UNR511100L	TRANSISTOR	1	
QR4005	UNR521300L	TRANSISTOR	1	
QR4501	UNR521100L	TRANSISTOR	1	
QR4901	UNR521300L	TRANSISTOR	1	
QR4902	UNR511100L	TRANSISTOR	1	
QR4903	UNR521600L	TRANSISTOR	1	
QR4904	UNR521600L	TRANSISTOR	1	
QR4905	UNR521600L	TRANSISTOR	1	
QR4906	UNR521600L	TRANSISTOR	1	
QR4908	UNR511300L	TRANSISTOR	1	
QR4910	UNR521600L	TRANSISTOR	1	
QR4911	UNR511300L	TRANSISTOR	1	
QR4912	UNR521600L	TRANSISTOR	1	

Ref. No.	Part No.	Part Name & Description	PCS	Remarks
QR4913	UNR521600L	TRANSISTOR	1	
QR4914	UNR521300L	TRANSISTOR	1	
QR6402	UNR521500L	TRANSISTOR	1	
QR6403	UNR521500L	TRANSISTOR	1	
QR7401	UNR511200L	TRANSISTOR	1	
QR7402	UNR511200L	TRANSISTOR	1	
QR7501	UNR521100L	TRANSISTOR	1	
QR7503	UNR521100L	TRANSISTOR	1	
QR7505	UNR521100L	TRANSISTOR	1	
QR9103	UNR521300L	TRANSISTOR	1	
QR9104	UNR521100L	TRANSISTOR	1	
QR9105	UNR521300L	TRANSISTOR	1	
QR9301	UNR511100L	TRANSISTOR	1	
QR9304	UNR521600L	TRANSISTOR	1	
QR9305	UNR521600L	TRANSISTOR	1	
QR9310	UNR521200L	TRANSISTOR	1	
QR9311	UNR521200L	TRANSISTOR	1	
QR9701	UNR521200L	TRANSISTOR	1	
QR9702	UNR521400L	TRANSISTOR	1	
QR9703	UNR521300L	TRANSISTOR	1	
R1101	ERDS2FJ105T	CARBON RESISTOR	1	
R1102	ERDS2FJ105T	CARBON RESISTOR	1	
R1103	ERG2SJ683E	SOLID RESISTOR	1	
R1104	ERG2SJ221E	METAL OXIDE RESISTOR	1	
R1105	ERX12SJR47E	METAL RESISTOR	1	
R1106	ERG12SJ180E	METAL OXIDE RESISTOR	1	
R1107	ERDS2TJ474T	CARBON RESISTOR	1	
R1108	ERDS2TJ474T	CARBON RESISTOR	1	
R1206	D0GB513JA002	CHIP RESISTOR	1	
R1207	D1BFR0270001	RESISTOR ARRAY	1	
R1213	D1BB10020004	CHIP RESISTOR	1	
R1214	D1BB2701A010	CHIP RESISTOR	1	
R1215	D1BB33010002	CHIP RESISTOR	1	
R1216	D0GB222JA002	CHIP RESISTOR	1	
R1217	D0GB221JA002	CHIP RESISTOR	1	
R1218	D0GB222JA002	CHIP RESISTOR	1	
R1220	D1BB10020004	CHIP RESISTOR	1	
R1221	D1BB68000002	CHIP RESISTOR	1	
R1222	D1BB2701A010	CHIP RESISTOR	1	
R1225	D0GB104JA002	CHIP RESISTOR	1	
R1226	D1BB4301A010	CHIP RESISTOR	1	
R1227	D1BB1201A010	CHIP RESISTOR	1	
R1228	D1BB1001A010	CHIP RESISTOR	1	
R1501	D0GB273JA002	CHIP RESISTOR	1	
R1502	D0GB273JA002	CHIP RESISTOR	1	
R1503	ERDS2TJ151T	CARBON RESISTOR	1	
R1511	D0GB273JA002	CHIP RESISTOR	1	
R1512	D0GB273JA002	CHIP RESISTOR	1	
R1513	ERJ6GEYJ121V	CHIP RESISTOR	1	
R2001	D0GB392JA002	CHIP RESISTOR	1	
R2002	D0GB105JA002	CHIP RESISTOR	1	
R2099	D0GB682JA002	CHIP RESISTOR	1	
R2501	ERJ6GEYJ1R2V	CHIP RESISTOR	1	
R2502	ERJ6GEYJ1R5V	CHIP RESISTOR	1	
R2503	ERDS2TJ182T	CARBON RESISTOR	1	
R2514	D0GB221JA002	CHIP RESISTOR	1	
R2515	D0GB221JA002	CHIP RESISTOR	1	
R2516	D0GB221JA002	CHIP RESISTOR	1	
R2520	D0GB183JA002	CHIP RESISTOR	1	
R2521	D0GB102JA002	CHIP RESISTOR	1	
R2551	D0GB103JA002	CHIP RESISTOR	1	
R2552	D0GB103JA002	CHIP RESISTOR	1	
R2561	D0GB102JA002	CHIP RESISTOR	1	
R2562	D0GB473JA002	CHIP RESISTOR	1	
R2563	D0GB102JA002	CHIP RESISTOR	1	
R2564	D0GB101JA002	CHIP RESISTOR	1	
R2565	D0GB101JA002	CHIP RESISTOR	1	
R3001	D0GB152JA002	CHIP RESISTOR	1	
R3002	D0GB622JA002	CHIP RESISTOR	1	
R3003	D0GB562JA002	CHIP RESISTOR	1	
R3005	D0GB122JA002	CHIP RESISTOR	1	
R3007	D0GB101JA002	CHIP RESISTOR	1	
R3008	D0GB106JA002	CHIP RESISTOR	1	

