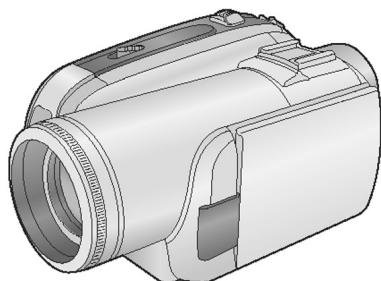


Service Manual

Digital Video Camcorder



PbF
Solder Lead free

NV-GS80E NV-GS80EB
NV-GS80EE NV-GS80EF
NV-GS80EG NV-GS80EK
NV-GS80EP NV-GS85EE
NV-GS85GC NV-GS88GK

Vol. 1

Colours

(S).....Silver Type

⚠ 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 Safety Precautions

1.1. General Guidelines

1. IMPORTANT SAFETY NOTICE

There are special components used in this equipment which are important for safety. These parts are marked by \triangle in the Schematic Diagrams, Circuit Board Layout, 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.

2. An Isolation Transformer should always be used during the servicing of AC Adaptor whose chassis is not isolated from the AC power line. Use a transformer of adequate power rating as this protects the technician from accidents resulting in personal injury from electrical shocks. It will also protect AC Adaptor from being damaged by accidental shorting that may occur during servicing.
3. 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.
4. After servicing, see to it that all the protective devices such as insulation barriers, insulation papers shields are properly installed.
5. After servicing, make the following leakage current checks to prevent the customer from being exposed to shock hazards.

2 Warning

2.1. Prevention of Electro Static Discharge (ESD) to Electrostatically Sensitive (ES) Devices

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

1. Immediately before handling any semiconductor component or semiconductor-equipped assembly, drain off any ESD on your body by touching a known earth ground. Alternatively, obtain and wear a commercially available discharging ESD wrist strap, which should be removed for potential shock reasons prior to applying power to the unit under test.
2. After removing an electrical assembly equipped with ES devices, place the assembly on a conductive surface such as aluminum foil, to prevent electrostatic charge buildup or exposure of the assembly.
3. Use only a grounded-tip soldering iron to solder or unsolder ES devices.
4. Use only an antistatic solder removal device. Some solder removal devices not classified as "antistatic (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 unpackaged replacement ES devices. (Otherwise harmless motion such as the brushing together of your clothes fabric or the lifting of your foot from a carpeted floor can generate static electricity (ESD) sufficient to damage an ES device).

2.2. Caution for AC Cord (VJA0940 type)

2.2.1. Information for your safety

IMPORTANT

Your attention is drawn to the fact that recording of pre-recorded tapes or discs or other published or broadcast material may infringe copyright laws.

WARNING

To reduce the risk of fire or shock hazard, do not expose this equipment to rain or moisture.

CAUTION

To reduce the risk of fire or shock hazard and annoying interference, use the recommended accessories only.

FOR YOUR SAFETY

DO NOT REMOVE THE OUTER COVER

To prevent electric shock, do not remove the cover. No user serviceable parts inside. Refer servicing to qualified service personnel.

2.2.2. Caution for AC Mains Lead

For your safety, please read the following text carefully.

This appliance is supplied with a moulded three-pin mains plug for your safety and convenience.

A 5-ampere fuse is fitted in this plug.

Should the fuse need to be replaced please ensure that the replacement fuse has a rating of 5 amperes and it is approved by ASTA or BSI to BS1362.

Check for the ASRA mark or the BSI mark on the body of the fuse.



If the plug contains a removable fuse cover you must ensure that it is refitted when the fuse is replaced.

If you lose the fuse cover, the plug must not be used until a replacement cover is obtained.

A replacement fuse cover can be purchased from your local Panasonic Dealer.

If the fitted moulded plug is unsuitable for the socket outlet in your home then the fuse should be removed and the plug cut off and disposed of safely.

There is a danger of severe electrical shock if the cut off plug is inserted into any 13-ampere socket.

If a new plug is to be fitted please observe the wiring code as shown below.

If in any doubt, please consult a qualified electrician.

2.2.2.1. Important

The wires in this mains lead are coloured in accordance with the following code:

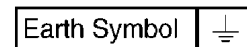
Blue	Neutral
Brown	Live

As the colours of the wires in the mains lead of this appliance may not correspond with the coloured markings identifying the terminals in your plug, proceed as follows:

The wire which is coloured BLUE must be connected to the terminal in the plug which is marked with the letter N or coloured BLACK.

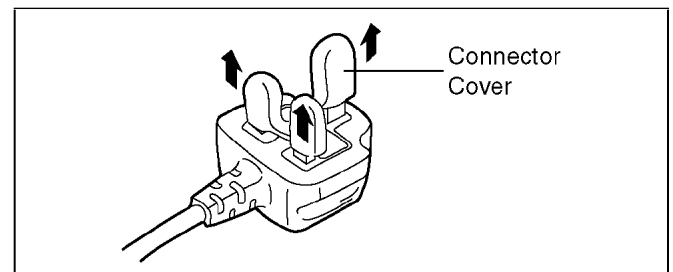
The wire which is coloured BROWN must be connected to the terminal in the plug which is marked with the letter L or coloured RED.

Under no circumstances should either of these wires be connected to the earth terminal of the three pin plug, marked with the letter E or the Earth Symbol.



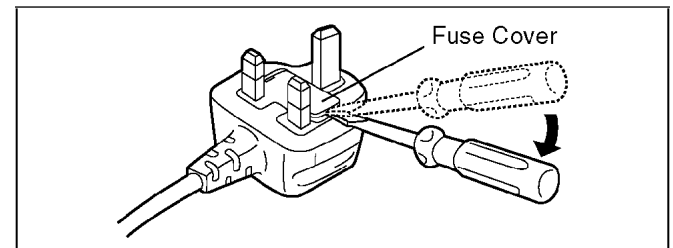
2.2.2.2. Before use

Remove the Connector Cover as follows.

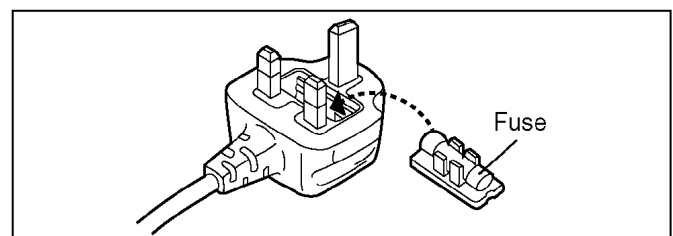


2.2.2.3. How to replace the Fuse

1. Remove the Fuse Cover with a screwdriver.



2. Replace the fuse and attach the Fuse cover.



2.3. How to Replace the Lithium Battery

The lithium battery (CGR-F/202AW) is not supplied as a service part and must be replaced as part of the Side R Shaft Unit. (Refer to "Disassembly and Assembly Instructions.")



Danger of explosion if battery is incorrectly replaced.
Replace only with the same or equivalent battery type.

CAUTION - The battery used in this device may present a risk of fire or chemical burn if mistreated.

Do not recharge, disassemble, heat above 100 °C (212 °F), or incinerate.

Only replace battery with Panasonic part number ML-621S/F9D (not supplied).

Use of another battery may present a risk of fire or explosion.

Dispose of used battery promptly. Keep away from children.

Do not disassemble and do not dispose of in fire.

NOTE:

This Lithium battery is a critical component. (Type No.: CGR-F/202AW Manufactured by Panasonic.) **(Not supplied)**

It must never be subjected to excessive heat or discharge.

It must therefore only be fitted in equipment designed specifically for its use.

Replacement batteries must be of the same type and manufacture.

They must be fitted in the same manner and location as the original battery, with the correct polarity contacts observed.

Do not attempt to re-charge the old battery or re-use it for any other purpose.

It should be disposed of in waste products destined for burial rather than incineration.

CAUTION

Danger of explosion if battery is incorrectly replaced.

Replace only with the same or equivalent type recommended by the equipment manufacturer.

Discard used batteries according to manufacturer's instructions.

PRECAUTION

Le fait de remplacer incorrectement la pile peut présenter des risques d'explosion.

Remplacer la pile uniquement par une pile identique ou de type équivalent recommandée par le fabricant. Se débarrasser des piles usagées conformément aux instructions du fabricant.

VORSICHT

Bei einer falsch eingesetzten Batterie besteht Explosionsgefahr. Nur mit einer vom Hersteller empfohlenen Batterie vom gleichen Typ ersetzen.

Verbrauchte Batterien beim Fachhändler oder einer Sammelstelle für Sonderstoffe abliefern.

VARNING

Explosionsfara vid felaktigt batteribyte.

Använd samma batterityp eller en ekvivalent typ som rekommenderas av apparattillverkaren.

Kassera använt batteri enligt fabrikantens instruktion.

ADVARSEL!

Lithiumbatteri-Eksplosionsfare ved fejlagtig håndtering.

Udskiftning må kun ske med batteri af samme fabrikat og type.

Levér det brugte batteri tilbage til leverandøren.

VAROITUS

Paristo voi räjähtää, jos se on virheellisesti asennettu.

Vaihda paristo ainoastaan laitevalmistajan suosittelemaan tyyppiin.

Hävitätä käytetty paristo valmistajan ohjeiden mukaisesti.

3 Service Navigation

3.1. Introduction

This service manual contains technical information which will allow service personnel's to understand and service this model. Please place orders using the parts list and not the drawing reference numbers.

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

Note 1:

1. VSK0561 is indicated on AC Adaptor used on the following models:

NV-GS88GK.

However, the AC Adaptor replacement part number is DE-974HC which should be used when ordering.

2. VSK0561 is indicated on AC Adaptor used in the following models:

NV-GS80E, NV-GS80EB, NV-GS80EE, NV-GS80EF, NV-GS80EG, NV-GS80EK, NV-GS80EP, NV-GS85EE, and NV-GS85GC.

However, the AC Adaptor replacement part number is DE-974GC which should be used when ordering.

Note 2:

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

a. Schematic Diagram, Block Diagram and P.C.B. layout of Main P.C.B.

b. Parts List for individual parts of Main P.C.B.

2. The following category are recycle module parts. Please send it to Central Repair Center.

a. *Main P.C.B. (LSEP8361P1/ LSEP8361Q1/ LSEP8361R1)

When a part replacement is required for repairing Main P.C.B., replace the assembly parts.

3.2. About Lead Free Solder (PbF)

Distinction of PbF PCB:

PCBs (manufactured) using lead free solder will have a PbF stamp on the PCB.

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.

4 Specifications

ITEM	SPECIFICATION	1	2
Power	Digital Camcorder Power Source: DC 7.9/7.2 V Power Consumption: 4.1 W (Recording) AC Adaptor: Power Source: AC 110-240 V, 50/60 Hz Power Consumption: 19 W DC Output: DC 7.9 V, 1.4 A (Camcorder Operation) DC 8.4 V, 0.65 A (Battery Charging)	<input type="radio"/> <input type="radio"/>	<input type="radio"/> <input type="radio"/>
Recording Format	Mini DV (Consumer-use Digital Video SD Format)	<input type="radio"/>	<input type="radio"/>
Tape Used	1/4 inch video tape	<input type="radio"/>	<input type="radio"/>
Recording/Playback Time	SP: 80 min.; LP: 120 min. (with DVM80)	<input type="radio"/>	<input type="radio"/>
Video Recording System	Digital Component	<input type="radio"/>	<input type="radio"/>
Television System	PAL system: 625 lines, 50 fields	<input type="radio"/>	<input type="radio"/>
Audio Recording System	PCM Digital Recording 16 bit (48 kHz/2ch), 12 bit (32 kHz/4ch)	<input type="radio"/>	<input type="radio"/>
Image Sensor	1/6-inch CCD Image Sensor [Effective pixels] Moving picture: 400 K (4:3), 540 K (16:9)/Still picture: 410 K (4:3), 550 K (16:9)/Total: 800 K	<input type="radio"/>	<input type="radio"/>
Lens	Auto Iris, F1.8 to F3.7 Focal length; 2.3 mm - 73.6 mm Macro (Full Range AF)	<input type="radio"/>	<input type="radio"/>
Filter Diameter	37 mm	<input type="radio"/>	<input type="radio"/>
Zoom	32:1 Power Zoom	<input type="radio"/>	<input type="radio"/>
Monitor	2.7-inch Liquid Crystal Display	<input type="radio"/>	<input type="radio"/>
Viewfinder	Color Electronic Viewfinder	<input type="radio"/>	<input type="radio"/>
Microphone	Stereo (with a zoom function)	<input type="radio"/>	<input type="radio"/>
Speaker	1 round speaker \varnothing 20 mm	<input type="radio"/>	<input type="radio"/>
Standard Illumination	1,400 lx	<input type="radio"/>	<input type="radio"/>
Minimum Required Illumination	12 lx (Low light Mode : 1/60) 2 lx (MagicPix function)	<input type="radio"/> <input type="radio"/>	<input type="radio"/> <input type="radio"/>
Output Level	Video Output Level: 1.0 Vp-p, 75 ohm Audio Output Level (Line): 316 mV, 600 ohm	<input type="radio"/>	<input type="radio"/>
USB	Card reader/writer function No copyright protection support	- -	<input type="radio"/> <input type="radio"/>
Digital Interface	DV Output Jack (IEEE1394, 4-pin) DV Input/Output Jack (IEEE1394, 4-pin) (: GS80EK)	<input type="radio"/> <input type="radio"/>	- <input type="radio"/>
Card Memory Functions	Recording Media: SD Memory Card (8 MB/16 MB/32 MB/64 MB/128 MB/256 MB/512 MB/1GB /2GB (Maximum)) (FAT12 and FAT16 format corresponding) SDHC Memory Card (4 GB (Maximum)) (FAT32 format corresponding) Still picture recording file format: JPEG (Design rule for Camera File system, based on Exif 2.2 standard), DPOF corresponding Still picture Size: 640 × 480, 640 × 360	-	<input type="radio"/>
WEB Camera	Compression: Motion JPEG Image Size: 320 × 240 pixels (QVGA) Frame rate: Approx. 6 fps	-	<input type="radio"/>
Operating Condition	0 °C-40 °C (32 °F -104 °F) (Temperature) 10 %-80 % (Humidity)	<input type="radio"/>	<input type="radio"/>
Weight	Digital Camcorder: 450 g (0.99 lbs.) (without the supplied battery, DV cassette and lens cap) AC Adaptor: 110 g (0.24 lbs.)	<input type="radio"/>	<input type="radio"/>
Dimensions	Digital Camcorder: 78.5 mm × 72.6 mm × 136 mm (H × W × D) (3.091 inch × 2.859 inch × 5.355 inch) (H × W × D) (excluding the projection parts) AC Adaptor: 61 mm × 32 mm × 91 mm (W × H × D) (2.40 inch × 1.26 inch × 3.58 inch) (W × H × D)	<input type="radio"/>	<input type="radio"/>
Solder	This model uses lead free solder (PbF).	<input type="radio"/>	<input type="radio"/>

1. NV-GS80E/GS80EB/GS80EE/GS80EF/GS80EG/GS80EK/GS80EP
2. NV-GS85EE/GS85GC/GS88GK

Design and Specifications are subject to change without notice.
Weight and Dimensions shown are approximate.

5 Service Mode

5.1. Error Display

"PUSH THE RESET SWITCH" is displayed automatically on the EVF or the LCD Monitor when an undesirable condition has occurred.

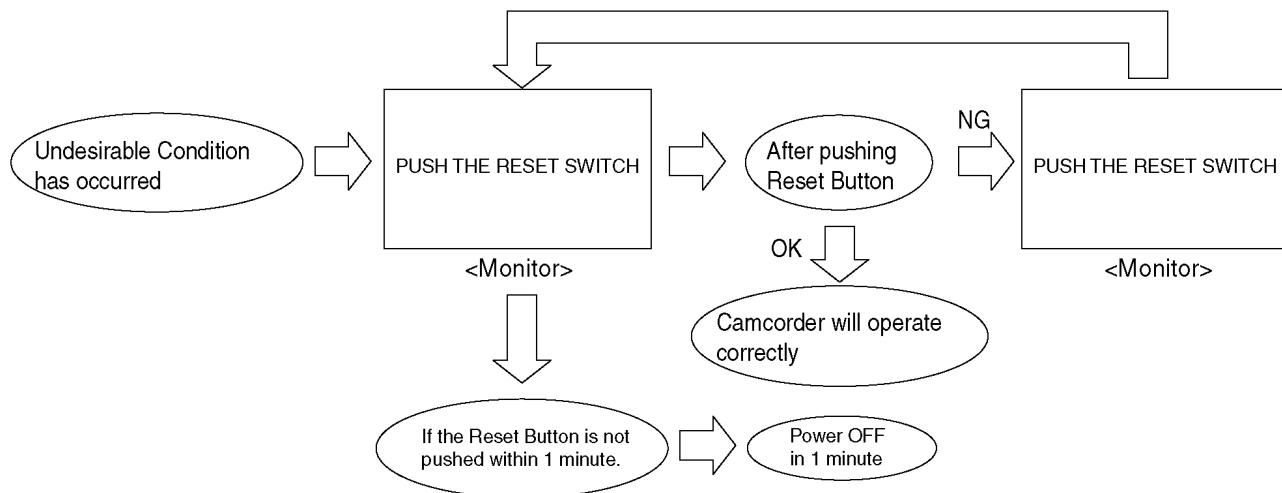


Fig. 1

Note:

When "PUSH THE RESET SWITCH" is displayed repeatedly, service is required. Check the Error Code which is listed in the Service Menu.

5.2. Service Menu

When abnormal detection contents are confirmed, do the following operation. Automatic diagnosis code will be displayed. (Service Menu)

To enter the Service Menu

Push the [PHOTO SHOT], [JOYSTICK CONTROL LEFT] and [RECORDING START/STOP] simultaneously for 3 seconds (with no SD Card inserted).

Note:

If a tape or SD Card is inserted, the above operation will not work.

This operation displays the following Service Menu items.

0 5 0 5 0 1 1 3 0 0		1 / 2
1		N O
2		N O
3		N O
4		N O
5		N O

<Service Menu 1/2>

- Item [1]: Factory setting (reset)
- Item [2]: Life Mode } ignore
- Item [3]: Error/Lock Code/elapsed time
- Item [4]: Not used } ignore
- Item [5]: BER

0 5 0 5 0 1 1 3 0 0		2 / 2
6		N O
7		N O
8		N O
9		N O
1 0		N O

<Service Menu 2/2>

- Item [6]: AD 24ch data
- Item [7]: Not used } ignore
- Item [8]: Resets the Cylinder elapsed time
- Item [9]: Not used } ignore
- Item [10]: Not used

Note:

Only perform items 1, 3, and 8 of items 1-10 in the Service Menu.

Fig. 2-1

To perform the factory setting

After repairing, perform this operation to clear the Mechanism lock code and Lens motor lock code.

1. Set to Service Menu.
2. Press [JOYSTICK CONTROL UP/DOWN] to select item [1].
3. Press [JOYSTICK CONTROL RIGHT] to display [NO/YES] screen.
4. Press [JOYSTICK CONTROL UP/DOWN] to select [YES].
5. Press [JOYSTICK CONTROL CENTER] to end.

To reset the Cylinder elapsed time

After replacing the Cylinder unit, perform this operation to clear the Cylinder elapsed time.