Ref. No.	Part No.	Part Name & Description	PCS	Remarks
R3010	D0GB153JA002	CHIP RESISTOR	1	
R3013	D0GB101JA002	CHIP RESISTOR	1	
R3014	D0GB101JA002	CHIP RESISTOR	1	
R3015	D0GB273JA002	CHIP RESISTOR	1	
R3016	D0GB471JA002	CHIP RESISTOR	1	
R3017	D0GB332JA002	CHIP RESISTOR	1	
R3020	D0GB332JA002	CHIP RESISTOR	1	
R3021	D0GB102JA002	CHIP RESISTOR	1	
R3023	D0YBR0000002	CHIP RESISTOR	1	
R3024	D0GB682JA002	CHIP RESISTOR	1	
R3501	D1BB5600A010	CHIP RESISTOR	1	
R3502	D1BB1001A010	CHIP RESISTOR	1	
R3503	D0GB122JA002	CHIP RESISTOR	1	
R3504	D0GB102JA002	CHIP RESISTOR	1	
R3505	D0GB122JA002	CHIP RESISTOR	1	
R3507	D1BB1201A010	CHIP RESISTOR	1	
R3508	D0GB394JA002	CHIP RESISTOR	1	
R3509	D1BB1001A010	CHIP RESISTOR	1	
R3510	D1BB4700A010	CHIP RESISTOR	1	
R3511	D1BB33010002	CHIP RESISTOR	1	
R3512	D1BB33010002	CHIP RESISTOR	1	
R3513	D1BB15010002	CHIP RESISTOR	1	
R3515	D1BB1201A010	CHIP RESISTOR	1	
R3516	D1BB1001A010	CHIP RESISTOR	1	
R3801	D0GB750JA002	CHIP RESISTOR	1	
R3802	D0GB750JA002	CHIP RESISTOR	1	
R3803	D0GB750JA002	CHIP RESISTOR	1	
R3804	D0GB102JA002	CHIP RESISTOR	1	
R3901	ERJ6GEYG750V	CHIP RESISTOR	1	
R3902	ERJ6GEYG750V	CHIP RESISTOR	1	
R3903	ERJ6GEYG750V	CHIP RESISTOR	1	
R3904	ERJ6GEYG750V	CHIP RESISTOR	1	
R3905	ERJ6GEYG750V	CHIP RESISTOR	1	
R3906	ERJ6GEYG750V	CHIP RESISTOR	1	
R3907	ERDS2TJ221T	CARBON RESISTOR	1	
R3908	ERJ6GEYG750V	CHIP RESISTOR	1	
R3909	ERJ6GEYG750V	CHIP RESISTOR	1	
R3910	ERJ3RED750V	CHIP RESISTOR	1	
R3911	ERJ3RED750V	CHIP RESISTOR	1	
R3912	ERJ3RED750V	CHIP RESISTOR	1	
R3913	ERJ6GEYG750V	CHIP RESISTOR	1	
R3914	D0GB330JA002	CHIP RESISTOR	1	
R3915	D0GB822JA002	CHIP RESISTOR	1	
R3916	D0GB101JA002	CHIP RESISTOR	1	
R3917	D0GB101JA002	CHIP RESISTOR	1	
R3918	D0GB102JA002	CHIP RESISTOR	1	
R3919	D0GB154JA002	CHIP RESISTOR	1	
R3920	D0GB154JA002	CHIP RESISTOR	1	
R3921	D0GB682JA002	CHIP RESISTOR	1	
R3922	D0GB682JA002	CHIP RESISTOR	1	
R3923	D0GB124JA002	CHIP RESISTOR	1	
R3924	D0GB124JA002	CHIP RESISTOR	1	
R3925	D0GB153JA002	CHIP RESISTOR	1	
R3934	D0GB103JA002	CHIP RESISTOR	1	
R4001	D0GB332JA002	CHIP RESISTOR	1	
R4001	D0GB202JA002	CHIP RESISTOR	1	
R4001	D0GB183JA002	CHIP RESISTOR	1	
R4002	D0GB153JA002	CHIP RESISTOR	1	
R4003	D0GB682JA002	CHIP RESISTOR	1	
R4003	D0GB392JA002	CHIP RESISTOR	1	
R4003	D0GB333JA002	CHIP RESISTOR	1	
R4004	D0GB472JA002	CHIP RESISTOR	1	
R4006	D0GB332JA002	CHIP RESISTOR	1	
R4007	D0GB104JA002	CHIP RESISTOR	1	
R4008	D0GB153JA002	CHIP RESISTOR	1	
R4009	D0GB271JA002	CHIP RESISTOR	1	
R4011	D0GB203JA002	CHIP RESISTOR	1	
R4012	D0GB474JA002	CHIP RESISTOR	1	
R4013	D0GB153JA002	CHIP RESISTOR	1	
R4014	D0GB103JA002	CHIP RESISTOR	1	
R4015	D0GB332JA002	CHIP RESISTOR	1	
R4016	D0GB222JA002	CHIP RESISTOR	1	
R4017	D0GB222JA002	CHIP RESISTOR	1	

Ref. No.	Part No.	Part Name & Description	PCS	Remarks
R4018	ERJ6GEYJ102V	CHIP RESISTOR	1	
R4019	ERJ6GEYJ102V	CHIP RESISTOR	1	
R4101	D0GB102JA002	CHIP RESISTOR	1	
R4102	D0GB102JA002	CHIP RESISTOR	1	
R4103	D0GB102JA002	CHIP RESISTOR	1	
R4104	D0GB102JA002	CHIP RESISTOR	1	
R4305	D0GB471JA002	CHIP RESISTOR	1	
R4306	D0GB471JA002	CHIP RESISTOR	1	
R4501	D0GB563JA002	CHIP RESISTOR	1	