1. Set to Service Menu.
2. Press [JOYSTICK CONTROL UP/DOWN] to select item [8].
3. Press [JOYSTICK CONTROL RIGHT] to display [NO/YES] screen.
4. Press [JOYSTICK CONTROL UP/DOWN] to select [YES].
5. Press [JOYSTICK CONTROL CENTER] to end.

To confirm the error, lock code, or elapsed time

1. Set to Service Menu.
2. Press [JOYSTICK CONTROL UP/DOWN] to select item [3].
3. Press [JOYSTICK CONTROL RIGHT] to display [NO/YES] screen.
4. Press [JOYSTICK CONTROL UP/DOWN] to select [YES].
5. Press [JOYSTICK CONTROL CENTER] to end.

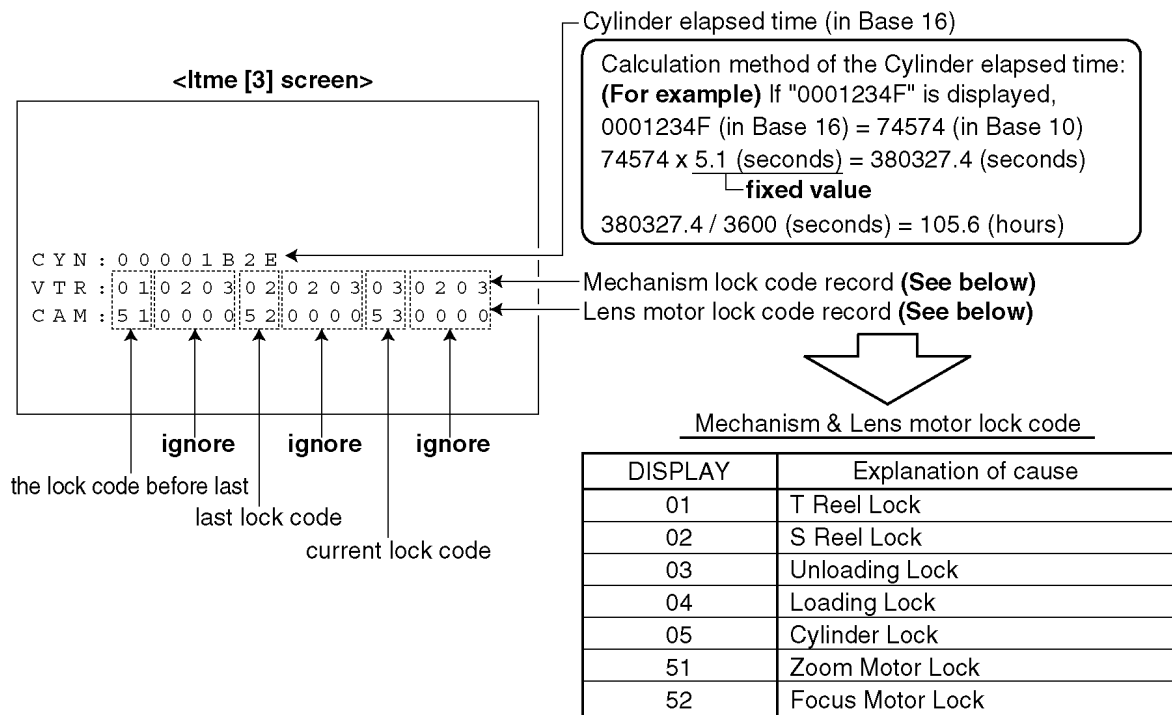


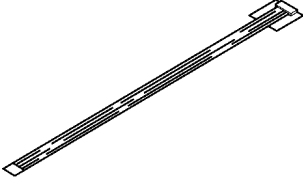
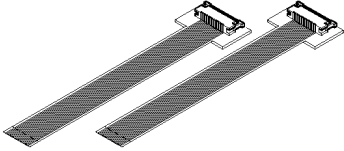
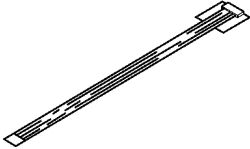
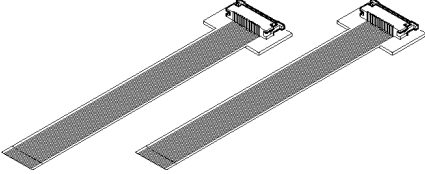
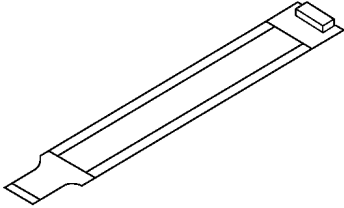
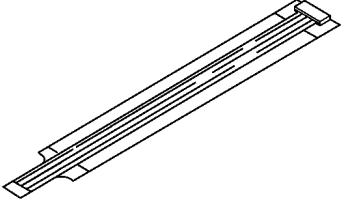
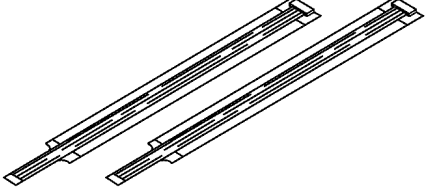
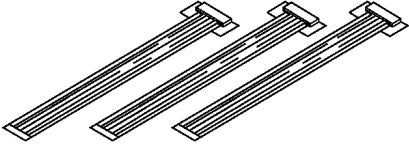
Fig. 2-2

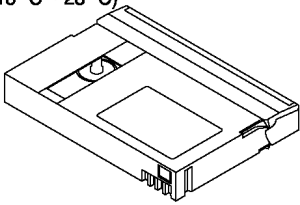
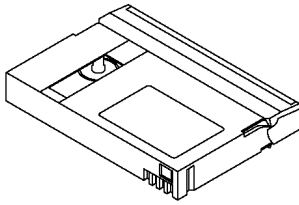

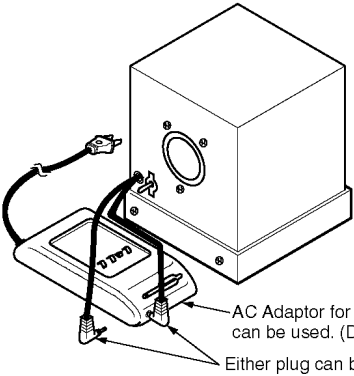
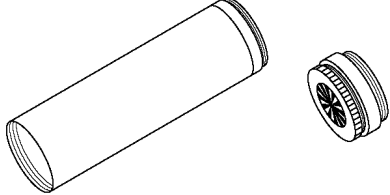







To exit the Service Menu

Unplug the AC Cord.

6 Service Fixture & Tools

6.1. Service Fixture and Tools

<p>Extension Cable 10P LSUA0016</p> 	<p>Extension Cable 18P (2 pcs) LSUA0017</p> 	<p>Extension Cable 8P LSUA0019</p> 
<p>Extension Cable 26P (2 pcs) LSUA0021</p> 	<p>Extension Cable 30P VFK1174</p> 	<p>Extension Cable 14P VFKW0124A</p> 
<p>Extension Cable 12P (2 pcs) VUVS0007</p> 	<p>Extension Cable 22P (3 pcs) VUVS0012</p> 	

<p>Color Bar Standard Tape VFM3110EDS (Keeping condition: Keep at 18 °C ~ 28 °C)</p> 	<p>DVC Head Cleaning Tape VFK1451</p> 	<p>Plier for Non ZIF Connector LSVQ0028</p> 	
<p>Light Box and AC Adaptor VFK1164LBX1</p>  <p>AC Adaptor for C-Movie can be used. (DC +6V) Either plug can be used.</p> <p>(AC Adaptor is not supplied)</p>	<p>Infinity Lens (with Focus Chart) VFK1164TCM02</p> 	<p>27mm Ring VFK1164TAR27</p> 	<p>Color Conversion Filter (C14) VFK1164TFCT2</p> 
<p>White Chart VFK1164TFWC2 Color Bar Chart VFK1164TFCB2 Gray Scale Chart VFK1164TFGS2</p>   			
<p>Post Height Adjustment Fixture VFK1899</p> 	<p>Grease LSUQ0050</p> 		

6.2. Service Position

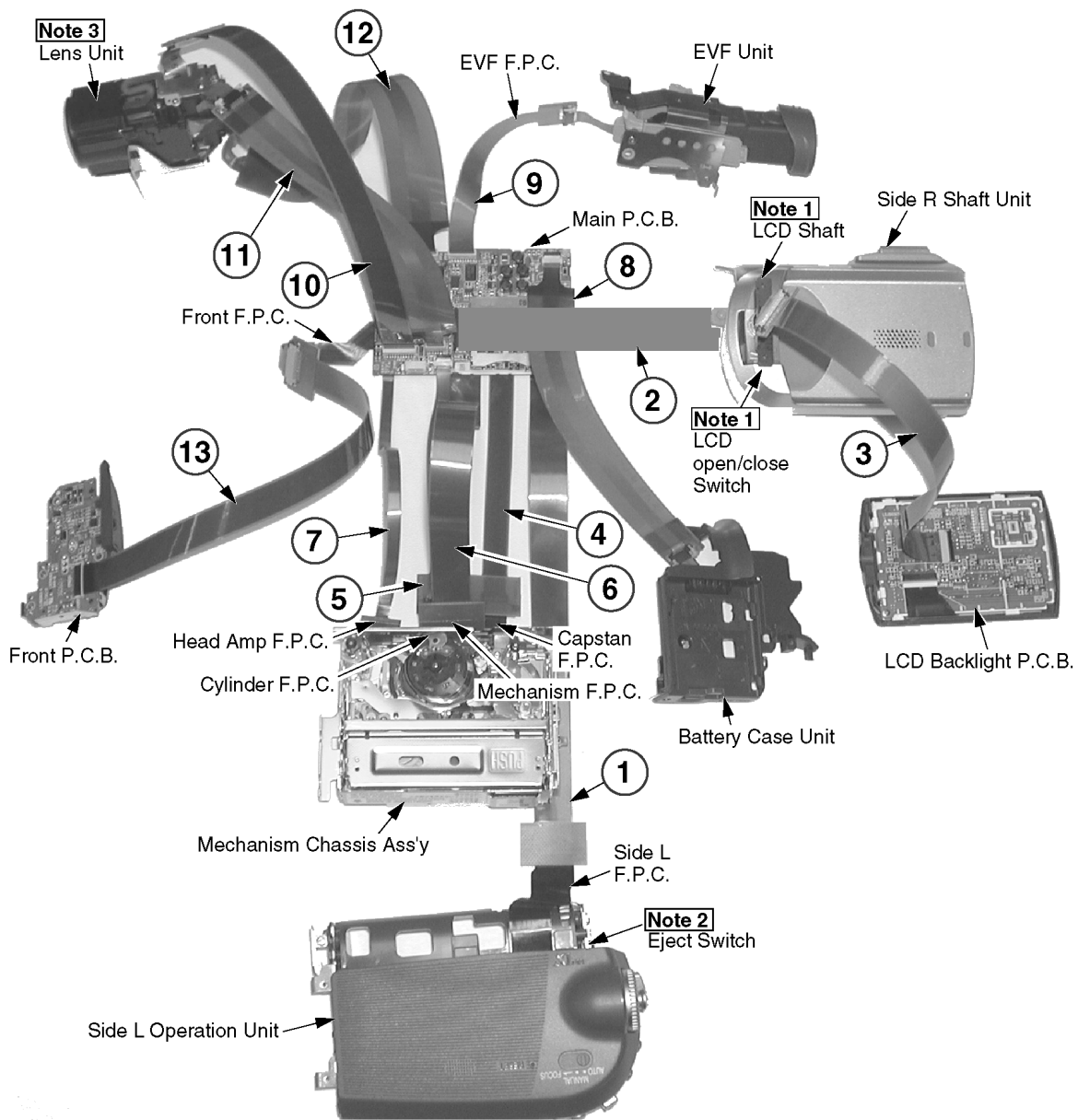
6.2.1. Extension Cables for Service Position

Using the following Extension Cables, place the unit as shown for check and service.

NO.	PART NUMBER	PART NAME	CONNECTION
①	LSUA0021	26Pin Extension Cable	FP61 on Main P.C.B. ~ Side L F.P.C.
②	VFK1174	30Pin Extension Cable	FP81 on Main P.C.B. ~ LCD Shaft F.P.C.
③	VUVS0012	22Pin Extension Cable	LCD Shaft F.P.C. ~ FP8101 on LCD Backlight P.C.B.
④	LSUA0017	18Pin Extension Cable	FP23 on Main P.C.B. ~ Capstan F.P.C. on Mechanism Chassis Ass'y
⑤	LSUA0016	10Pin Extension Cable	FP22 on Main P.C.B. ~ Cylinder F.P.C. on Mechanism Chassis Ass'y
⑥	LSUA0021	26Pin Extension Cable	FP21 on Main P.C.B. ~ Mechanism F.P.C. on Mechanism Chassis Ass'y
⑦	LSUA0019	8Pin Extension Cable	FP24 on Main P.C.B. ~ Head Amp F.P.C. on Mechanism Chassis Ass'y
⑧	VUVS0007	12Pin Extension Cable	FP11 on Main P.C.B. ~ Battery Case F.P.C. on Battery Case Unit
⑨	LSUA0017	18Pin Extension Cable	FP91 on Main P.C.B. ~ EVF F.P.C. on EVF Unit
⑩	VUVS0012	22Pin Extension Cable	FP71 on Main P.C.B. ~ Lens F.P.C. on Lens Unit
⑪	VUVS0007	12Pin Extension Cable	FP72 on Main P.C.B. ~ OIS F.P.C. on Lens Unit
⑫	VFKW0124A	14Pin Extension Cable	FP31 on Main P.C.B. ~ CCD F.P.C. on CCD P.C.B.
⑬	VUVS0012	22Pin Extension Cable	FP41 on Main P.C.B. (Front F.P.C.) ~ FP6501 on Front P.C.B.

Note:

1. The LCD open/close Switch is for changing between LCD Display and EVF Display. When turning on EVF Display, close the LCD Shaft so that LCD open/close Switch stays ON.
2. To eject the Mechanism, hold down the Eject Switch on the Side L Operation Unit for a short time, or open the Cassette Cover of the Side L Operation Unit.
3. Use a grounded ESD wrist strap while disassembling the Lens portion.
4. Connect the F.P.C.s to the connectors, verifying the direction of F.P.C.s.
5. Use extreme care when plugging in or unplugging connectors.



Non ZIF connectors are on the Main P.C.B. as shown in gray.

Direction of F.P.C.s connection

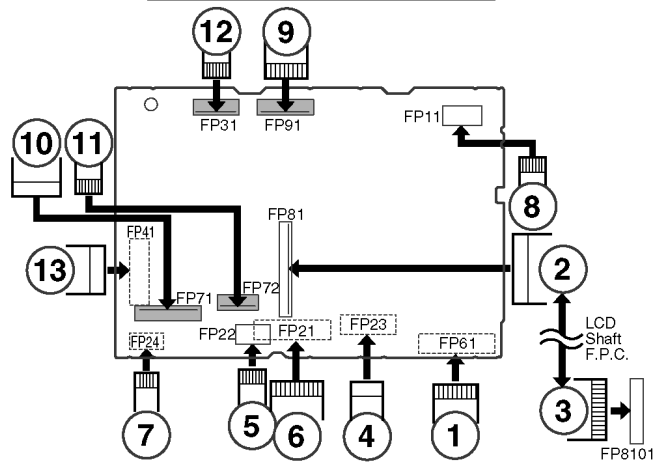


Fig. 3

6.3. Removal/Installation of F.P.C. From Non ZIF (Zero Insertion Force) Connector

Removal/Installation of F.P.C. from the Non ZIF (Zero Insertion Force) connector:

1. The Non ZIF connectors and the ZIF connectors are used on the unit. And there are 2 types (Type A, Type B) of Non ZIF connectors.
2. To remove the F.P.C. from the Non ZIF connector, use the Plier for Non ZIF Connector (LSVQ0028) to pull out the F.P.C. as shown. The same Plier for Non ZIF Connector (LSVQ0028) should also be used to install the F.P.C. to the Non ZIF Connector.

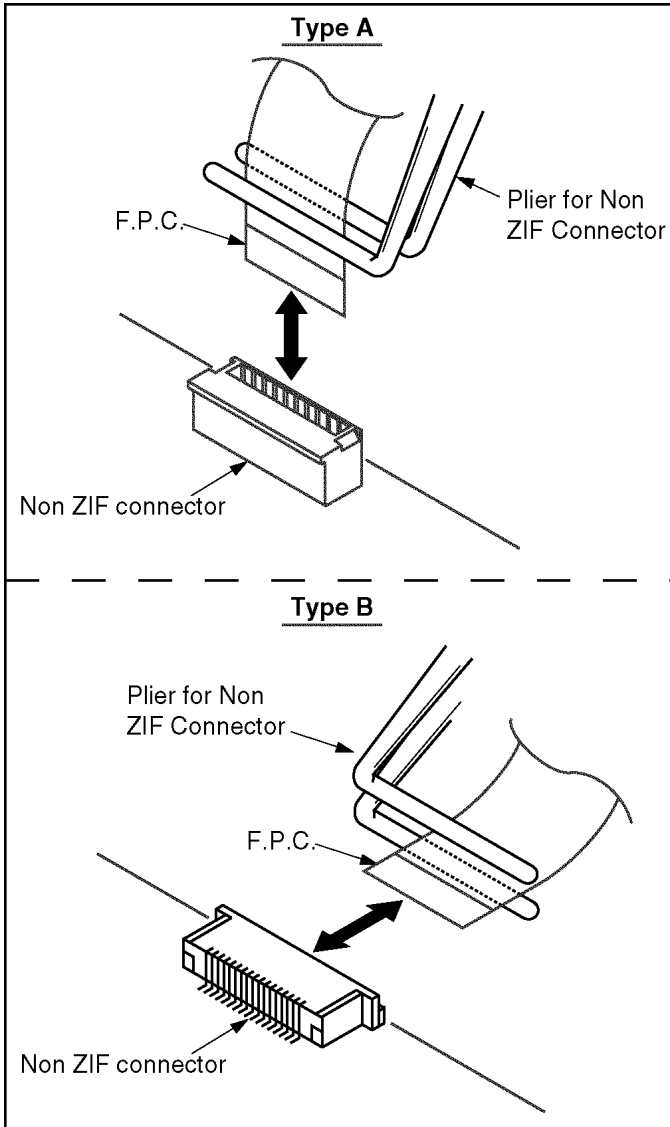


Fig. 4-1

3. Connect the F.P.C.s to the Non ZIF connectors, verifying the direction of F.P.C as shown.

Non ZIF connectors are on the Main P.C.B. as shown in gray.

Direction of F.P.C.s connection

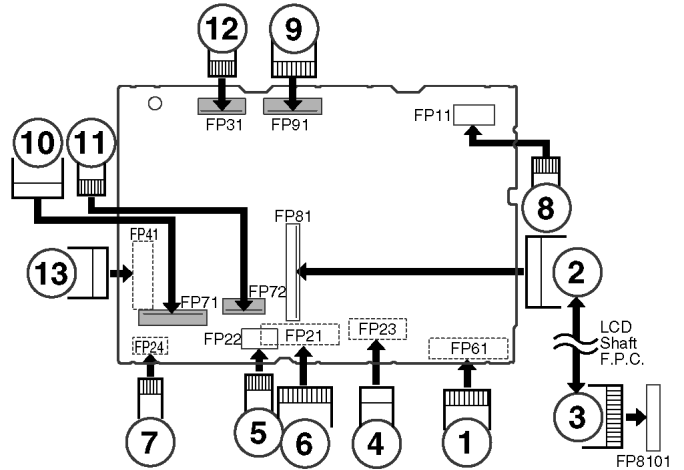


Fig. 4-2

6.4. Method for Loading/Unloading of Mechanism

CAUTION:

If loading does not start after DC Power Supply is applied, DO NOT continue to apply DC Power.