R4502	D0GB563JA002	CHIP RESISTOR	1	
R4503	D0GB223JA002	CHIP RESISTOR	1	
R4504	D0GB223JA002	CHIP RESISTOR	1	
R4505	D0GB432JA002	CHIP RESISTOR	1	
R4506	D0GB432JA002	CHIP RESISTOR	1	
R4507	D0GB912JA002	CHIP RESISTOR	1	
R4508	D0GB432JA002	CHIP RESISTOR	1	
R4509	D0GB432JA002	CHIP RESISTOR	1	
R4510	D0GB912JA002	CHIP RESISTOR	1	
R4511	D0GB432JA002	CHIP RESISTOR	1	
R4512	D0GB432JA002	CHIP RESISTOR	1	
R4513	D0GB563JA002	CHIP RESISTOR	1	
R4514	D0GB563JA002	CHIP RESISTOR	1	
R4515	D0GB563JA002	CHIP RESISTOR	1	
R4516	D0GB563JA002	CHIP RESISTOR	1	
R4517	D0GB511JA002	CHIP RESISTOR	1	
R4518	D0GB472JA002	CHIP RESISTOR	1	
R4519	D0GB472JA002	CHIP RESISTOR	1	
R4520	D0YBR0000002	CHIP RESISTOR	1	
R4521	D0GB124JA002	CHIP RESISTOR	1	
R4522	D0GB472JA002	CHIP RESISTOR	1	
R4523	D0GB511JA002	CHIP RESISTOR	1	
R4524	D0GB102JA002	CHIP RESISTOR	1	
R4525	D0GB333JA002	CHIP RESISTOR	1	
R4526	D0GB102JA002	CHIP RESISTOR	1	
R4527	D0GB102JA002	CHIP RESISTOR	1	
R4528	D0GB472JA002	CHIP RESISTOR	1	
R4530	D0GB472JA002	CHIP RESISTOR	1	
R4532	D0GB681JA002	CHIP RESISTOR	1	
R4554	D0GB683JA002	CHIP RESISTOR	1	
R4555	ERDS2TJ821T	CARBON RESISTOR	1	
R4557	D0GB472JA002	CHIP RESISTOR	1	
R4558	D0GB683JA002	CHIP RESISTOR	1	
R4559	D0GB393JA002	CHIP RESISTOR	1	
R4560	D0GB682JA002	CHIP RESISTOR	1	
R4903	D0YBR0000002	CHIP RESISTOR	1	
R4905	D0GB221JA002	CHIP RESISTOR	1	
R4906	D0GB221JA002	CHIP RESISTOR	1	
R4907	D0GB471JA002	CHIP RESISTOR	1	
R4908	D0GB471JA002	CHIP RESISTOR	1	
R4909	D0GB471JA002	CHIP RESISTOR	1	
R4910	D0GB471JA002	CHIP RESISTOR	1	
R4911	D0GB471JA002	CHIP RESISTOR	1	
R4916	D0GB221JA002	CHIP RESISTOR	1	
R4917	D0GB221JA002	CHIP RESISTOR	1	
R4922	D0GB471JA002	CHIP RESISTOR	1	
R4923	D0GB471JA002	CHIP RESISTOR	1	
R4924	D0GB225JA002	CHIP RESISTOR	1	
R4925	D0GB472JA002	CHIP RESISTOR	1	
R4926	D0GB472JA002	CHIP RESISTOR	1	
R4927	D0GB223JA002	CHIP RESISTOR	1	
R6001	D0GB102JA002	CHIP RESISTOR	1	
R6002	D0GB102JA002	CHIP RESISTOR	1	
R6004	D0GB433JA002	CHIP RESISTOR	1	
R6006	D0GB273JA002	CHIP RESISTOR	1	
R6007	D0GB183JA002	CHIP RESISTOR	1	
R6008	D0GB222JA002	CHIP RESISTOR	1	
R6009	D0GB101JA002	CHIP RESISTOR	1	
R6010	D0GB393JA002	CHIP RESISTOR	1	
R6011	D0GB183JA002	CHIP RESISTOR	1	
R6012	D0GB681JA002	CHIP RESISTOR	1	
R6013	D0GB221JA002	CHIP RESISTOR	1	
R6014	D0GB103JA002	CHIP RESISTOR	1	
R6016	D0GB102JA002	CHIP RESISTOR	1	

Ref. No.	Part No.	Part Name & Description	PCS	Remarks
R6017	D0GB222JA002	CHIP RESISTOR	1	
R6018	D0GB102JA002	CHIP RESISTOR	1	
R6019	D0GB681JA002	CHIP RESISTOR	1	
R6020	D0GB101JA002	CHIP RESISTOR	1	
R6022	D0GB221JA002	CHIP RESISTOR	1	
R6023	D0GB221JA002	CHIP RESISTOR	1	
R6024	D0GB221JA002	CHIP RESISTOR	1	
R6025	D0GB221JA002	CHIP RESISTOR	1	
R6026	D0GB103JA002	CHIP RESISTOR	1	
R6027	D0GB103JA002	CHIP RESISTOR	1	
R6028	D0GB103JA002	CHIP RESISTOR	1	
R6029	D0GB472JA002	CHIP RESISTOR	1	
R6030	D0GB472JA002	CHIP RESISTOR	1	
R6031	D0GB223JA002	CHIP RESISTOR	1	
R6032	D0GB103JA002	CHIP RESISTOR	1	
R6035	D0GB102JA002	CHIP RESISTOR	1	
R6036	D0GB102JA002	CHIP RESISTOR	1	
R6109	D0GB105JA002	CHIP RESISTOR	1	
R6111	D0GB222JA002	CHIP RESISTOR	1	
R6114	D0GB102JA002	CHIP RESISTOR	1	
R6115	D0GB471JA002	CHIP RESISTOR	1	
R6116	D0GB152JA002	CHIP RESISTOR	1	
R6117	D0GB181JA002	CHIP RESISTOR	1	
R6118	D0GB473JA002	CHIP RESISTOR	1	
R6119	D0GB121JA002	CHIP RESISTOR	1	
R6120	D0GB102JA002	CHIP RESISTOR	1	
R6121	D0GB561JA002	CHIP RESISTOR	1	
R6122	D0GB561JA002	CHIP RESISTOR	1	
R6123	D0GB121JA002	CHIP RESISTOR	1	
R6124	D0GB682JA002	CHIP RESISTOR	1	
R6125	D0GB125JA002	CHIP RESISTOR	1	
R6126	D0GB682JA002	CHIP RESISTOR	1	
R6127	D0GB125JA002	CHIP RESISTOR	1	
R6128	D0GB104JA002	CHIP RESISTOR	1	
R6129	D0GB564JA002	CHIP RESISTOR	1	
R6130	D0GB221JA002	CHIP RESISTOR	1	
R6131	D0GB101JA002	CHIP RESISTOR	1	
R6201	D0GB103JA002	CHIP RESISTOR	1	
R6309	D0GB272JA002	CHIP RESISTOR	1	
R6401	D0GB221JA002	CHIP RESISTOR	1	
R6402	D0GB153JA002	CHIP RESISTOR	1	
R6403	D0GB103JA002	CHIP RESISTOR	1	
R6404	D0GB471JA002	CHIP RESISTOR	1	
R6405	D0GB223JA002	CHIP RESISTOR	1	
R6406	D0GB474JA002	CHIP RESISTOR	1	
R6407	D0GB153JA002	CHIP RESISTOR	1	
R6408	D0GB104JA002	CHIP RESISTOR	1	
R6409	D0GB104JA002	CHIP RESISTOR	1	
R6410	D0GB224JA002	CHIP RESISTOR	1	
R6411	D0GB225JA002	CHIP RESISTOR	1	
R6412	D0GB433JA002	CHIP RESISTOR	1	
R6413	D0GB473JA002	CHIP RESISTOR	1	
R6414	D0GB472JA002	CHIP RESISTOR	1	
R7301	D0YBR0000002	CHIP RESISTOR	1	
R7304	D0GB101JA002	CHIP RESISTOR	1	
R7305	D1BB1000002	CHIP RESISTOR	1	3*
R7306	D1BB39010002	CHIP RESISTOR	1	3*
R7307	D0YBR0000002	CHIP RESISTOR	1	
R7307	D0GB472JA002	CHIP RESISTOR	1	
R7308	D0GB752JA002	CHIP RESISTOR	1	3*
R7309	D0GB103JA002	CHIP RESISTOR	1	
R7310	D0GB221JA002	CHIP RESISTOR	1	
R7311	D0GB221JA002	CHIP RESISTOR	1	
R7312	D1BB2200A010	CHIP RESISTOR	1	1*
R7312	D1BB18010002	CHIP RESISTOR	1	2*
R7312	D1BB68010002	CHIP RESISTOR	1	3*
R7313	D1BB2200A010	CHIP RESISTOR	1	1*
R7313	D1BB18010002	CHIP RESISTOR	1	2*
R7313	D1BB68010002	CHIP RESISTOR	1	3*
R7314	D0YBR0000002	CHIP RESISTOR	1	
R7314	D1BB68010002	CHIP RESISTOR	1	3*
R7315	D0YBR0000002	CHIP RESISTOR	1	
R7316	D1BB33010002	CHIP RESISTOR	1	

Ref. No.	Part No.	Part Name & Description	PCS	Remarks
R7317	D0YBR0000002	CHIP RESISTOR	1	
R7317	J0JCC0000103	BEAD CORE	1	
R7318	D1BB33010002	CHIP RESISTOR	1	
R7319	D0YBR0000002	CHIP RESISTOR	1	
R7319	J0JCC0000103	BEAD CORE	1	
R7320	D1BB33010002	CHIP RESISTOR	1	
R7321	D0GB562JA002	CHIP RESISTOR	1	
R7322	D0YBR0000002	CHIP RESISTOR	1	
R7323	D0GB562JA002	CHIP RESISTOR	1	
R7324	D0GB101JA002	CHIP RESISTOR	1	
R7325	D0GB101JA002	CHIP RESISTOR	1	
R7401	ERDS2TJ331T	CARBON RESISTOR	1	
R7402	ERDS2TJ331T	CARBON RESISTOR	1	
R7403	ERDS2TJ331T	CARBON RESISTOR	1	
R7404	ERDS2TJ331T	CARBON RESISTOR	1	
R7405	D0GB471JA002	CHIP RESISTOR	1	
R7406	D0GB471JA002	CHIP RESISTOR	1	
R7410	D0GB221JA002	CHIP RESISTOR	1	
R7411	D0GB221JA002	CHIP RESISTOR	1	
R7413	D0YBR0000002	CHIP RESISTOR	1	
R7414	D0GB101JA002	CHIP RESISTOR	1	
R7415	D0GB101JA002	CHIP RESISTOR	1	
R7416	D0GB471JA002	CHIP RESISTOR	1	
R7417	D0GB471JA002	CHIP RESISTOR	1	
R7418	D0YBR0000002	CHIP RESISTOR	1	
R7419	D0YBR0000002	CHIP RESISTOR	1	
R7420	D0GB681JA002	CHIP RESISTOR	1	
R7421	D0GB221JA002	CHIP RESISTOR	1	
R7422	D0GB221JA002	CHIP RESISTOR	1	