Apply +3 VDC Power Supply to the Loading Motor terminals.

Loading:

DC (-) to Portion "a," DC (+) to Portion "b"

Unloading:

DC (+) to Portion "a," DC (-) to Portion "b"

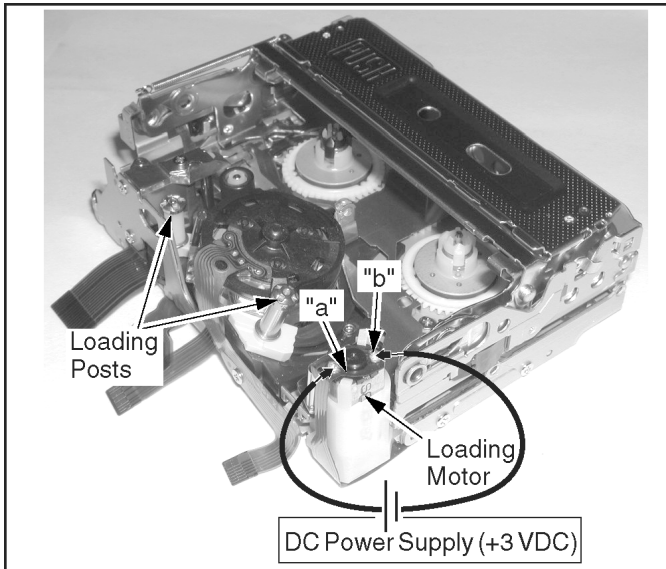


Fig. 5

6.5. EEPROM Data

CAUTION:

Be sure to save the EEPROM data using PC-EVR Adjustment Program before service and adjustment in order to make sure to avoid an accidental data loss, etc. using PC-EVR Adjustment Program by first.

EEPROM IC

C.B.A.	EEPROM IC Ref. No.
Main C.B.A.	IC6003

6.6. Special Note

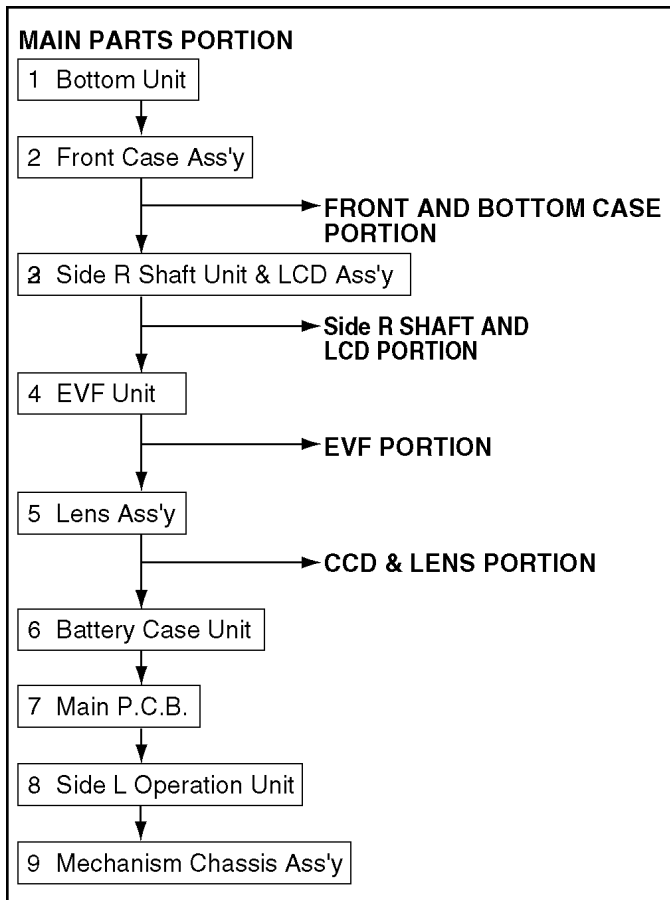
All integrated circuits and many other semiconductor devices are electrostatically sensitive and therefore require the special handling techniques described under the "ELECTROSTATICALLY SENSITIVE (ES) DEVICES" section of this service manual.

7 Disassembly and Assembly Instructions

7.1. Cabinet Section

7.1.1. DISASSEMBLY FLOWCHART

This flow chart indicates the disassembly steps of the cabinet parts and the P.C.Boards in order to gain access to item (s) to be serviced. When reassembling, perform the step (s) in the reverse order. Bend, route and dress the wires as they were originally.



Note:

1. When removing the cabinet, work with care so as not to break the Locking Tabs.
2. Place a cloth or some other soft material under the P.C. Boards or Unit to prevent damage.
3. When reinstalling, ensure that the connectors are connected and electrical components have not been damaged.
4. Do not supply power to the unit during disassembly and reassembly.

7.1.2. Disassembly Method

MAIN PARTS PORTION

STEP No.	Ref. No.	PART	Section No.	REMOVE	NOTE
1	⑦	Bottom Unit	①	6(519), (537)	1
2	-	Front Case Ass'y	①	2(519), 3(537), FP6501	2
3	-	Side R Shaft Unit & LCD Ass'y	①	2(518), 3(519), FP81	3
4	⑫	EVF Unit	①	2(519), (537), FP91	4
5	-	Lens Ass'y	①	2(537), FP31, FP71, FP72	5
6	⑳	Battery Case Unit	①	2(519), FP11	6
7	㉑	Main P.C.B.	①	2(519), FP21, FP22, FP23, FP24, FP61	7
8	㉒	Side L Operation Unit	①	(537), 2(L-1)	8
9	-	Mechanism Chassis Ass'y	①	3(441), (24)	9

↑ A ↑ B ↑ C ↑ D ↑ E ↑ F

How to read chart shown above:

- A: Order of Procedure steps.
When reassembling, perform steps(s) in reverse order.
- B: Ref No.
- C: Part to be removed or installed.
- D: Section No.
- E: Identification of part to be removed, unhooked, unlocked, released, unplugged, unclamped, or unsoldered.
3(404)= 3 Screws (404), 2(L-1) = 2 Looking Tabs (L-1)
- F: Refer to "Notes in chart."

FRONT CASE PORTION

STEP No.	Ref. No.	PART	Section No.	REMOVE	NOTE
1	ⓔ30	Front P.C.B.	②	5(537)	10
2	ⓔ56	Front Case Unit	②	-----	-

↑ A ↑ B ↑ C ↑ D ↑ E ↑ F

How to read chart shown above:

- A: Order of Procedure steps.
When reassembling, perform steps(s) in reverse order.
- B: Ref No.
- C: Part to be removed or installed.
- D: Section No.
- E: Identification of part to be removed, unhooked, unlocked, released, unplugged, unclamped, or unsoldered.
3(404)= 3 Screws (404), 2(L-1) = 2 Looking Tabs (L-1)
- F: Refer to "Notes in chart."

SIDE R SHAFT & LCD PORTION

STEP No.	Ref. No.	PART	Section No.	REMOVE	NOTE
1	③③	LCD Case A	③	2(519), 8(L-1)	11
2	③①	Side R Shaft Unit	③	FP8101	11
3	③④	LCD Case B	③	3(L-2)	12
4	④④	LCD Backlight P.C.B	③	(533), 3(L-3), FP8102	12
5	-	LCD Panel Ass'y	③	3(L-4)	12
	③⑤	LCD Shield Case			

↑ A ↑ B ↑ C ↑ D ↑ E ↑ F

STEP No.	Ref. No.	PART	Section No.	REMOVE	NOTE
1	④②	LCD Panel	③	-----	13
2	③⑨	Reflect Sheet	③	-----	13
3	③⑦	Lead Light Panel	③	-----	13
4	③⑧	Diffusion Sheet	③	-----	13
5	④①	BEF Sheet	③	-----	13
6	④①	BEF Sheet A	③	-----	13
7	③⑥	Panel Holder Unit	③	-----	13

↑ A ↑ B ↑ C ↑ D ↑ E ↑ F

How to read chart shown above:

A: Order of Procedure steps.

When reassembling, perform steps(s) in reverse order.

B: Ref No.

C: Part to be removed or installed.

D: Section No.


E: Identification of part to be removed, unhooked, unlocked, released, unplugged, unclamped, or unsoldered.

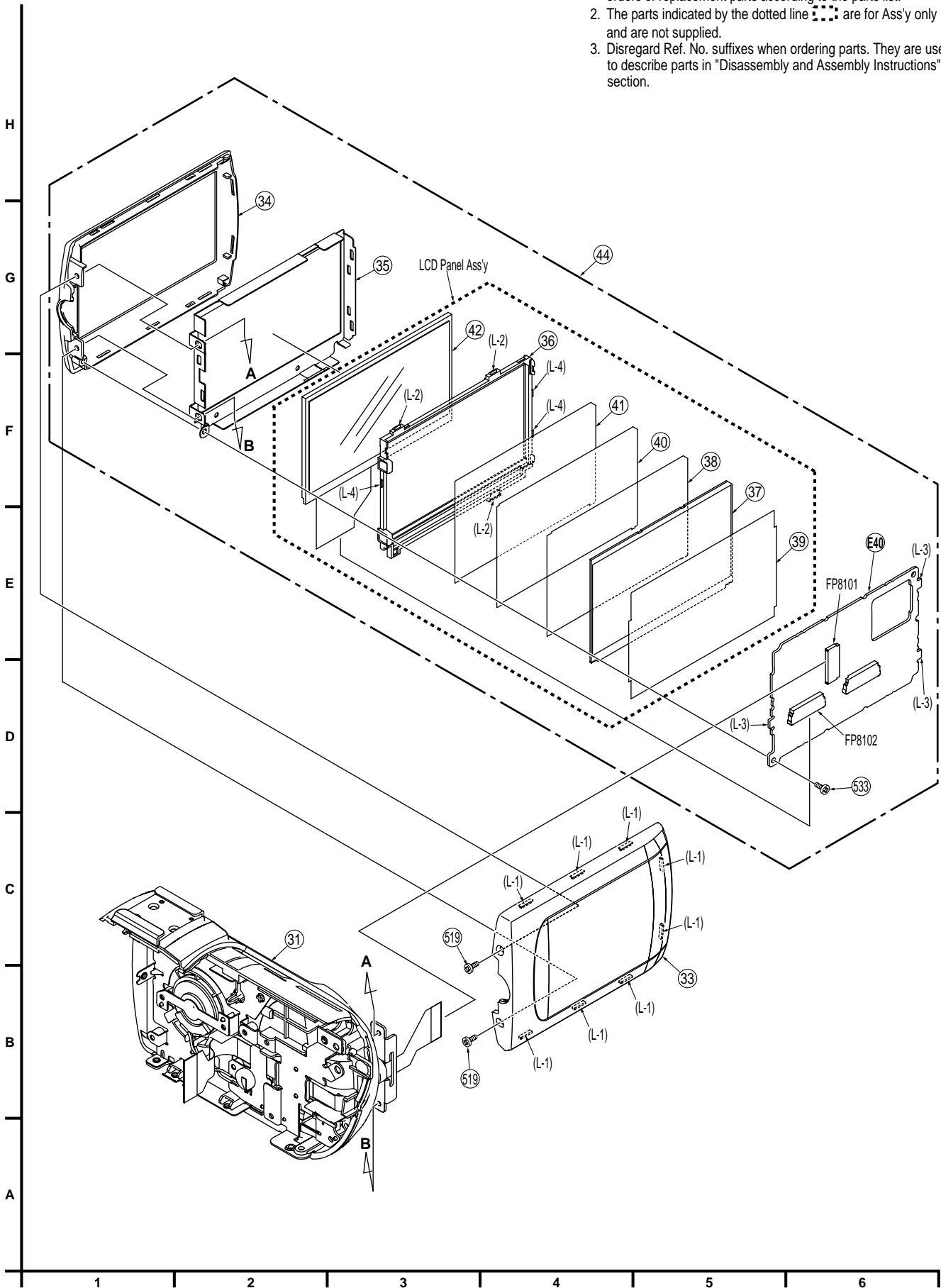
3(404)= 3 Screws (404), 2(L-1) = 2 Looking Tabs (L-1)

F: Refer to "Notes in chart."

③ SIDE R SHAFT UNIT AND LCD SECTION

Note:

1. Parts with no Ref. No. in "EXPLODED VIEW" are not supplied. And some Ref. No. will be skipped. Be sure to make your orders of replacement parts according to the parts list.
2. The parts indicated by the dotted line  are for Ass'y only and are not supplied.
3. Disregard Ref. No. suffixes when ordering parts. They are used to describe parts in "Disassembly and Assembly Instructions" section.



CCD & LENS PORTION

STEP No.	Ref. No.	PART	Section No.	REMOVE	NOTE
1	⑤⑩	CCD P.C.B	④	2(536)	14
2	⑥④	Filter Rubber	④	-----	14
3	⑥③	Optical Filter	④	-----	14

↑ A ↑ B ↑ C ↑ D ↑ E ↑ F

STEP No.	Ref. No.	PART	Section No.	REMOVE	NOTE
1	⑨	Lens Angle	④	(533)	-
2	⑥⑤	Zoom Motor Unit	④	2(538), Unsolder	15
3	⑥⑥	Focus Motor Unit	④	2(538), Unsolder	15


↑ A ↑ B ↑ C ↑ D ↑ E ↑ F

How to read chart shown above:

- A: Order of Procedure steps.
When reassembling, perform steps(s) in reverse order.
- B: Ref No.
- C: Part to be removed or installed.
- D: Section No.
- E: Identification of part to be removed, unhooked, unlocked, released, unplugged, unclamped, or unsoldered.
- F: Refer to "Notes in chart."

4 CCD AND LENS SECTION

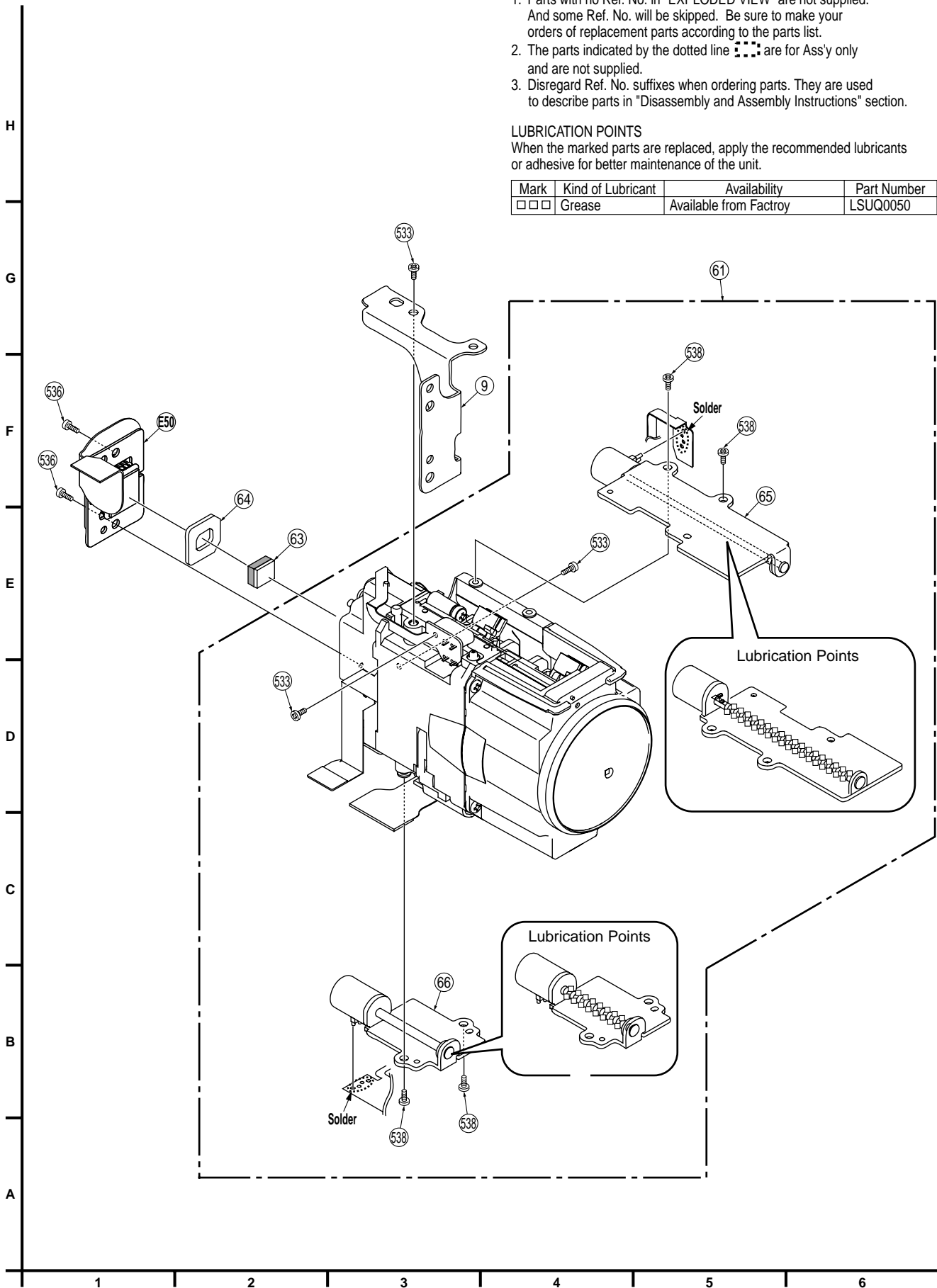
Note:

1. Parts with no Ref. No. in "EXPLODED VIEW" are not supplied. And some Ref. No. will be skipped. Be sure to make your orders of replacement parts according to the parts list.
2. The parts indicated by the dotted line  are for Ass'y only and are not supplied.
3. Disregard Ref. No. suffixes when ordering parts. They are used to describe parts in "Disassembly and Assembly Instructions" section.

LUBRICATION POINTS

When the marked parts are replaced, apply the recommended lubricants or adhesive for better maintenance of the unit.