R7433	D0GB104JA002	CHIP RESISTOR	1	
R7434	D0GB104JA002	CHIP RESISTOR	1	
R7435	D0GB562JA002	CHIP RESISTOR	1	
R7436	D0YBR0000002	CHIP RESISTOR	1	
R7436	D0GB122JA002	CHIP RESISTOR	1	
R7437	D0YBR0000002	CHIP RESISTOR	1	
R7437	D0GB122JA002	CHIP RESISTOR	1	
R7438	D0GB683JA002	CHIP RESISTOR	1	
R7501	D0GB271JA002	CHIP RESISTOR	1	
R7503	D0GB391JA002	CHIP RESISTOR	1	
R7505	D0GB391JA002	CHIP RESISTOR	1	
R7508	D0GB122JA002	CHIP RESISTOR	1	
R7509	D0GB122JA002	CHIP RESISTOR	1	
R7510	ERDS2TJ5R6T	CARBON RESISTOR	1	
R7511	D0GB152JA002	CHIP RESISTOR	1	
R7512	D0GB103JA002	CHIP RESISTOR	1	
R7513	D0GB683JA002	CHIP RESISTOR	1	
R7514	D0YBR0000002	CHIP RESISTOR	1	
R7515	D0GB101JA002	CHIP RESISTOR	1	
R7516	D0GB152JA002	CHIP RESISTOR	1	
R7517	D0GB222JA002	CHIP RESISTOR	1	
R7525	D0GB273JA002	CHIP RESISTOR	1	
R7526	D0GB101JA002	CHIP RESISTOR	1	
R7527	D0GB101JA002	CHIP RESISTOR	1	
R7801	D0GB221JA002	CHIP RESISTOR	1	
R7802	D0GB182JA002	CHIP RESISTOR	1	
R7803	D0GB332JA002	CHIP RESISTOR	1	
R7806	D0GB472JA002	CHIP RESISTOR	1	
R7807	D0GB182JA002	CHIP RESISTOR	1	
R7808	D0GB332JA002	CHIP RESISTOR	1	
R7809	D0GB472JA002	CHIP RESISTOR	1	
R7810	D0GB682JA002	CHIP RESISTOR	1	
R7812	D0GB123JA002	CHIP RESISTOR	1	
R7813	D0GB273JA002	CHIP RESISTOR	1	
R7901	ERDS2TJ561T	CARBON RESISTOR	1	
R7902	ERDS2TJ333T	CARBON RESISTOR	1	
R7903	D0GB472JA002	CHIP RESISTOR	1	
R7904	D0GB472JA002	CHIP RESISTOR	1	
R7905	D0GB223JA002	CHIP RESISTOR	1	
R7906	D0GB223JA002	CHIP RESISTOR	1	
R7907	ERDS2TJ101T	CARBON RESISTOR	1	
R7909	D0GB393JA002	CHIP RESISTOR	1	
R9101	D1BB3001A010	CHIP RESISTOR	1	
R9102	D0GB103JA002	CHIP RESISTOR	1	



Ref. No.	Part No.	Part Name & Description	PCS	Remarks
R9104	D0GB823JA002	CHIP RESISTOR	1	
R9110	D0GB472JA002	CHIP RESISTOR	1	
R9112	D0GB333JA002	CHIP RESISTOR	1	
R9113	D0GB104JA002	CHIP RESISTOR	1	
R9115	D1BB22020002	CHIP RESISTOR	1	
R9116	D1BB1001A010	CHIP RESISTOR	1	
R9119	D0GB131JA002	CHIP RESISTOR	1	
R9121	D1BFR047A024	RESISTOR ARRAY	1	
R9127	D0GB101JA002	CHIP RESISTOR	1	
R9132	D0GB472JA002	CHIP RESISTOR	1	
R9143	D0GB331JA002	CHIP RESISTOR	1	
R9144	D0GB473JA002	CHIP RESISTOR	1	
R9145	D0GB223JA002	CHIP RESISTOR	1	
R9146	D0GB221JA002	CHIP RESISTOR	1	
R9306	D0HB6222A002	CHIP RESISTOR	1	
R9307	D0HB6222A002	CHIP RESISTOR	1	
R9308	D0HB912ZA002	CHIP RESISTOR	1	
R9309	D0HB912ZA002	CHIP RESISTOR	1	
R9310	D0GB473JA002	CHIP RESISTOR	1	
R9311	D0GB473JA002	CHIP RESISTOR	1	
R9312	D0GB471JA002	CHIP RESISTOR	1	
R9313	D0YBR0000002	CHIP RESISTOR	1	
R9314	D0YBR0000002	CHIP RESISTOR	1	
R9315	D0GB471JA002	CHIP RESISTOR	1	
R9316	D0GB221JA002	CHIP RESISTOR	1	
R9317	D0GB221JA002	CHIP RESISTOR	1	
R9318	D1BB75R0A010	CHIP RESISTOR	1	
R9319	D1BB75R0A010	CHIP RESISTOR	1	
R9320	D1BB75R0A010	CHIP RESISTOR	1	
R9321	D1BB75R0A010	CHIP RESISTOR	1	
R9322	D1BB75R0A010	CHIP RESISTOR	1	
R9323	D1BB75R0A010	CHIP RESISTOR	1	
R9328	D0GB102JA002	CHIP RESISTOR	1	
R9329	D0GB102JA002	CHIP RESISTOR	1	
R9330	D0GB102JA002	CHIP RESISTOR	1	
R9331	D1BB10020004	CHIP RESISTOR	1	
R9332	D1BB20010002	CHIP RESISTOR	1	
R9333	D1BB2201A010	CHIP RESISTOR	1	
R9334	D1BB20020003	CHIP RESISTOR	1	