Mark	Kind of Lubricant	Availability	Part Number
<input type="checkbox"/> <input type="checkbox"/>	Grease	Available from Factory	LSUQ0050



EVF PORTION

STEP No.	Ref. No.	PART	Section No.	REMOVE	NOTE
1	⑮	EVF Earth Plate	⑤	2(519), 2(L-1)	16
2	⑬	EVF Base Frame	⑤	FP8901	16
3	⑭	EVF Spring	⑤	(519), 2(L-2)	16
4	⑰	EVF Backlight F.P.C.	⑤	-----	16

↑ A ↑ B ↑ C ↑ D ↑ E ↑ F

STEP No.	Ref. No.	PART	Section No.	REMOVE	NOTE
1	⑱	Eye Cap	⑤	2(533)	17
2	⑳	EVF Lens Unit	⑤	-----	18
3	㉒	Eye Sight Lever	⑤	-----	18


↑ A ↑ B ↑ C ↑ D ↑ E ↑ F

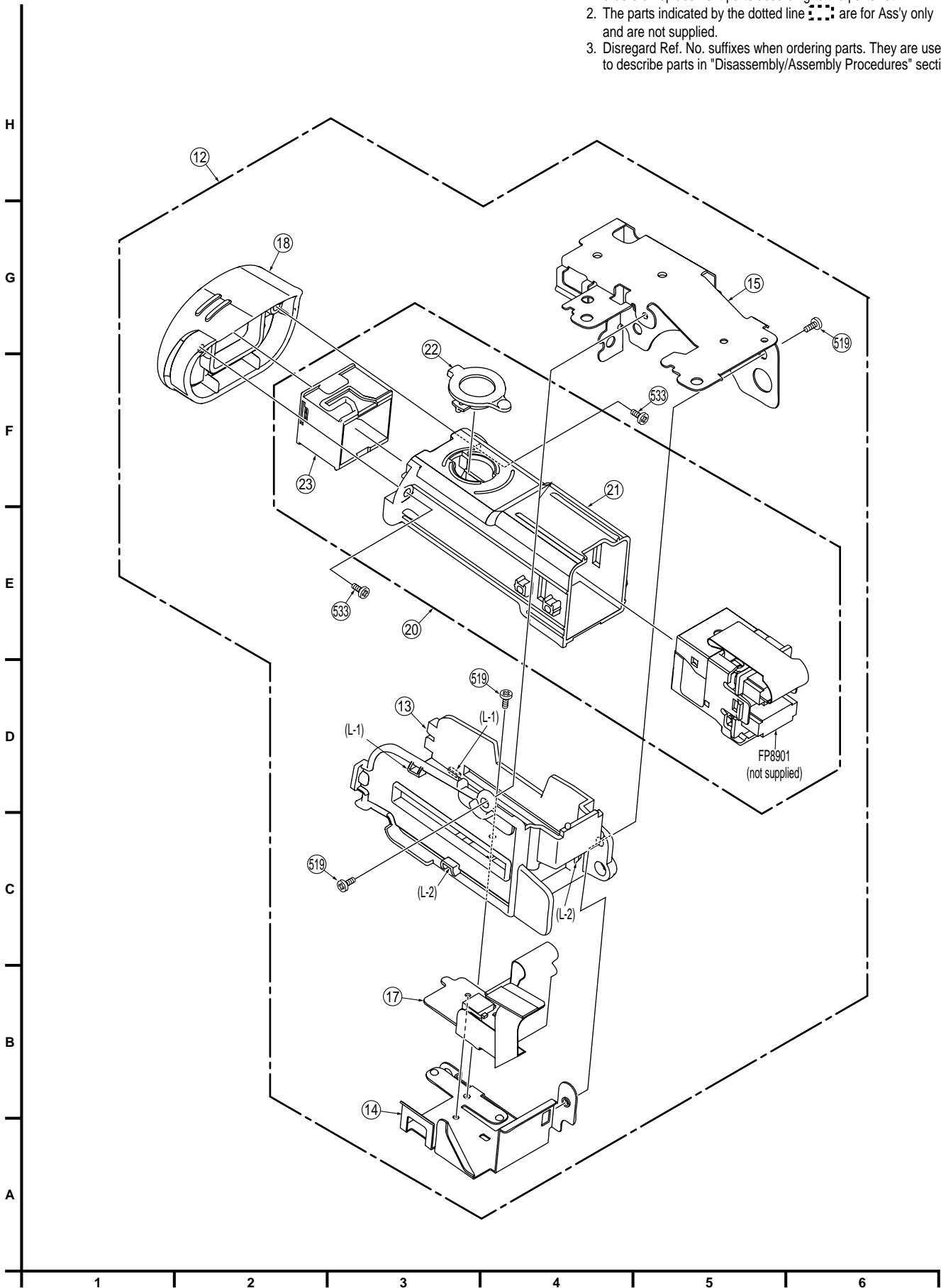
How to read chart shown above:

- A: Order of Procedure steps.
When reassembling, perform steps(s) in reverse order.
- B: Ref No.
- C: Part to be removed or installed.
- D: Section No.
- E: Identification of part to be removed, unhooked, unlocked, released, unplugged, unclamped, or unsoldered.
3(404)= 3 Screws (404), 2(L-1) = 2 Looking Tabs (L-1)
- F: Refer to "Notes in chart."

5 EVF SECTION

Note:

1. Parts with no Ref. No. in "EXPLODED VIEW" are not supplied. And some Ref. No. will be skipped. Be sure to make your orders of replacement parts according to the parts list.
2. The parts indicated by the dotted line  are for Ass'y only and are not supplied.
3. Disregard Ref. No. suffixes when ordering parts. They are used to describe parts in "Disassembly/Assembly Procedures" section.



Notes in chart

1. Removal of Bottom Unit

- 1) Release the Hand Strap.
- 2) Remove the 7 Screws (519, 537).



<Bottom View>
Fig. D1

2. Removal of Front Case Ass'y

- 1) Open the LCD and the Jack Cover and remove the 5 Screws (519, 537).
- 2) Pull and slide out the Front Case Ass'y carefully and disconnect the F.P.C. from Connector FP6501.

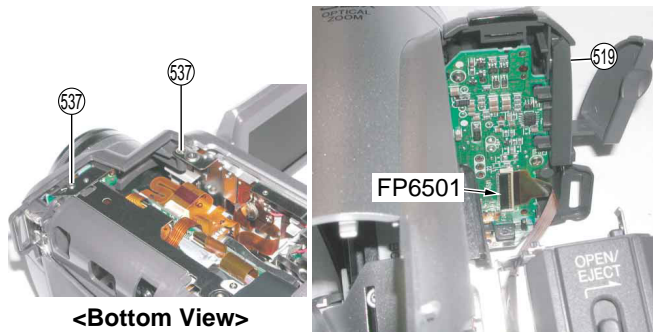
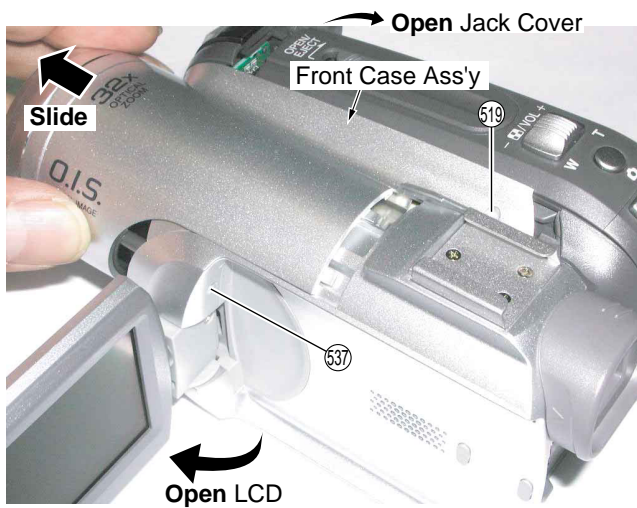


Fig. D2

3. Removal of Side R Shaft Unit & LCD Ass'y

- 1) Remove the 5 Screws (518, 519).
- 2) Disconnect the F.P.C. from Connector FP81.

Installation of Side R Shaft Unit & LCD Ass'y

Take care not to damage the F.P.C.

- 1) Connect the F.P.C. to Connector FP81.
- 2) Insert Pin A of Lens into Hole A, and Pin B of Side R Shaft Unit into Hole B.

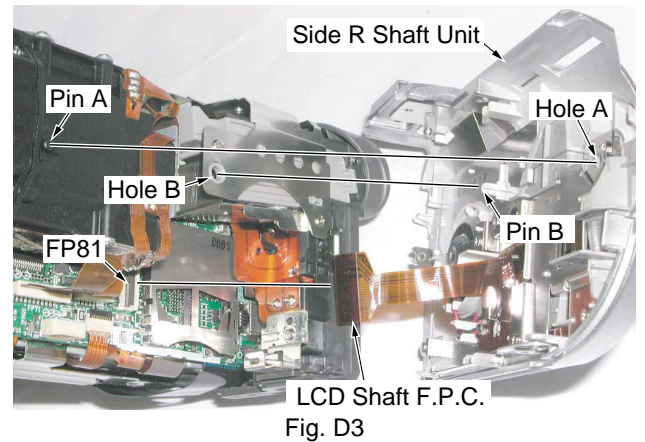
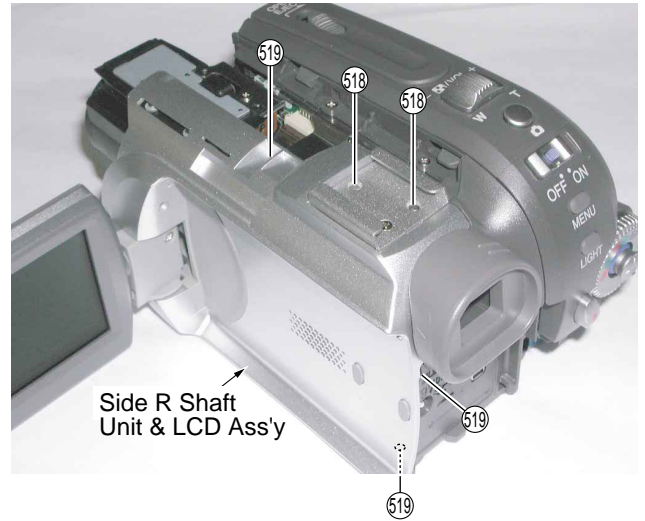


Fig. D3

4. Installation of EVF Unit

- 1) Connect the F.P.C. to Connector FP91.
- 2) Insert EVF Earth Plate into the gap, and tighten the 3 Screws (519, 537).

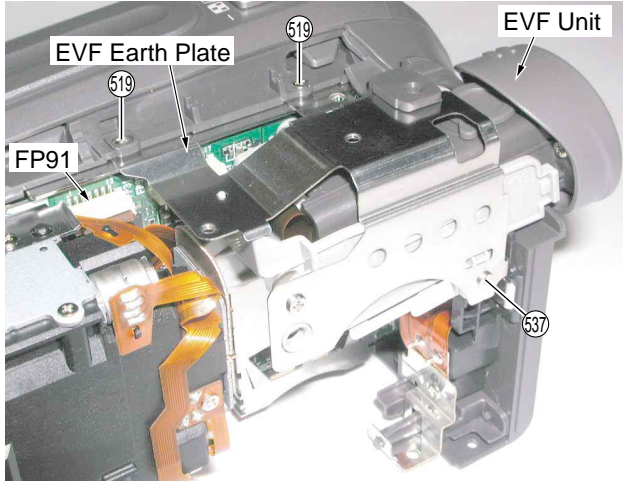


Fig. D4

6. Removal of Battery Case Unit

- 1) Open the Cassette Cover to remove the 2 Screws (519).
- 2) Disconnect the Battery Case F.P.C. from Connector FP11.

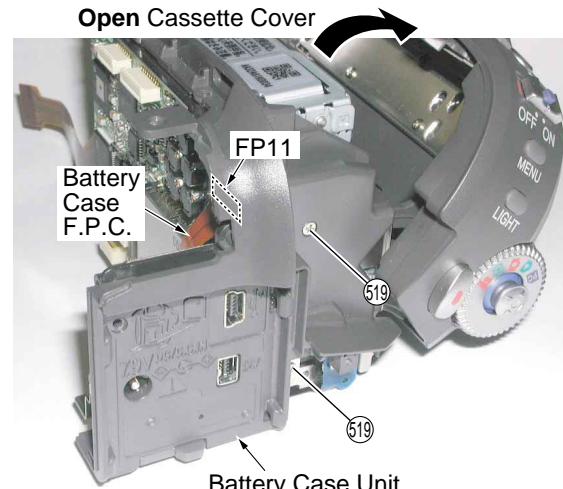


Fig. D6

5. Installation of Lens Ass'y

Take care not to damage the motor leads and the F.P.C.s.

- 1) Install the Lens Ass'y with the 2 pins, and tighten the 2 Screws (537).
- 2) Connect the F.P.C.s to Connectors FP31, FP71, and FP72.

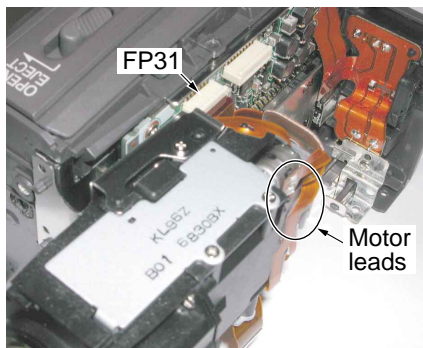
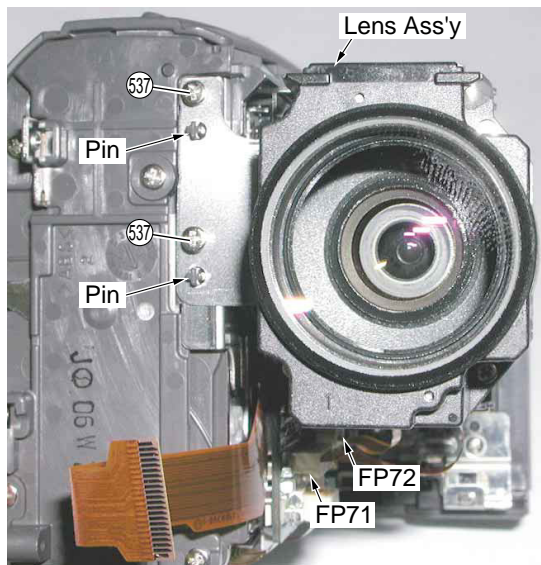


Fig. D5

7. Installation of Main P.C.B.

Take care not to damage the F.P.C.s.

- 1) Connect the F.P.C.s to the connectors on the Main P.C.B., verifying that the direction of the Flexible Cables is correct. Refer to "Removal/Installation of F.P.C. From Non ZIF (Zero Insertion Force) Connector."
- 2) Tighten the 2 Screws (519).
- 3) After installing the Main P.C.B, confirm the F.P.C.s are positioned as shown.

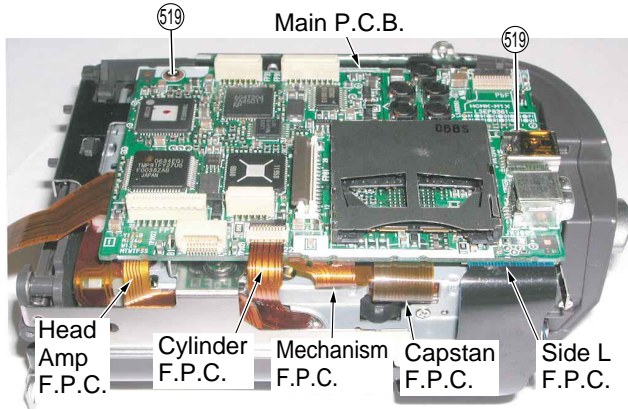
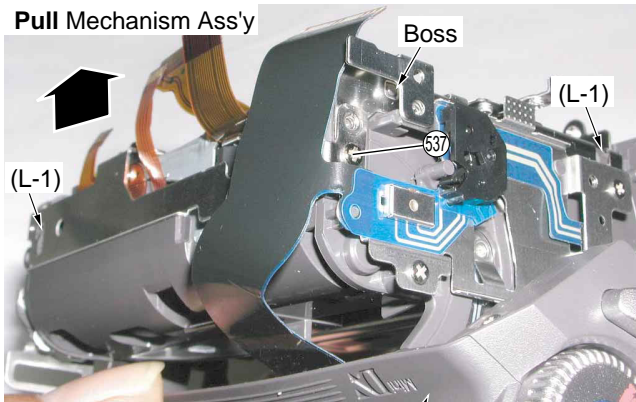


Fig. D7

8. Removal of Side L Operation Unit

- 1) Remove the Screw (537).
- 2) Pull off the Mechanism Ass'y while releasing the 2 Locking Tabs (L-1) and the boss.

Pull Mechanism Ass'y



Side L Operation Unit
Fig. D8

9. Replacement of Mechanism Chassis Ass'y

When replacing the Main Chassis Ass'y or the Cylinder Unit, be sure to perform the Envelope Output Adjustment. Refer to "ENVELOPE OUTPUT ADJUSTMENT" in Mechanical Adjustment.

Mechanism Chassis Ass'y Handling Caution

When servicing the Mechanism Chassis Ass'y **without the Cassette Up Unit**, do not handle the Sub Chassis of the Mechanism Chassis Ass'y.

Mechanism Chassis Ass'y
(with Cassette Up Unit)

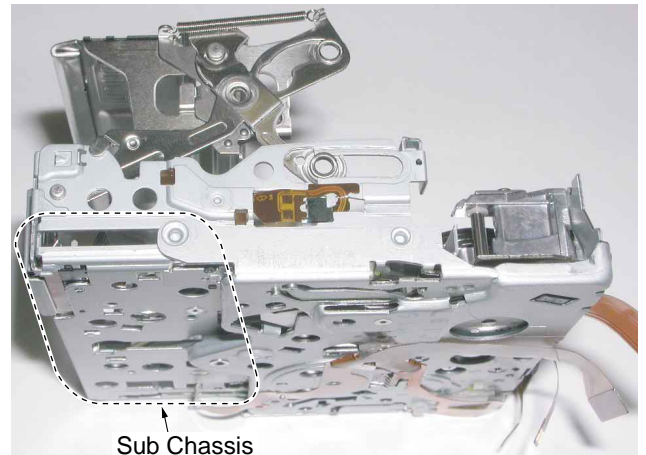
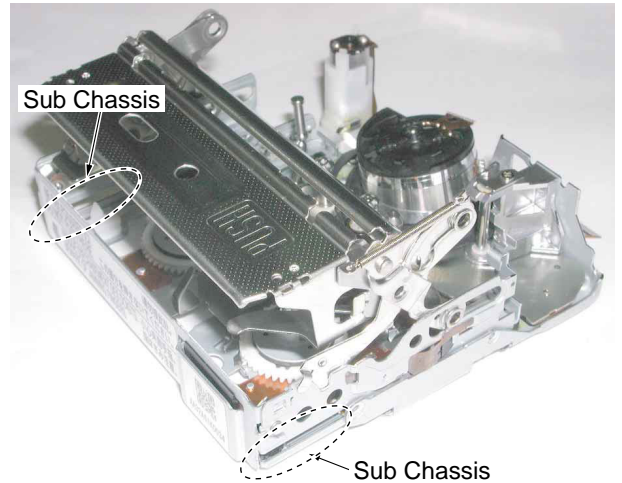


Fig. D9

10. Installation of Front P.C.B.

Install the Front P.C.B. with the 5 bosses, and tighten the 5 Screws (537).

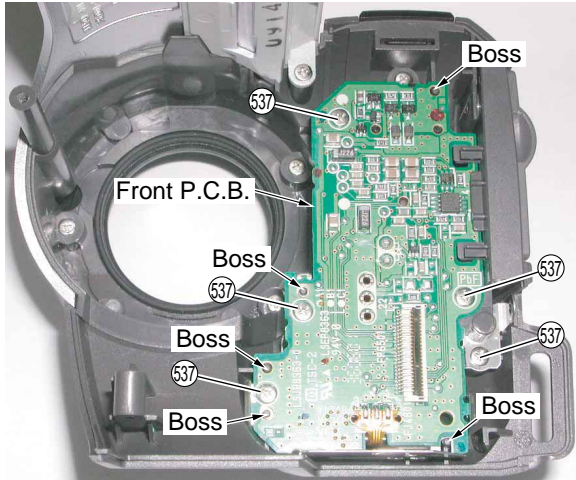


Fig. D10

11. Removal of Side R Shaft Case Unit and LCD Case A

Take care not to damage the F.P.C.

- 1) Open and rotate the LCD to access the 2 Screws (519).
- 2) Release the 8 Locking Tabs (L-1) and remove the LCD Case A.
- 3) Disconnect the F.P.C. from Connector FP8101.
- 4) Remove the Side R Shaft Unit.

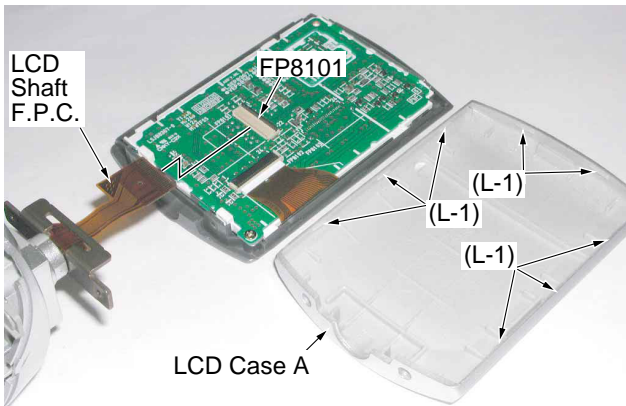
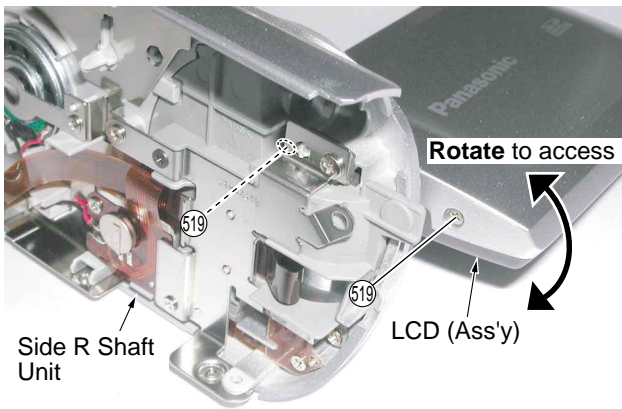


Fig. D11

12. Installation of LCD Backlight P.C.B., LCD Panel Ass'y, LCD Shield Case Unit and LCD Case B

Use extreme care regarding LEDs when handling the LCD Backlight P.C.B.

Install in order shown below.

- 1) Install the LCD Panel Ass'y onto the LCD Shield Case Unit with the 3 Locking Tabs (L-4) while carefully bending the LCD F.P.C. at its base so as not to damage it.
- 2) Install the LCD Backlight P.C.B. onto the LCD Panel Ass'y with the 3 Locking Tabs (L-3).
- 3) Install the LCD Case B with the 3 Locking Tabs (L-2).
- 4) Tighten the Screw (533) while keeping the LCD Backlight P.C.B. pressed toward the left. Then, connect the F.P.C. to Connector FP8102.

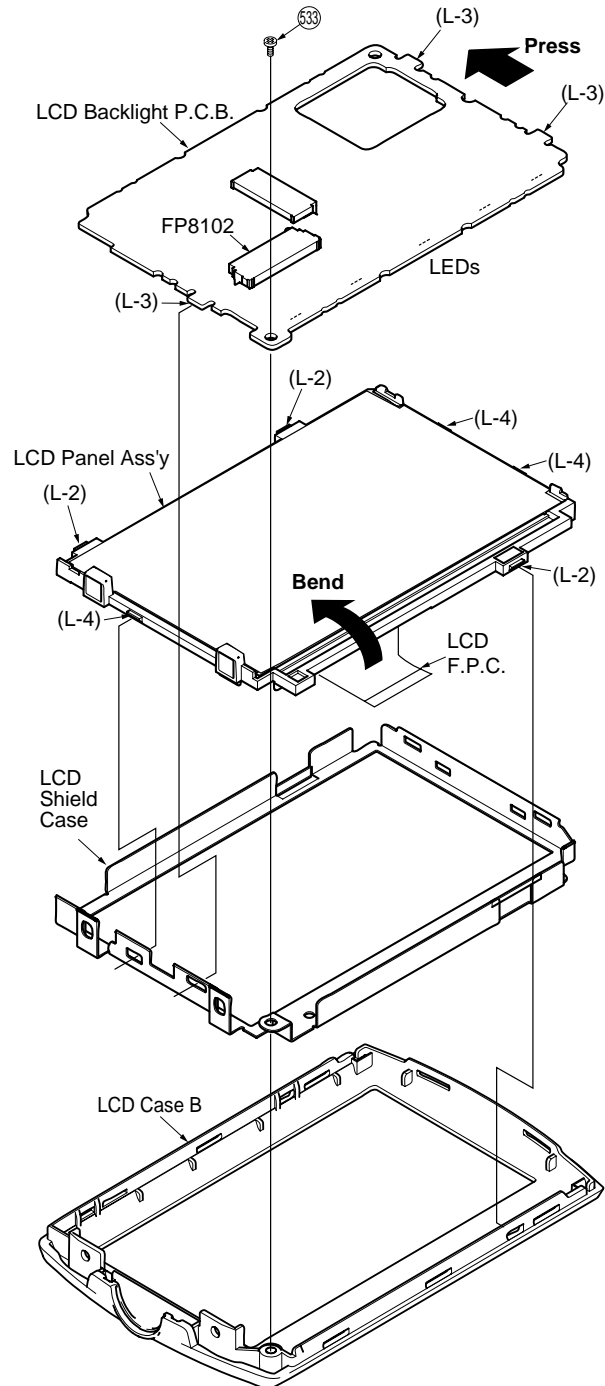


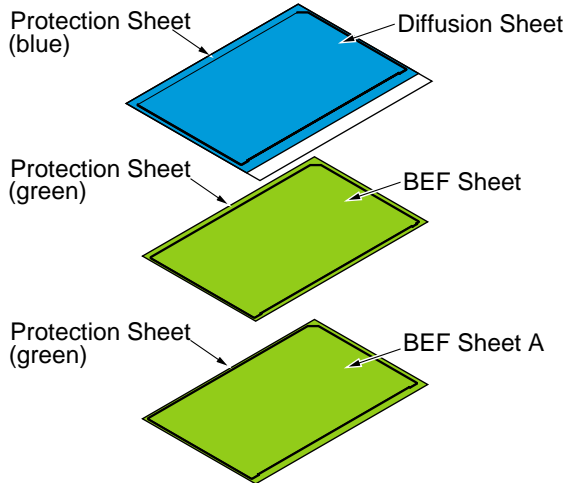
Fig. D12

13. Installation of LCD Panel, Reflect Sheet, Lead Light Panel, Diffusion Sheet, BEF Sheet, BEF Sheet A and Panel Holder Unit

a. When replacing the LCD Panel, the Diffusion Sheet, the BEF Sheet and the BEF Sheet A, make sure to remove the Protection Sheets.

To distinguish Sheets from attached Protection Sheet:

- A blue Protection Sheet is affixed to both faces of the Diffusion Sheet.
- A green Protection Sheet is affixed to both faces of the BEF Sheet.
- A green Protection Sheet is affixed to both faces of the BEF Sheet A.



b. Use extreme care when handling the LCD Panel, the Reflect Sheet, the Lead Light Panel, the Diffusion Sheet, the BEF Sheet and the BEF Sheet A to avoid damage, dust, and spots (especially fingerprints, etc.)

Install in order shown below.

- 1) Install in order: the BEF Sheet A, BEF Sheet and Diffusion Sheet while fitting the corners of each sheet into the corners of the Panel Holder Unit.
- 2) Install the Lead Light Panel while fitting the corners into the corners of the Panel Holder Unit.
- 3) Place the Reflect Sheet so it is aligned with Portion A of the Panel Holder Unit, then install it using the adhesive tape portions of the Reflect Sheet.

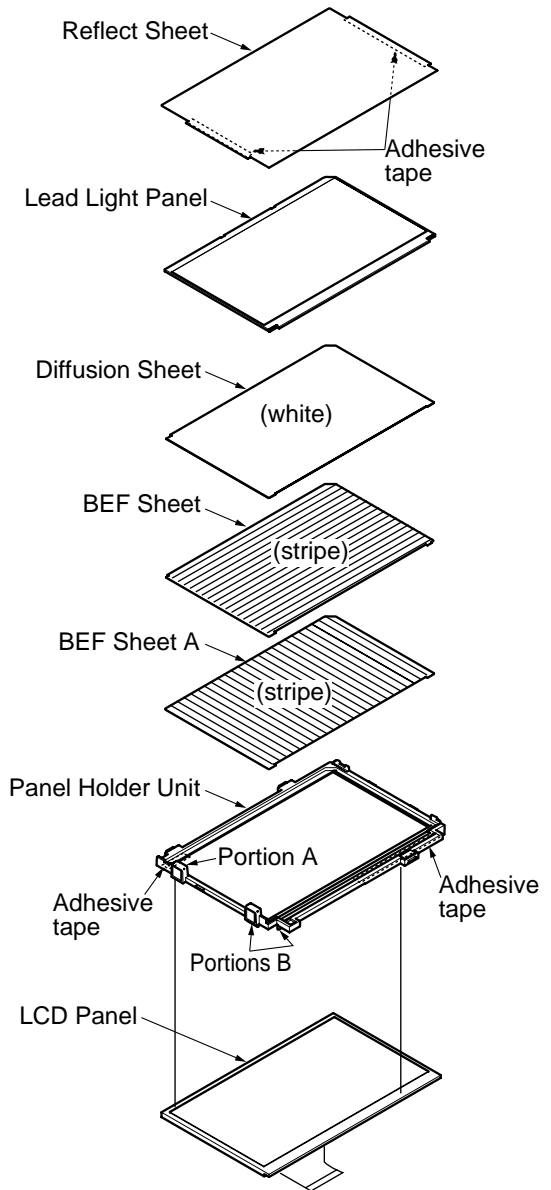


Fig. D13-2

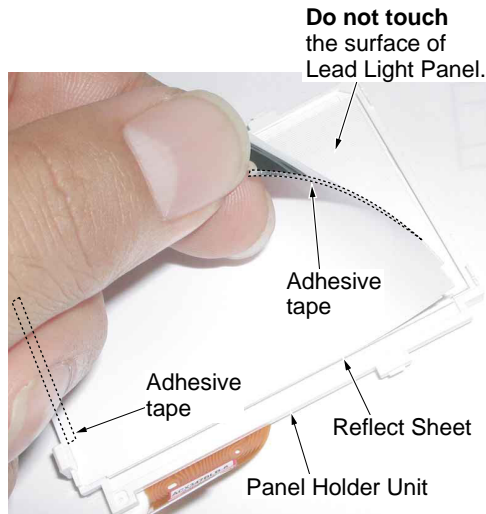


Fig. D13-1

- 4) Install the LCD Panel with adhesive tape so it is aligned with Portions B of the Panel Holder Unit.

14. Removal of CCD P.C.B., Filter Rubber and Optical Filter
CAUTION:

- 1) When removing the CCD P.C.B., take care that the Optical Filter does not fall out.
- 2) Use extreme caution when removing the CCD P.C.B. as it is easily damaged by static electricity. Use a Wrist Strap while removing and installing.
- 3) Do not touch the CCD window surface.

Installation of CCD P.C.B., Filter Rubber and Optical Filter

Install in order shown below.

- 1) Install the Optical Filter, taking care the direction is correct.

Note: Make sure that no dust gets on the Optical Filter or in the Lens Unit. Clean the Optical Filter with lens cleaning paper dampened with lens cleaner if necessary.

- 2) Install the Filter Rubber on the Optical Filter, taking care the direction is correct.

Note: Make sure that no dust gets on the Filter Rubber.

- 3) Install the CCD P.C.B. into the Lens Unit. Then, tighten the 2 Screws (536).

Note: Do not touch the Lens Surface. Clean the surface with lens cleaning paper dampened with lens cleaner if necessary.

15. Installation of Zoom Motor Unit/Focus Motor Unit

Install the Zoom Motor Unit/Focus Motor Unit so that the Shaft of the Zoom Motor Unit/Focus Motor Unit is set in the Holder.

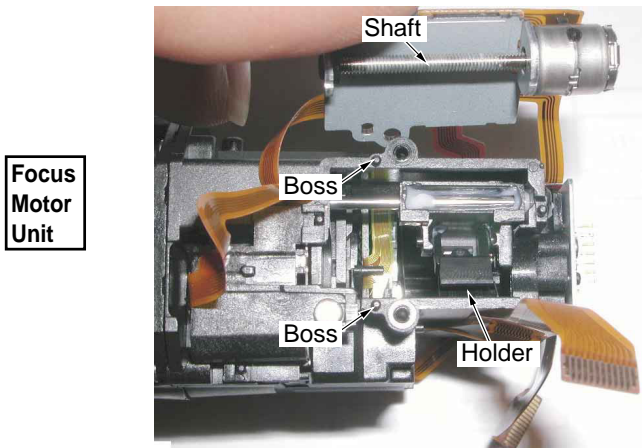
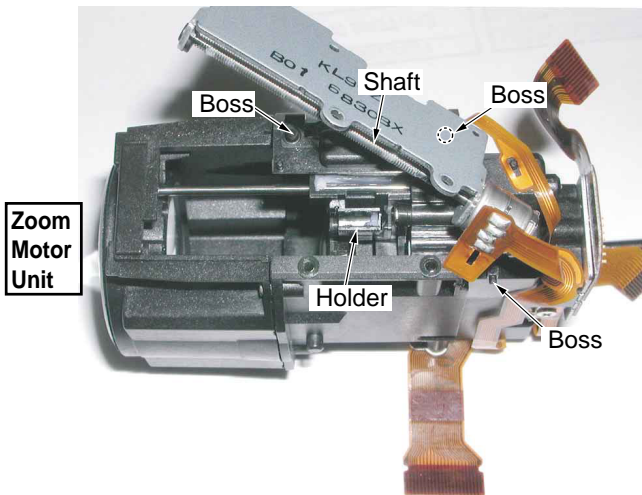


Fig. D14

16. Installation of EVF Backlight F.P.C., EVF Spring, EVF Base Frame and EVF Earth Plate

Take care not to damage the F.P.C. and the Switch.

- 1) Insert the EVF Backlight F.P.C. into the slot and secure it with the 2 pins. Then, pass it through the hole.
- 2) Install the EVF Spring with the 2 Locking Tabs (L-2), and tighten the Screw (519).
- 3) Connect the EVF Backlight F.P.C. to Connector FP8901, and install the EVF Base Frame so that the ribs are inserted into the slots.
- 4) Install the EVF Earth Plate with the boss, the pin, and the 2 Locking Tabs (L-1). Then, tighten the 2 Screws (519).
- 5) After installing, verify the EVF moves correctly.

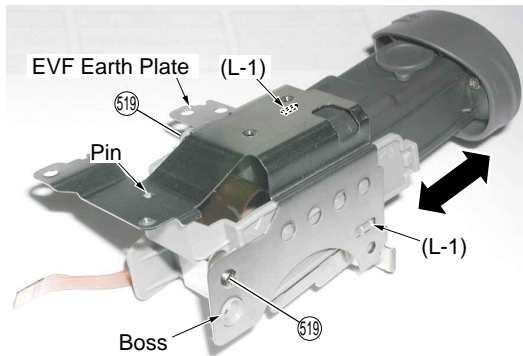
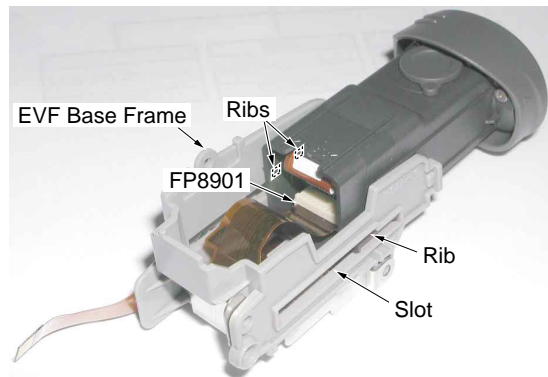
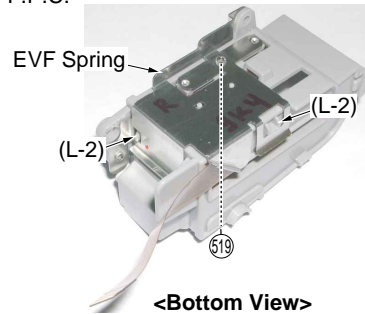
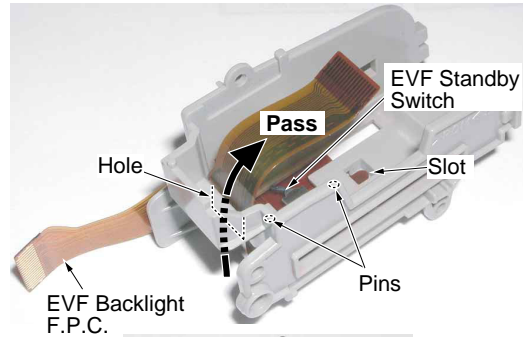


Fig. D15

17. Removal of Eye Cap

Remove the Eye Cap after removing the 2 Screws (533).

18. Handling Cautions of EVF Lens Unit

Use extreme care when handling the EVF Lens Unit to avoid damage, dust, and spots (especially fingerprints, etc.)

Installation of EVF Lens Unit, Eye Sight Lever

- 1) Install the Eye Sight Lever into the EVF Case hole in the direction shown.
- 2) Install the EVF Lens Unit into the EVF Case.
- 3) After installing, verify the Eye Sight Lever and the EVF Lens Unit work together correctly.