R9335	D0GB473JA002	CHIP RESISTOR	1	
R9701	D0GB103JA002	CHIP RESISTOR	1	
R9702	D0GB103JA002	CHIP RESISTOR	1	
R9703	D0GB472JA002	CHIP RESISTOR	1	
R9704	D0GB102JA002	CHIP RESISTOR	1	
R9705	D1BB1502A010	CHIP RESISTOR	1	
R9706	D1BB15010002	CHIP RESISTOR	1	
R9707	D0GB103JA002	CHIP RESISTOR	1	
R9708	D0GB102JA002	CHIP RESISTOR	1	
R9709	D0GB472JA002	CHIP RESISTOR	1	
R9711	D0GB474JA002	CHIP RESISTOR	1	
R9712	D0GB153JA002	CHIP RESISTOR	1	
R9714	D0GB153JA002	CHIP RESISTOR	1	
R9716	D0GB181JA002	CHIP RESISTOR	1	
R9717	D0GB104JA002	CHIP RESISTOR	1	
R9718	D0GB103JA002	CHIP RESISTOR	1	
R9719	D0GB101JA002	CHIP RESISTOR	1	
R9720	D0GB101JA002	CHIP RESISTOR	1	
R9721	D0GB101JA002	CHIP RESISTOR	1	
R9722	D0GB101JA002	CHIP RESISTOR	1	
R9723	D0GB101JA002	CHIP RESISTOR	1	
R9724	D0GB101JA002	CHIP RESISTOR	1	
R9725	D0GB101JA002	CHIP RESISTOR	1	
R9726	D0GB101JA002	CHIP RESISTOR	1	
R9728	D0GB101JA002	CHIP RESISTOR	1	
R9729	D0GB101JA002	CHIP RESISTOR	1	
R9730	D0GB101JA002	CHIP RESISTOR	1	
R9731	D0GB103JA002	CHIP RESISTOR	1	
R9732	D0GB473JA002	CHIP RESISTOR	1	
R9733	D0GB473JA002	CHIP RESISTOR	1	
R9734	D0GB473JA002	CHIP RESISTOR	1	
R9735	D0GB473JA002	CHIP RESISTOR	1	
R9736	D0GB473JA002	CHIP RESISTOR	1	
R9737	D0GB473JA002	CHIP RESISTOR	1	

Ref. No.	Part No.	Part Name & Description	PCS	Remarks
R9738	D0GB473JA002	CHIP RESISTOR	1	
R9739	D0GB104JA002	CHIP RESISTOR	1	
R9740	D1BB5601A010	CHIP RESISTOR	1	
R9742	D0GB101JA002	CHIP RESISTOR	1	
R9745	D0GB101JA002	CHIP RESISTOR	1	
R9747	D0GB101JA002	CHIP RESISTOR	1	
R9749	D0GB101JA002	CHIP RESISTOR	1	
R9750	D0GB101JA002	CHIP RESISTOR	1	
R9751	D0GB101JA002	CHIP RESISTOR	1	
R9752	D0GB101JA002	CHIP RESISTOR	1	
R9753	D1BB3902A010	CHIP RESISTOR	1	
R9754	D1BB4302A010	CHIP RESISTOR	1	
R9756	D0GB822JA002	CHIP RESISTOR	1	
R9757	D0GB822JA002	CHIP RESISTOR	1	
R9758	D0GB822JA002	CHIP RESISTOR	1	
R9759	D0GB472JA002	CHIP RESISTOR	1	
R9760	D0GB472JA002	CHIP RESISTOR	1	
R9762	D0GB472JA002	CHIP RESISTOR	1	
R9763	D0GB223JA002	CHIP RESISTOR	1	
R9765	D0GB472JA002	CHIP RESISTOR	1	
R9766	D0GB472JA002	CHIP RESISTOR	1	
R9767	D0YBR0000002	CHIP RESISTOR	1	
R9768	D0YBR0000002	CHIP RESISTOR	1	
R9769	D0GB101JA002	CHIP RESISTOR	1	
R9770	D0GB221JA002	CHIP RESISTOR	1	
R9771	D0GB221JA002	CHIP RESISTOR	1	
R9772	D0GB511JA002	CHIP RESISTOR	1	
R9773	D0GB202JA002	CHIP RESISTOR	1	
R9774	D0GB202JA002	CHIP RESISTOR	1	
R9776	D0GB103JA002	CHIP RESISTOR	1	
R9779	D0GB392JA002	CHIP RESISTOR	1	
R9780	D0GB102JA002	CHIP RESISTOR	1	
R9781	D0GB104JA002	CHIP RESISTOR	1	
R9782	D0GB102JA002	CHIP RESISTOR	1	
R9783	D0GB473JA002	CHIP RESISTOR	1	
S1531	K0C111A00006	SAFETY TAB SWITCH	1	
S1532	K0ZZ00000598	MODE SWITCH	1	
S7501	EVQ11G04M	TOUCH SWITCH	1	
S7502	EVQ11G07K	TOUCH SWITCH	1	
S7503	EVQ11G07K	TOUCH SWITCH	1	
S7504	EVQ11G07K	TOUCH SWITCH	1	
S7505	EVQ11G07K	TOUCH SWITCH	1	
S7506	EVQ11G07K	TOUCH SWITCH	1	
S7507	EVQ11G07K	TOUCH SWITCH	1	
S7508	EVQ11G07K	TOUCH SWITCH	1	
S7801	EVQ11G07K	TOUCH SWITCH	1	
S7802	EVQ11G07K	TOUCH SWITCH	1	
S7803	EVQ11G07K	TOUCH SWITCH	1	
S7805	EVQ11G07K	TOUCH SWITCH	1	
S7806	EVQ11G07K	TOUCH SWITCH	1	