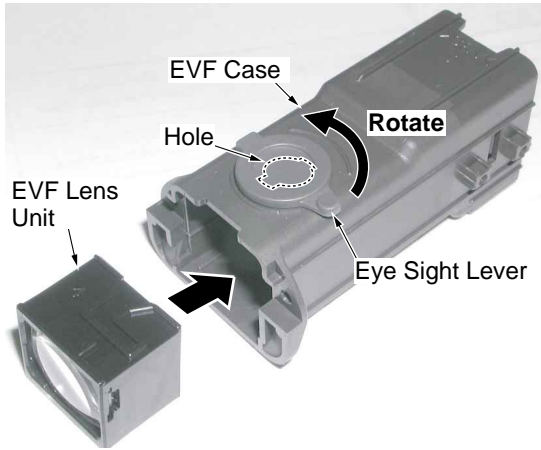


Fig. D16

7.2. Mechanism Section

No.	Item / Part	Fig.	Removal (Screw, Connector, Flex. & Other)
1	Cassette Up Unit	Fig. M1 Fig. M2	Move the mechanism into Eject position (For Battery) 4-Tabs
2	Cylinder Unit	Fig. M3	1-Screw (A) 3-Screw (B)

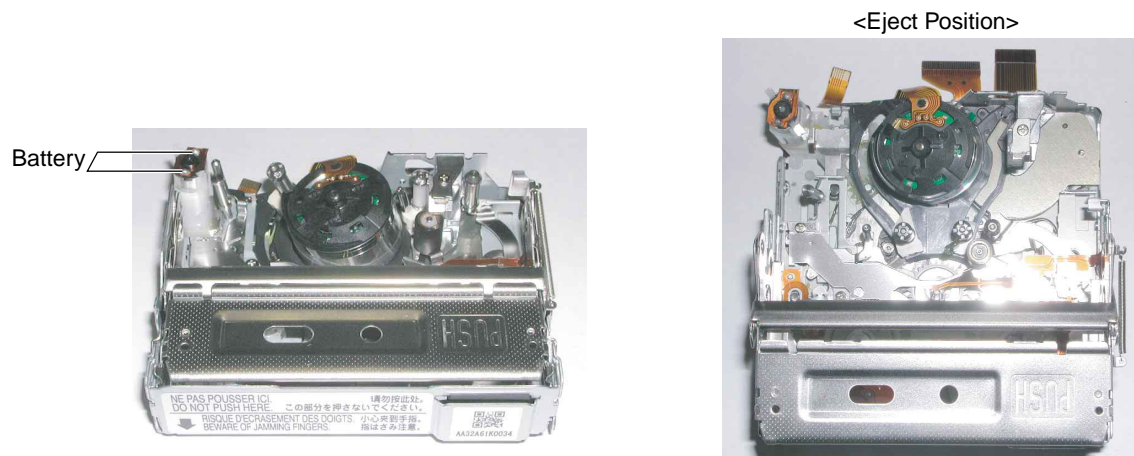


Fig. M1

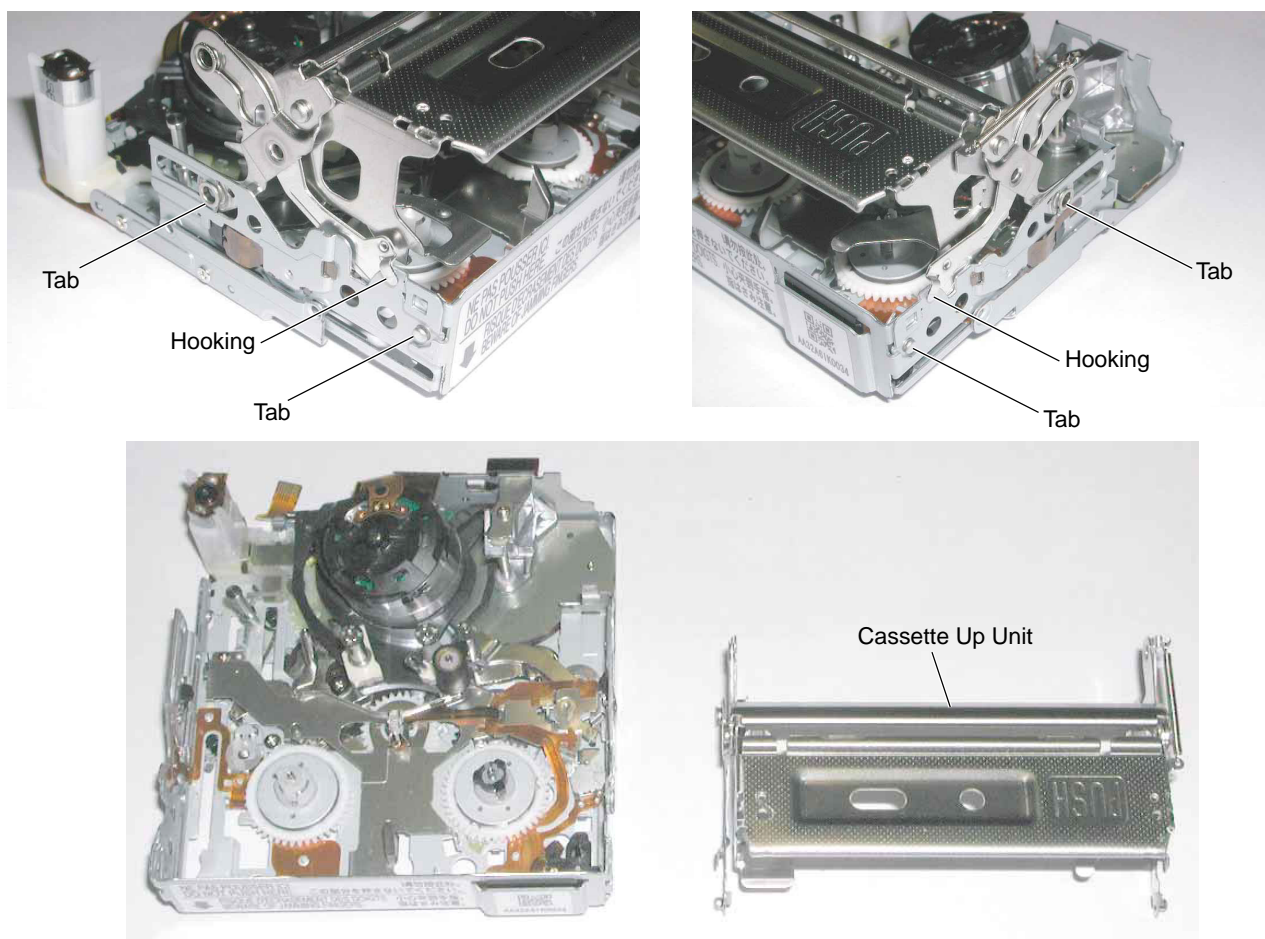


Fig. M2

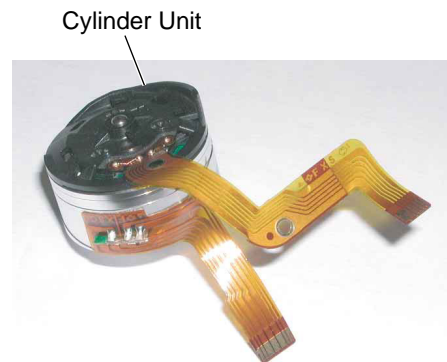
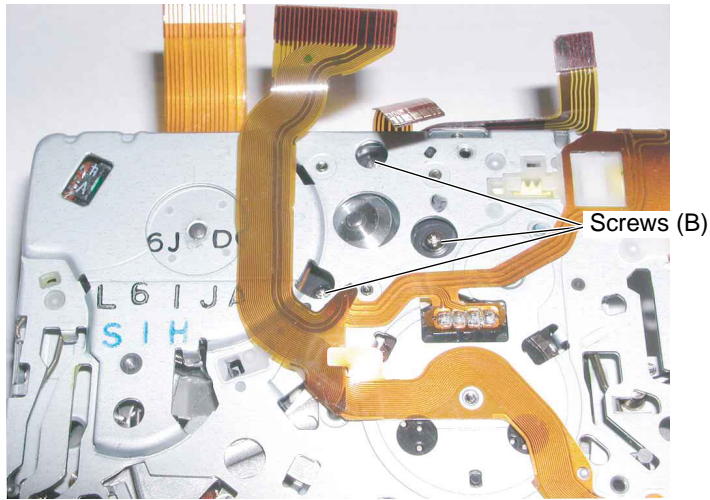


Fig. M3

8 Measurements and Adjustments

8.1. Mechanical Adjustment

8.1.1. ENVELOPE OUTPUT ADJUSTMENT

When replacing the Main Chassis Unit or the Cylinder Unit, be sure to perform the Envelope Output Adjustment as shown below.

1. Remove the Bottom Case Unit. (Refer to "Disassembly and Assembly Instructions")
2. Connect the oscilloscope to TP3922 (Envelope) and TP3921 (HID) on the Main P.C.B.
3. Play back the Color Bar Standard Tape (VFM3110EDS). "Envelope" and "HID" signal will be output.
4. Adjust the S1 post by turning the top of post with Post Height Adjustment Fixture (VFK1899) so that the left half of envelope signal becomes as flat as possible.
5. Adjust the T1 post by turning the top of post with Post Height Adjustment Fixture (VFK1899) so that the right half of envelope signal becomes as flat as possible.

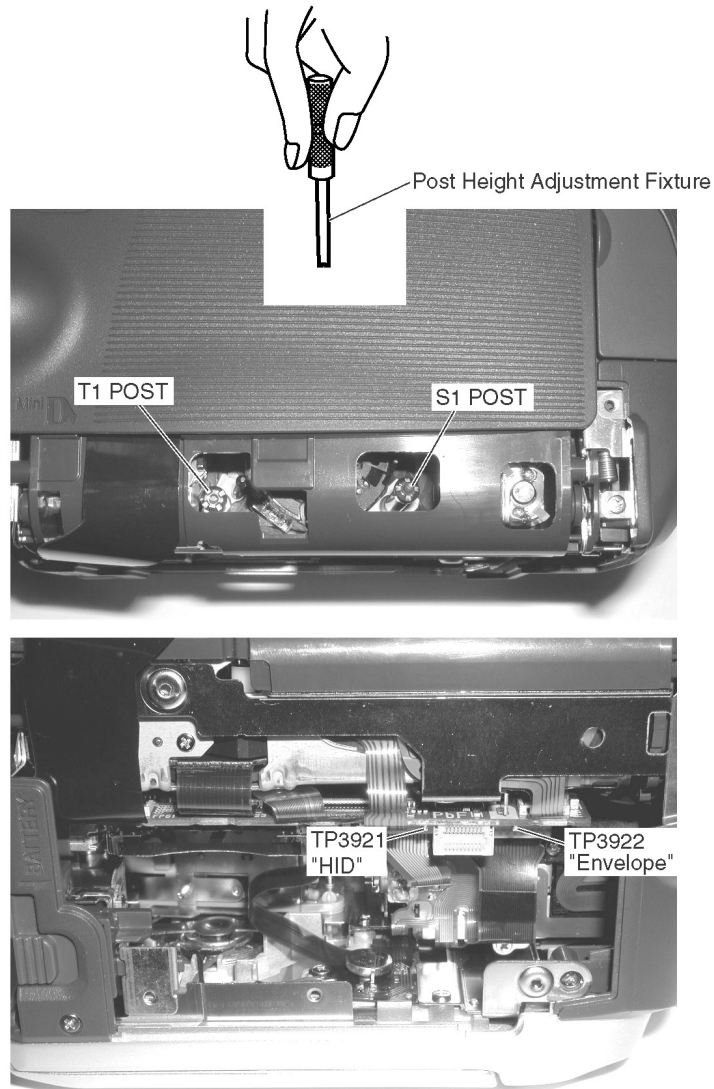


Fig. E1-1

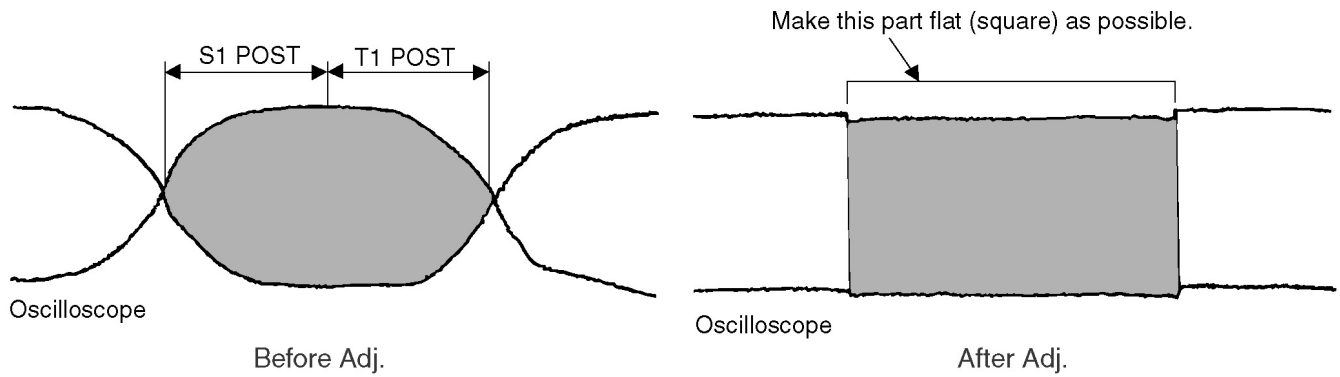
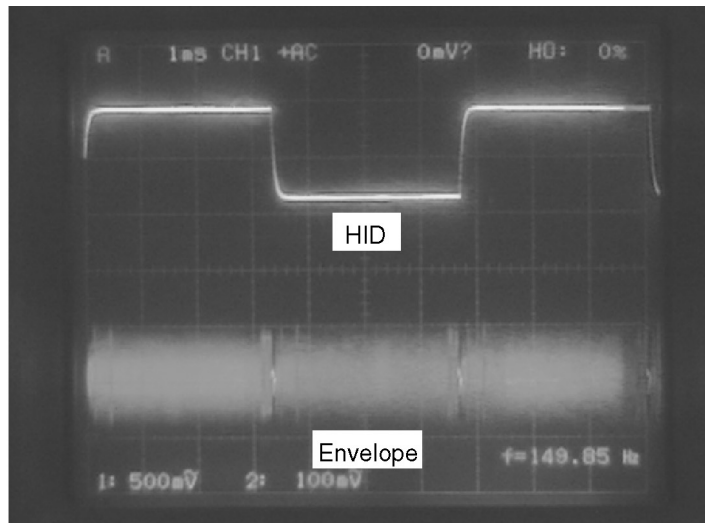


Fig. E1-2

Note:

After the adjustment, be sure to confirm BER (Bit Error Ratio) using EVR Adjustment Software. If it is NG, try this adjustment once again.

8.2. Electrical Adjustment

8.2.1. Initial Guideline

The table below shows which adjustments are necessary according to the unit parts and individual parts to be replaced. Make sure to perform these adjustments shown below as necessary.

Adjustment Item		Replacement Parts									
		MAIN P.C.B.	IC302 (CAMERA SIGNAL PROCESS)	IC701 (FOCUS/ZOOM MOTOR DRIVE & OIS/IRIS/HALL AMP CONTROL)	IC3001 (CAMERA DIGITAL SIGNAL PROCESS/SHUFFLING)	IC3301 (VIDEO/AUDIO SIGNAL PROCESS)	IC6001 (SYSTEM MICROCONTROLLER)	IC6003 (EEPROM)	CCD P.C.B.	LENS UNIT	CYLINDER UNIT
Camera	CAM hall amplifier and Iris PWM	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	CAM Zoom Tracking and De-focus	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	CAM WB coarse	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	CAM AWB 3100	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	CAM AWB 5100	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	CAM Revision CCD scrach	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Video	VCR Sensitivity adj of Tape sensors	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	VCR PG shifter adjustment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	VCR Luminance level	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	VCR Chroma level	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Note: : Adjustment Item

8.2.2. Installation of USB-SERIAL driver

Execute the "Setup.exe" file in "ComMass" folder by double clicking to install the USB-SERIAL driver.

8.2.3. COM Mode

If a Disc or SD Card is inserted, remove before operation.

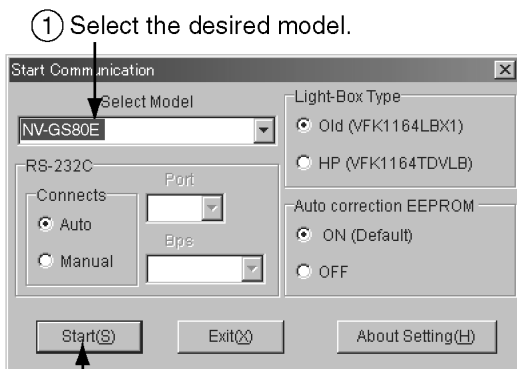
To enter the PC connection (COM) mode, push the [PHOTO SHOT], [RECORDING START/STOP] and [JOYSTICK CONTROL UP] simultaneously for 3 seconds with the USB Cable disconnected.



<LCD Monitor>

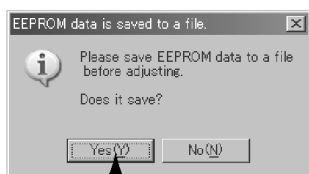
8.2.4. SET UP OF PC-EVR ADJUSTMENT PROGRAM

1. Turn on the PC and install the PC-EVR Adjustment Program into the PC.
2. Execute the "kdv2007.exe" file by double clicking to start up the PC-EVR Adjustment Program.
The main menu will be displayed.
3. Select the appropriate model.
4. Turn on the camcorder and set to PC connection (COM) mode. Then click "Start".



② Click to start.

5. When the communication is complete, the following dialog will appear.
Click "Yes," and "Save" to save the EEPROM data.



③ Click.

Fig. E2-2

6. When EEPROM data has been saved, the menu will appear.

To perform each adjustment, display the adjustment menu by selecting from "Camera Adjust" or "VCR Adjust" and select each adjustment item.

④ Select the desired menu.

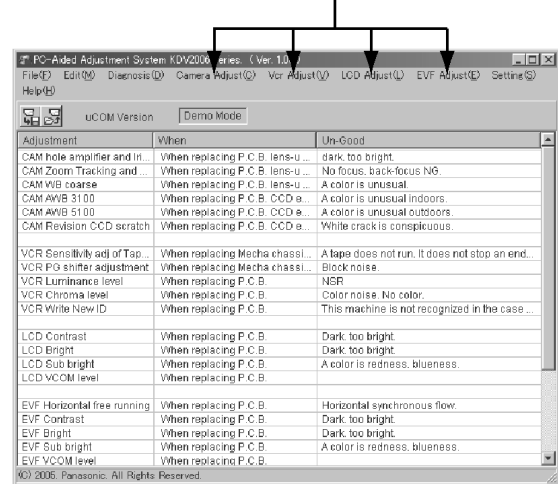


Fig. E2-3

Note:

The adjusted data is stored in the EEPROM IC after each adjustment.

7. After adjustment, to close the software, select "Exit" in the File menu or close the window.

⑤ Select "Exit" or close the window.

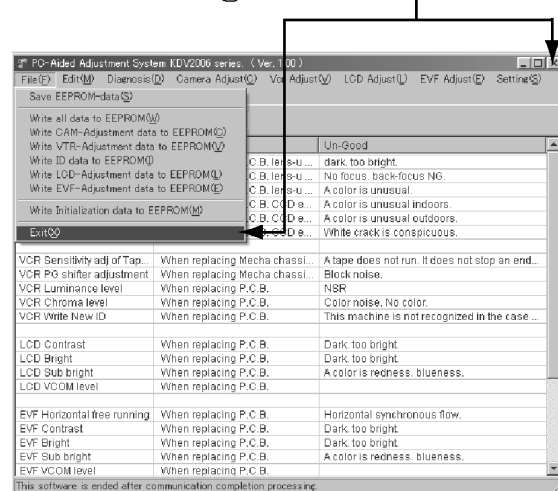


Fig. E2-4

8. To release the PC connection (COM) mode, push the [PHOTO SHOT], [RECORDING START/STOP] and [JOYSTICK CONTROL UP] simultaneously for 3 seconds with the USB Cable disconnected.

9 Maintenance

9.1. Cleaning Lens, Viewfinder and LCD Panel

Do not touch the surface of the lens, Viewfinder and LCD Panel with your hand.

When cleaning the lens, use air-blower to blow off the dust.

When cleaning the LCD Panel, dampen the lens cleaning paper with lens cleaner, and gently wipe the surface.

Note:

Lens cleaning paper and lens cleaner are available at camera shops, etc.