S7807	EVQ11G07K	TOUCH SWITCH	1	
S7808	EVQ11G07K	TOUCH SWITCH	1	
S7809	EVQ11G07K	TOUCH SWITCH	1	
S7810	EVQ11G07K	TOUCH SWITCH	1	
S7812	EVQ11G07K	TOUCH SWITCH	1	
S7813	EVQ11G07K	TOUCH SWITCH	1	
T1101	ETS29AZ2J6AC	TRANSFORMER	1	△
T4001	G2A362C00004	BIAS TRANSFORMER	1	
T7901	ETS13TB159AP	TRANSFORMER	1	
TU7403	ENC879T3F	RF MODULATOR	1	
W501	D0YBR00000002	CHIP RESISTOR	1	
W502	D0YDR00000006	CHIP RESISTOR	1	
W503	D0YDR00000006	CHIP RESISTOR	1	
W504	D0YBR00000002	CHIP RESISTOR	1	
W505	D0YBR00000002	CHIP RESISTOR	1	
W506	D0YBR00000002	CHIP RESISTOR	1	
W507	D0YDR00000006	CHIP RESISTOR	1	
W508	D0YBR00000002	CHIP RESISTOR	1	
W6	D0YBR00000002	CHIP RESISTOR	1	
W7	D0YBR00000002	CHIP RESISTOR	1	
W701	D0YDR00000006	CHIP RESISTOR	1	
W702	D0YBR00000002	CHIP RESISTOR	1	
W703	D0YBR00000002	CHIP RESISTOR	1	

Ref. No.	Part No.	Part Name & Description	PCS	Remarks
W704	D0YDR0000006	CHIP RESISTOR	1	
W705	D0YBR0000002	CHIP RESISTOR	1	
W706	D0YDR0000006	CHIP RESISTOR	1	
W707	D0YDR0000006	CHIP RESISTOR	1	
W708	D0YDR0000006	CHIP RESISTOR	1	
W709	D0YBR0000002	CHIP RESISTOR	1	
W710	D0YBR0000002	CHIP RESISTOR	1	
W711	D0YBR0000002	CHIP RESISTOR	1	
W712	D0YBR0000002	CHIP RESISTOR	1	
W713	D0YBR0000002	CHIP RESISTOR	1	
W714	D0YBR0000002	CHIP RESISTOR	1	
W715	D0YBR0000002	CHIP RESISTOR	1	
W716	D0YBR0000002	CHIP RESISTOR	1	
W717	D0YDR0000006	CHIP RESISTOR	1	
W718	D0YBR0000002	CHIP RESISTOR	1	
W719	D0YDR0000006	CHIP RESISTOR	1	
W720	D0YBR0000002	CHIP RESISTOR	1	
W721	D0YBR0000002	CHIP RESISTOR	1	
W722	D0YBR0000002	CHIP RESISTOR	1	
W724	D0YBR0000002	CHIP RESISTOR	1	
W725	D0YBR0000002	CHIP RESISTOR	1	
W726	D0YBR0000002	CHIP RESISTOR	1	
W727	D0YDR0000006	CHIP RESISTOR	1	
W728	D0YBR0000002	CHIP RESISTOR	1	
W729	D0YBR0000002	CHIP RESISTOR	1	
W730	D0YBR0000002	CHIP RESISTOR	1	
W731	D0YDR0000006	CHIP RESISTOR	1	
W732	D0YBR0000002	CHIP RESISTOR	1	
W733	D0YBR0000002	CHIP RESISTOR	1	
W734	D0YBR0000002	CHIP RESISTOR	1	
W735	D0YDR0000006	CHIP RESISTOR	1	
W736	D0YDR0000006	CHIP RESISTOR	1	
W737	D0YBR0000002	CHIP RESISTOR	1	
W738	D0YDR0000006	CHIP RESISTOR	1	
W739	D0YBR0000002	CHIP RESISTOR	1	
W740	D0YBR0000002	CHIP RESISTOR	1	
W741	D0YDR0000006	CHIP RESISTOR	1	
W742	D0YDR0000006	CHIP RESISTOR	1	
W743	D0YBR0000002	CHIP RESISTOR	1	
W744	D0YBR0000002	CHIP RESISTOR	1	
W745	D0YDR0000006	CHIP RESISTOR	1	
W746	D0YDR0000006	CHIP RESISTOR	1	
W747	D0YBR0000002	CHIP RESISTOR	1	
W748	D0YBR0000002	CHIP RESISTOR	1	
W749	D0YDR0000006	CHIP RESISTOR	1	
W750	D0YBR0000002	CHIP RESISTOR	1	
W751	D0YBR0000002	CHIP RESISTOR	1	
W752	D0YBR0000002	CHIP RESISTOR	1	
W753	D0YBR0000002	CHIP RESISTOR	1	
W754	D0YBR0000002	CHIP RESISTOR	1	
W755	D0YDR0000006	CHIP RESISTOR	1	
W756	D0YDR0000006	CHIP RESISTOR	1	
W757	D0YDR0000006	CHIP RESISTOR	1	
W758	D0YDR0000006	CHIP RESISTOR	1	
W759	D0YBR0000002	CHIP RESISTOR	1	
W760	D0YDR0000006	CHIP RESISTOR	1	
W761	D0YDR0000006	CHIP RESISTOR	1	
W762	D0YBR0000002	CHIP RESISTOR	1	
W763	D0YBR0000002	CHIP RESISTOR	1	
W764	D0YBR0000002	CHIP RESISTOR	1	
W765	D0YBR0000002	CHIP RESISTOR	1	
W766	D0YBR0000002	CHIP RESISTOR	1	
W767	D0YDR0000006	CHIP RESISTOR	1	