9.2. How to use the DVC Head Cleaning Tape / VFK1451

Please use the cleaning tape as described below.

Note: This cleaning tape has a total playback time of 2 minutes 30 seconds. it can be used 30 times.

1. Confirm the picture.

NG ↓

2. Playback the cleaning tape for 20 seconds.

3. Confirm the picture again.

OK →

NG ↓

4. Playback the cleaning tape for 20 seconds.

OK →

5. Confirm the picture again.

NG ↓

6. Playback the cleaning tape for 20 seconds.

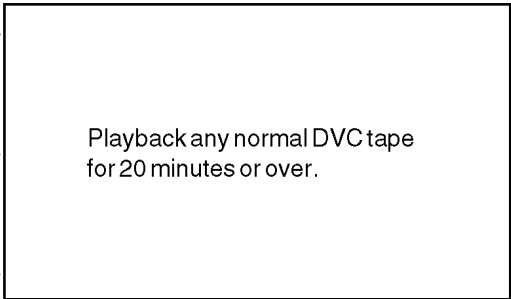
OK →

7. Confirm the picture again.

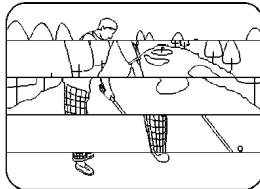
NG ↓

8. Replace the Cylinder Unit

OK ←

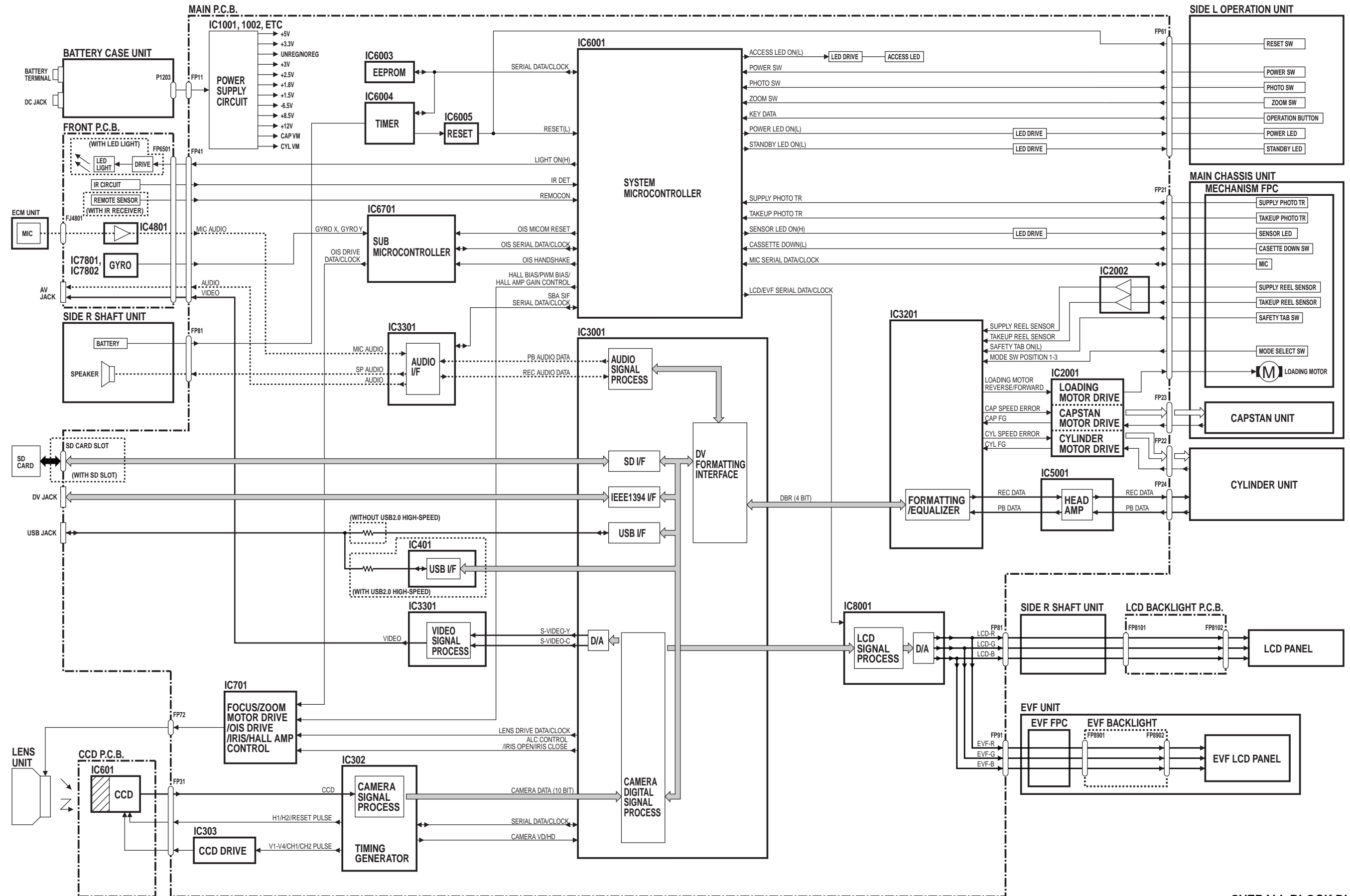


The picture will look like this in case of clogged video head.



10 Block Diagrams

OVERALL BLOCK DIAGRAM




OVERALL BLOCK DIAGRAM
NV-GS80EG/EF/E/EP/EB/EK/EE, NV-GS85GC/EE, NV-GS88GK

11 Schematic Diagrams

11.1. SCHEMATIC DIAGRAM & CIRCUIT BOARD LAYOUT NOTES

1. Important safety notice

Components identified by the sign  have special characteristics important for safety. When replacing any of these components, use only the specified parts.

2. Do not use the part numbers shown on these drawings for ordering.

The correct part number and part value is shown in the parts list, and may be slightly different or amended since this drawing was prepared.


3. Use only original replacement parts:

To maintain original function and reliability of repaired units, use only original replacement parts which are listed with their part numbers in the parts list section of the service manual.

4. Parts different in shape or size may be used.

However, only interchangeable parts will be supplied as service replacement parts.

5. Test point information

 : Test point with no test pin.

Schematic Diagram Notes

1. Indication for Zener Voltage of Zener Diodes

The Zener Voltages of Zener Diodes are indicated as such on Schematic Diagrams.

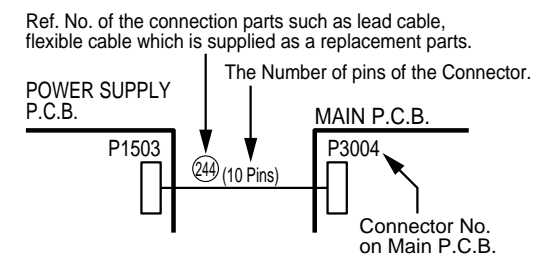
Example:
(6.2V).....Zener Voltage

2. How to identify Connectors

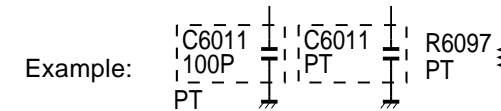
Each connector is labeled with a Connector No. and Pin No. Indicating what it is connected to (its counter part). Use the interconnection schematic diagram to find the connection between associated connectors.

Example:

The connections between two P.C.B.s are shown below.

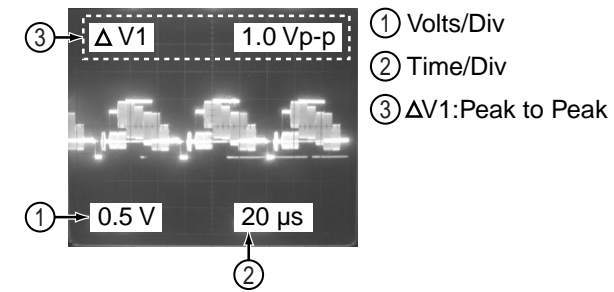


3. Parts marked "PT" are not used in any models included in this service model.



Signal Waveform Note

How to read Signal Waveform



Voltage Chart Note

Voltage Measurement

- Color bar signal in SP mode.
- :Unmeasurable or not necessary to measure.

Circuit Board Layout Note

Circuit Board Layouts show components installed for various models.

For proper parts content for the model you are servicing, please refer to the schematic diagram and parts list.

NOTE:

Circuit Board Layouts include components which are not used.

Model Number Indication

Model numbers are indicated without "NV-GS."

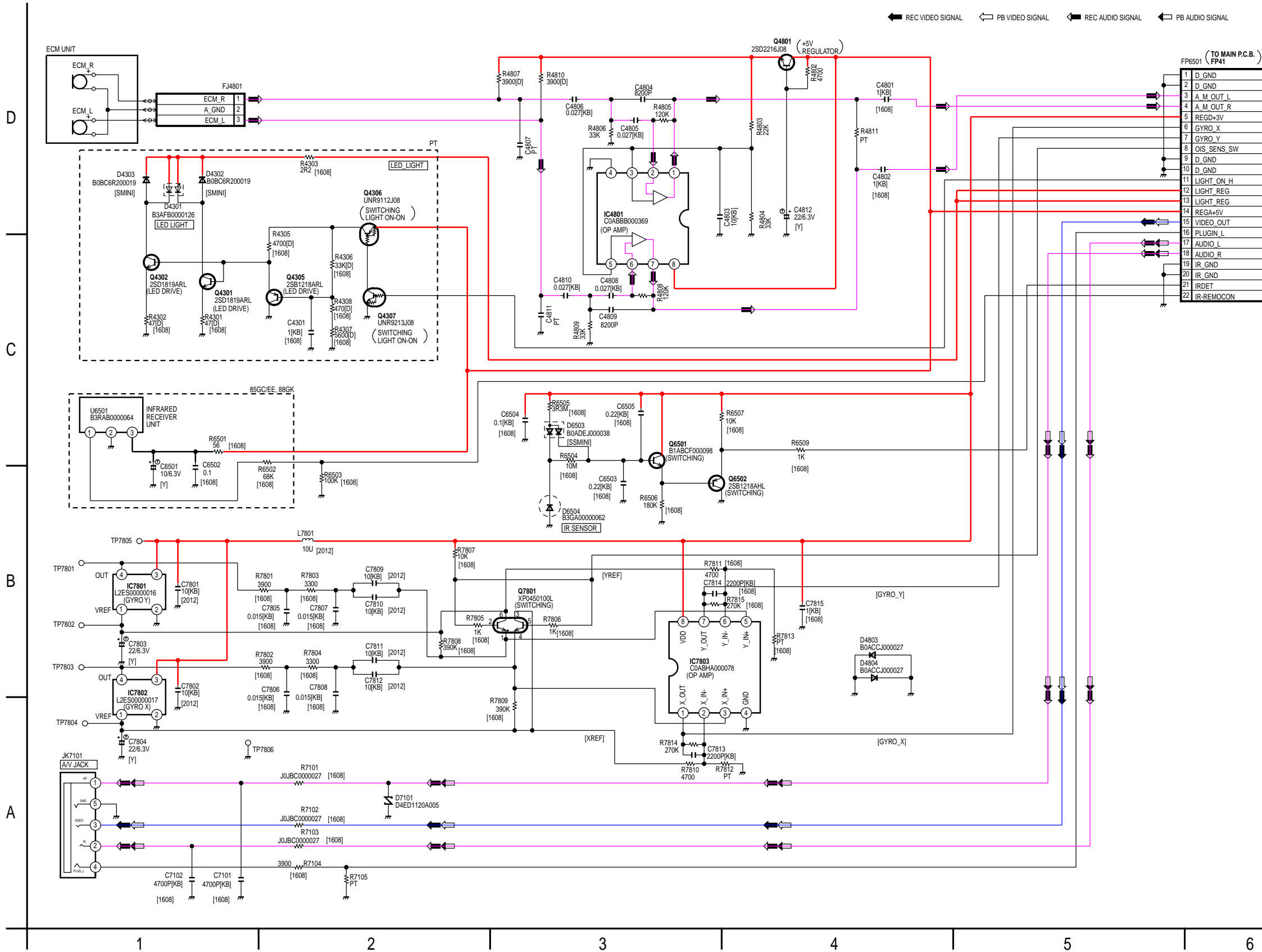
11.2. FRONT SCHEMATIC DIAGRAM

FRONT SCHEMATIC DIAGRAM

NOTE: For placing a purchase order of the parts, be sure to use the part number listed in the parts list. Do not use the part number on this diagram.

NOTE: PARTS MARKED "PT" ARE NOT USED.

NOTE: FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES, REFER TO BEGINNING OF SCHEMATIC SECTION.



11.3. LCD BACKLIGHT SCHEMATIC DIAGRAM

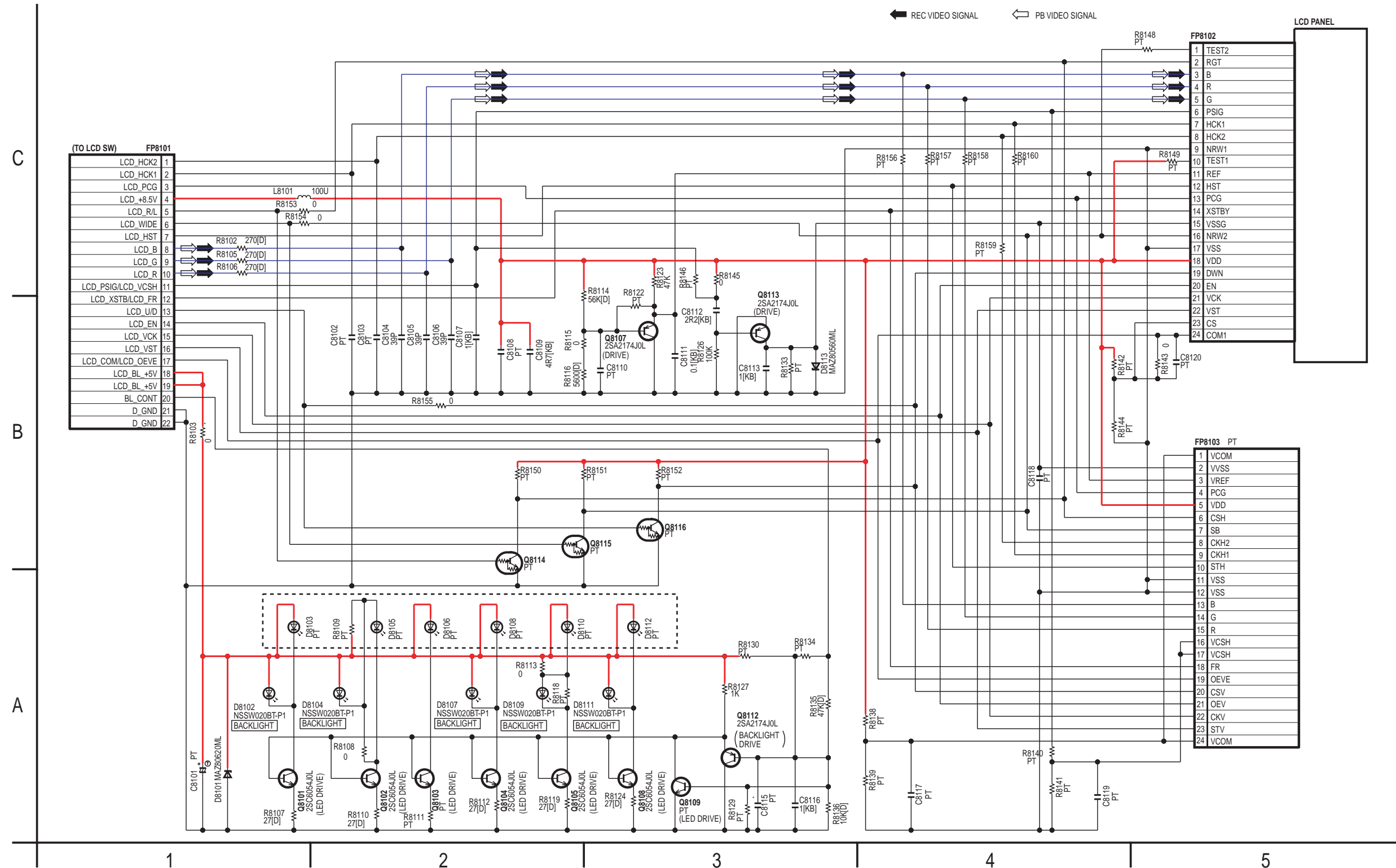
LCD BACKLIGHT SCHEMATIC DIAGRAM

NOTE:
ALL INDIVIDUAL PARTS EXCEPT D8102, D8104, D8107, D8109 AND D8111 ON LCD BACKLIGHT P.C.B. ARE SUPPLIED AS REPLACEMENT PARTS. WHEN SERVICING THESE PARTS, REPLACE LCD BACKLIGHT P.C.B. INSTEAD OF INDIVIDUAL PARTS.

NOTE: For placing a purchase order of the parts, be sure to use the part number listed in the parts list. Do not use the part number on this diagram.

NOTE: PARTS MARKED "PT" ARE NOT USED.

NOTE: FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES, REFER TO BEGINNING OF SCHEMATIC SECTION.



11.4. EVF BACKLIGHT / EVF FPC / BATTERY CASE SCHEMATIC DIAGRAMS

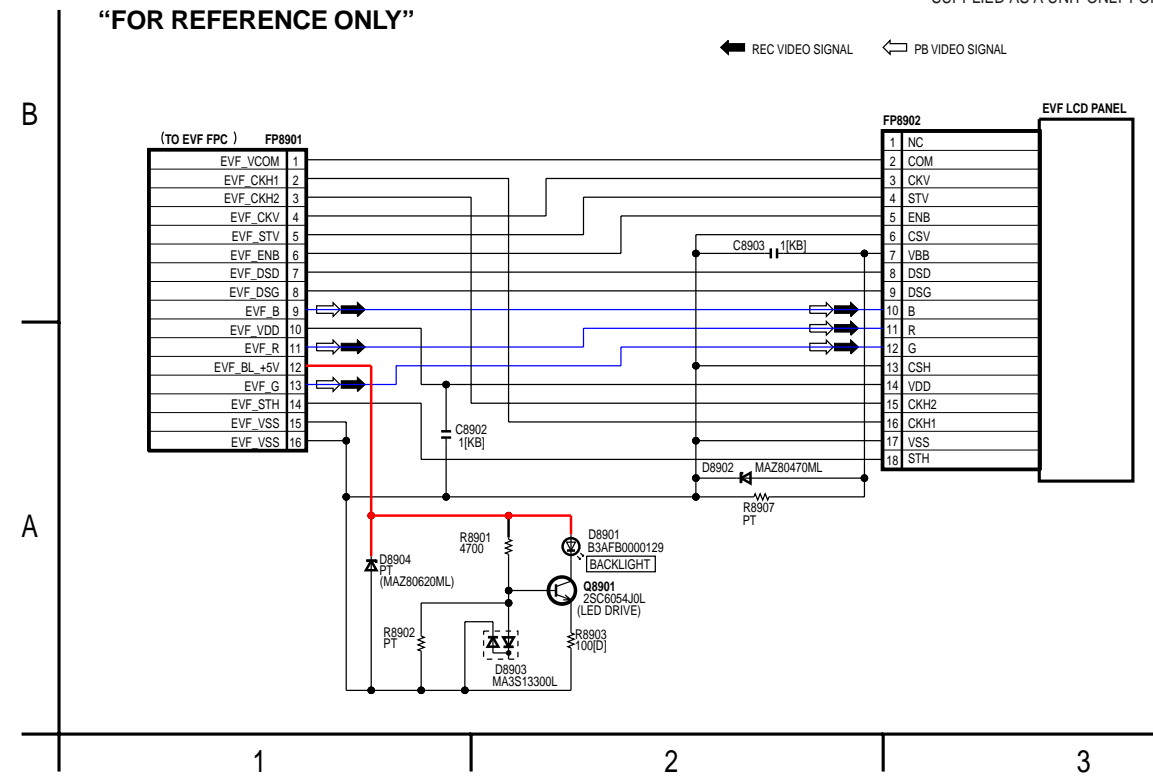
NOTE: For placing a purchase order of the parts, be sure to use the part number listed in the parts list. Do not use the part number on this diagram.