W768	D0YDR0000006	CHIP RESISTOR	1	
W769	D0YDR0000006	CHIP RESISTOR	1	
W770	D0YBR0000002	CHIP RESISTOR	1	
W771	D0YDR0000006	CHIP RESISTOR	1	
W772	D0YBR0000002	CHIP RESISTOR	1	
W773	D0YBR0000002	CHIP RESISTOR	1	
W774	D0YDR0000006	CHIP RESISTOR	1	
W775	D0YBR0000002	CHIP RESISTOR	1	
W776	D0YBR0000002	CHIP RESISTOR	1	
W777	D0YBR0000002	CHIP RESISTOR	1	

Ref. No.	Part No.	Part Name & Description	PCS	Remarks
W778	D0YBR0000002	CHIP RESISTOR	1	
W779	D0YBR0000002	CHIP RESISTOR	1	
W780	D0YDR0000006	CHIP RESISTOR	1	
W781	D0YDR0000006	CHIP RESISTOR	1	
W782	D0YBR0000002	CHIP RESISTOR	1	
W783	D0YDR0000006	CHIP RESISTOR	1	
W784	D0YDR0000006	CHIP RESISTOR	1	
W785	D0YBR0000002	CHIP RESISTOR	1	
W786	D0YDR0000006	CHIP RESISTOR	1	
W787	D0YBR0000002	CHIP RESISTOR	1	
W788	D0YBR0000002	CHIP RESISTOR	1	
W789	D0YDR0000006	CHIP RESISTOR	1	
W790	D0YBR0000002	CHIP RESISTOR	1	
W791	D0YBR0000002	CHIP RESISTOR	1	
W792	D0YBR0000002	CHIP RESISTOR	1	
W793	D0YBR0000002	CHIP RESISTOR	1	
W794	D0YDR0000006	CHIP RESISTOR	1	
W795	D0YBR0000002	CHIP RESISTOR	1	
W796	D0YBR0000002	CHIP RESISTOR	1	
W797	D0YBR0000002	CHIP RESISTOR	1	
W798	D0YDR0000006	CHIP RESISTOR	1	
W799	D0YBR0000002	CHIP RESISTOR	1	
W800	D0YDR0000006	CHIP RESISTOR	1	
W801	D0YBR0000002	CHIP RESISTOR	1	
W802	D0YBR0000002	CHIP RESISTOR	1	
W803	D0YBR0000002	CHIP RESISTOR	1	
W804	D0YDR0000006	CHIP RESISTOR	1	
W805	D0YBR0000002	CHIP RESISTOR	1	
X3001	H0D443400040	CRYSTAL OSCILLATOR	1	
X3002	H0D357400067	CRYSTAL OSCILLATOR	1	
X6001	H0D120500009	CRYSTAL OSCILLATOR	1	
X7301	H0D245500016	CRYSTAL OSCILLATOR	1	1*, 2*
X7301	H0H400400006	CRYSTAL OSCILLATOR	1	3*
X9701	H0D100500018	OSCILLATOR	1	
X9702	H0A327200108	CRYSTAL OCSILLATOR	1	
ZJ3101	VMC1359	EARTH SPRING	1	
ZJ6001	K9ZZ00001279	EARTH FITTING	1	
ZJ9103	K9ZZ00001279	EARTH FITTING	1	

## 27.6. SERVICE FIXTURE AND TOOLS

Ref. No.	Part No.	Part Name & Description	PCS	Remarks
	RFKZ0125	Extension FFC (Digital P.C.B. - DVD-RAM Drive / 40 Pin)	1	Same as E30/HS2/E 50/ E55/ES10 series
	RFKZ0126	Extension Cable (Power & Digital I/F P.C.B. - DVD-RAM Drive / 4 Pin)	1	Same as E30/HS2/E S10 series
	RFKZ0168	Extension Cable (Power & Digital I/F P.C.B. - FAN / 3 Pin)	1	Same as E50/E55 series
	VFK1729	Extension Cable (Main P.C.B. - Power & Digital I/F P.C.B. / 13pin/40mm)	2	Same as E75V
	RFKZ0240	Extension Cable (Main P.C.B. - Power & Digital I/F P.C.B. / 19pin/40mm)	2	Same as E75V
	RFKZ0178	Extension Cable (Main P.C.B. - Power & Digital I/F P.C.B. / 7pin/40mm)	1	Same as E75V
	RFKZ0260	Extension Cable (Power & Digital I/F P.C.B. - Digital P.C.B. / 88 Pin)	1	Same as ES10/EH50 series
	RFKZ0215	Extension Cable (Main P.C.B. - Front (Jack) P.C.B. / 12 Pin)	1	Same as DMR- E55/E75V series
	RFKZ0239	Extension Cable (Power & Digital I/F P.C.B. - FL Drive P.C.B. / 10 Pin)	1	Same as E75V
	RFKZ0238	Extension Cable (Power & Digital I/F P.C.B. - FL Drive P.C.B. / 8 Pin)	1	Same as E75V
	for VHS			
	VFJ8125H3F	PAL VHS Alignment Tape	1	Same as E75V
	VFK0329	Post Adjustment Screwdriver	1	Same as E75V
	VFK0330	Fine Adjustment Gear Driver	1	Same as E75V