NOTE: PARTS MARKED "PT" ARE NOT USED.

NOTE: FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES, REFER TO BEGINNING OF SCHEMATIC SECTION.

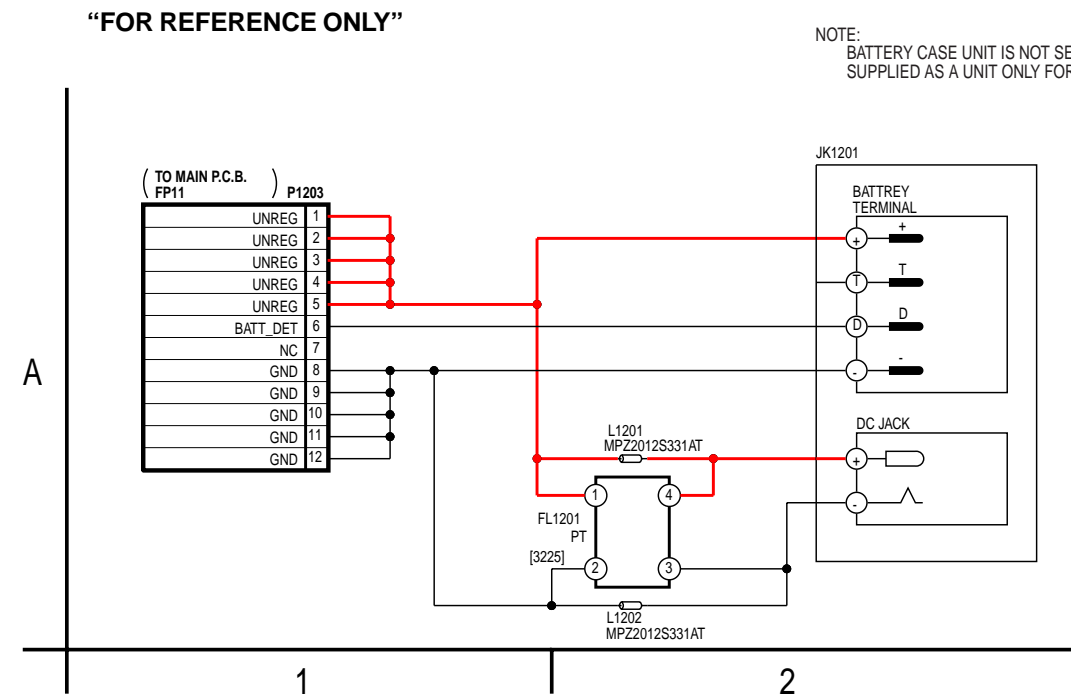
EVF BACKLIGHT SCHEMATIC DIAGRAM

NOTE: EVF BACKLIGHT IS NOT SERVICEABLE AND IS SUPPLIED AS A UNIT ONLY FOR REPLACEMENT.



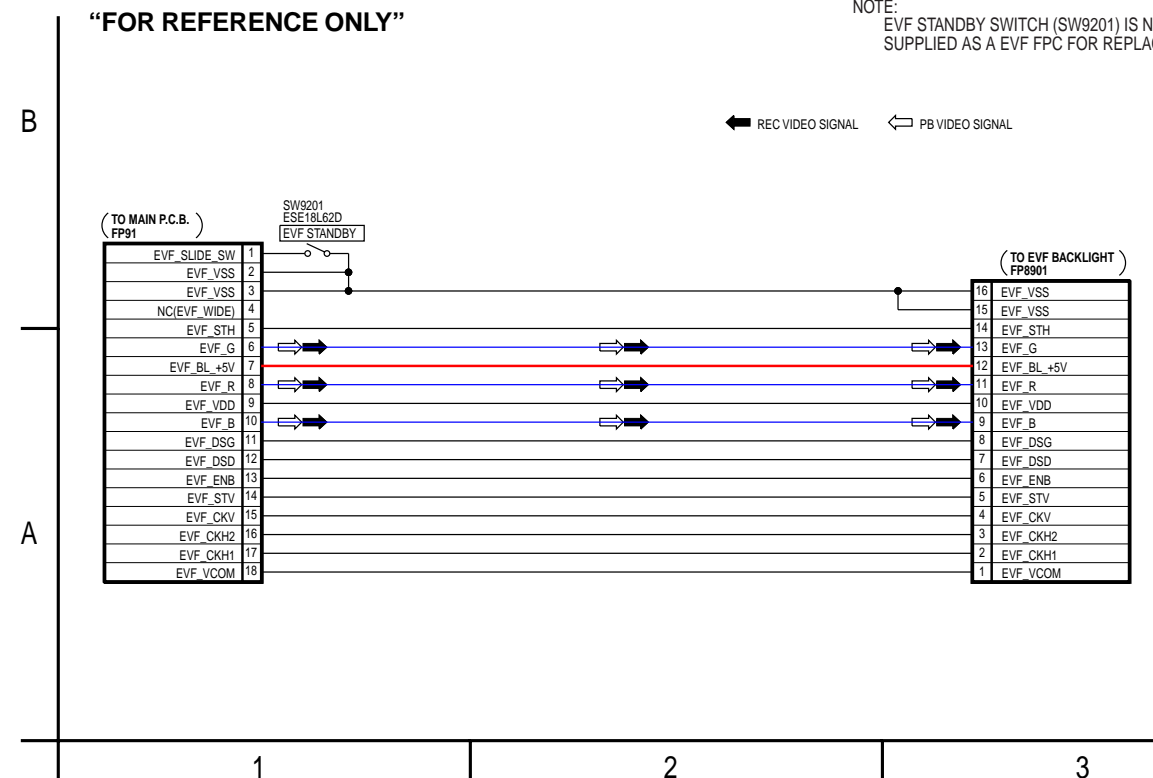
BATTERY CASE SCHEMATIC DIAGRAM

NOTE: BATTERY CASE UNIT IS NOT SERVICEABLE AND IS SUPPLIED AS A UNIT ONLY FOR REPLACEMENT.



EVF FPC SCHEMATIC DIAGRAM

NOTE: EVF STANDBY SWITCH (SW9201) IS NOT SERVICEABLE AND IS SUPPLIED AS A EVF FPC FOR REPLACEMENT.



EVF BACKLIGHT SCHEMATIC DIAGRAM
 EVF FPC SCHEMATIC DIAGRAM
 BATTERY CASE SCHEMATIC DIAGRAM
 NV-GS80EG/EF/E/EP/EB/EK, NV-GS85GC/EE, NV-GS88GK

11.5. CCD / SIDE L OPERATION / LCD SW SCHEMATIC DIAGRAMS

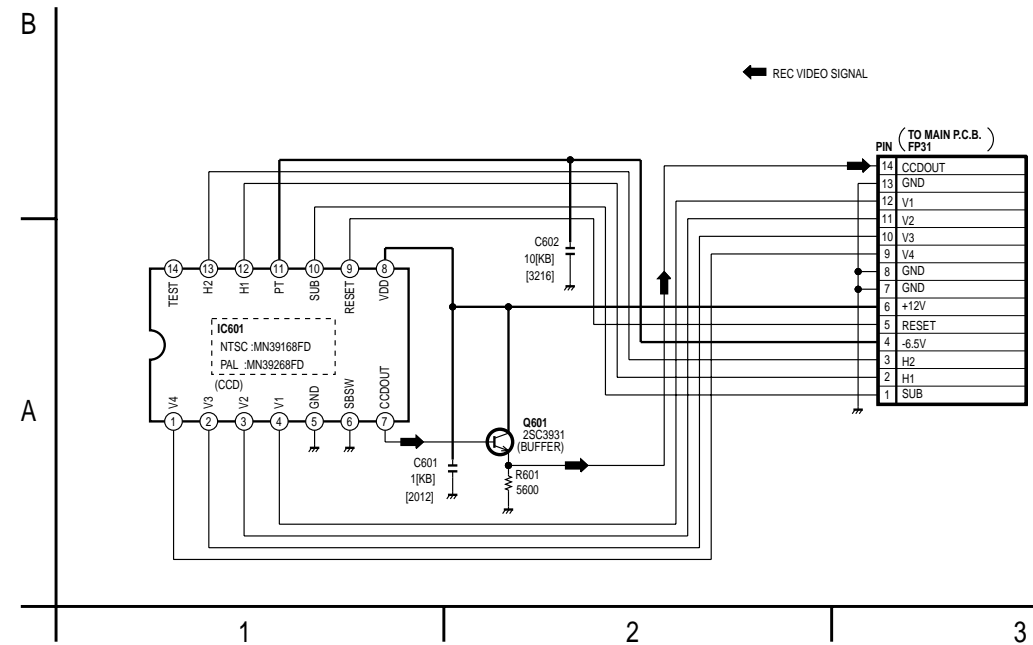
NOTE: For placing a purchase order of the parts, be sure to use the part number listed in the parts list. Do not use the part number on this diagram.

NOTE: PARTS MARKED "PT" ARE NOT USED.

NOTE: FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES, REFER TO BEGINNING OF SCHEMATIC SECTION.

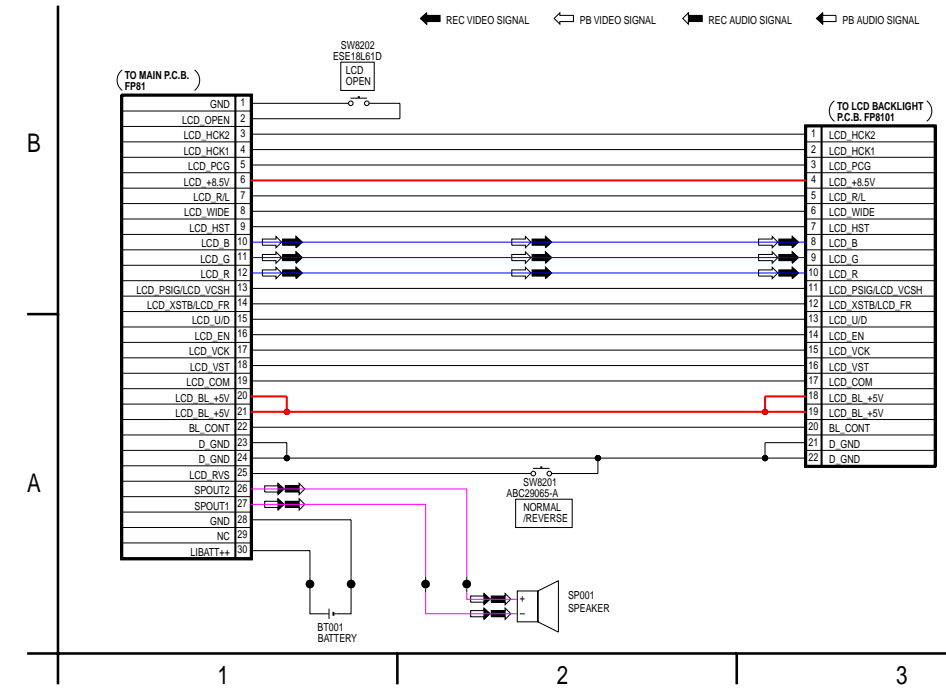
CCD SCHEMATIC DIAGRAM
"FOR REFERENCE ONLY"

NOTE: CCD P.C.B. IS NOT SERVICEABLE AND IS SUPPLIED AS A UNIT ONLY FOR REPLACEMENT.



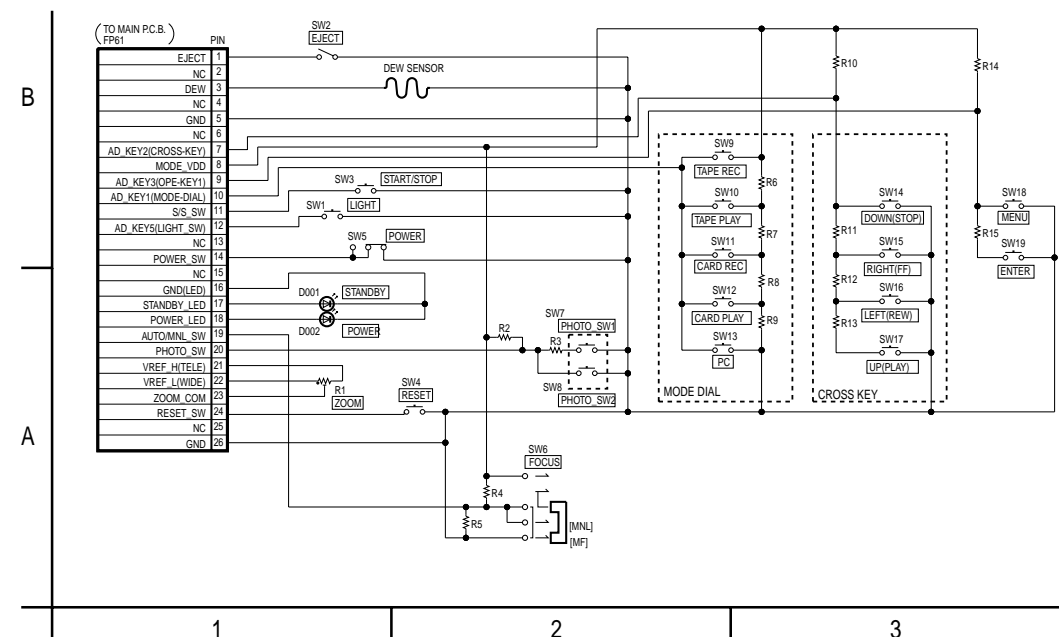
LCD SW SCHEMATIC DIAGRAM
"FOR REFERENCE ONLY"

NOTE: LCD SW IS NOT SERVICEABLE AND IS SUPPLIED AS A UNIT ONLY FOR REPLACEMENT.



SIDE L OPERATION SCHEMATIC DIAGRAM
"FOR REFERENCE ONLY"

NOTE: SIDE L OPERATION UNIT IS NOT SERVICEABLE AND IS SUPPLIED AS A UNIT ONLY FOR REPLACEMENT.



CCD SCHEMATIC DIAGRAM
SIDE L OPERATION SCHEMATIC DIAGRAM
SIDE R SHAFT SCHEMATIC DIAGRAM
NV-GS80EG/EF/E/EP/EB/EK, NV-GS85GC/EE, NV-GS88GK

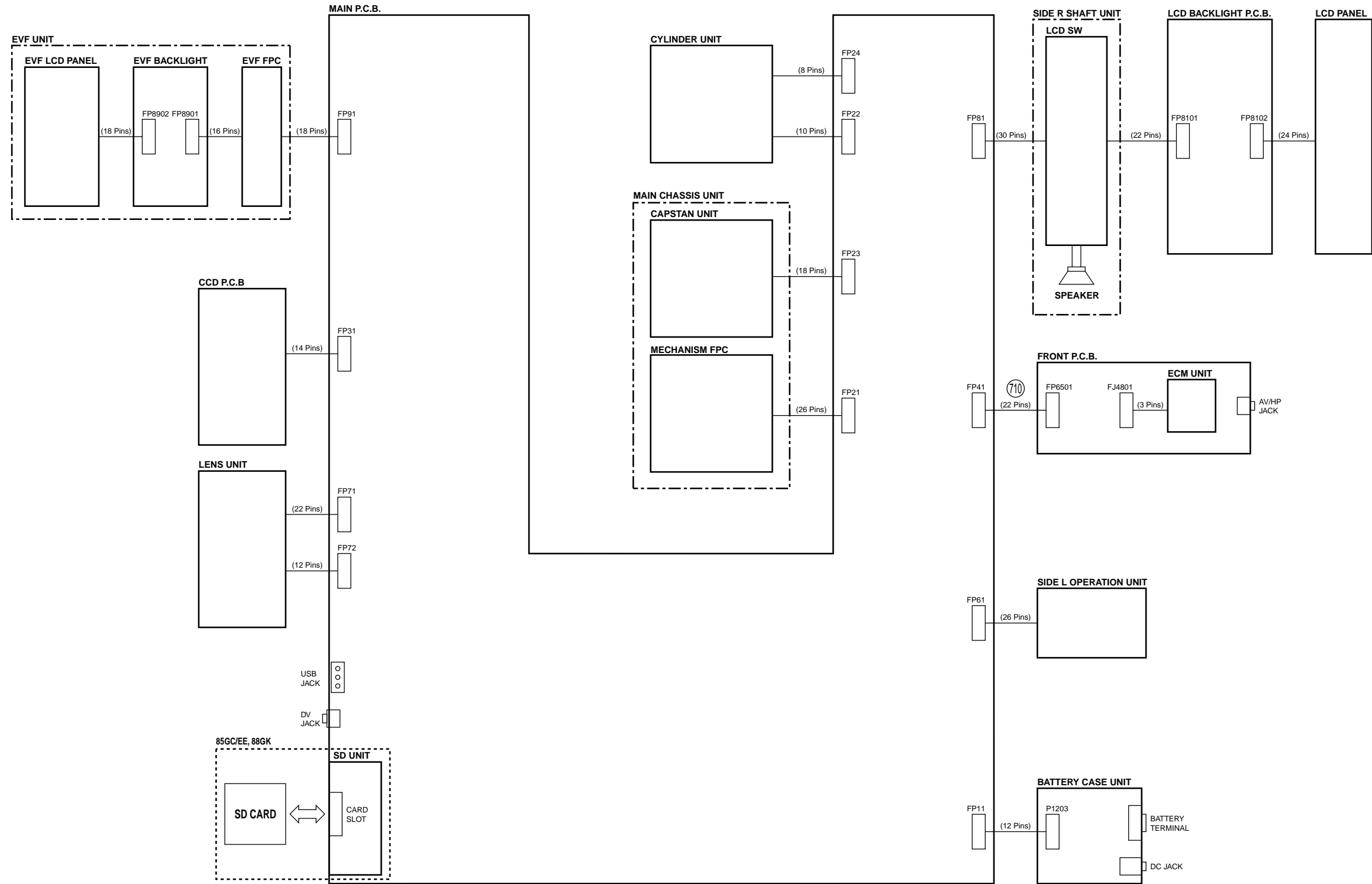
11.6. INTERCONNECTION SCHEMATIC DIAGRAM

INTERCONNECTION SCHEMATIC DIAGRAM

NOTE: For placing a purchase order of the parts, be sure to use the part number listed in the parts list. Do not use the part number on this diagram.

NOTE: PARTS MARKED "PT" ARE NOT USED.

NOTE: FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES, REFER TO BEGINNING OF SCHEMATIC SECTION.



12 Printed Circuit Board

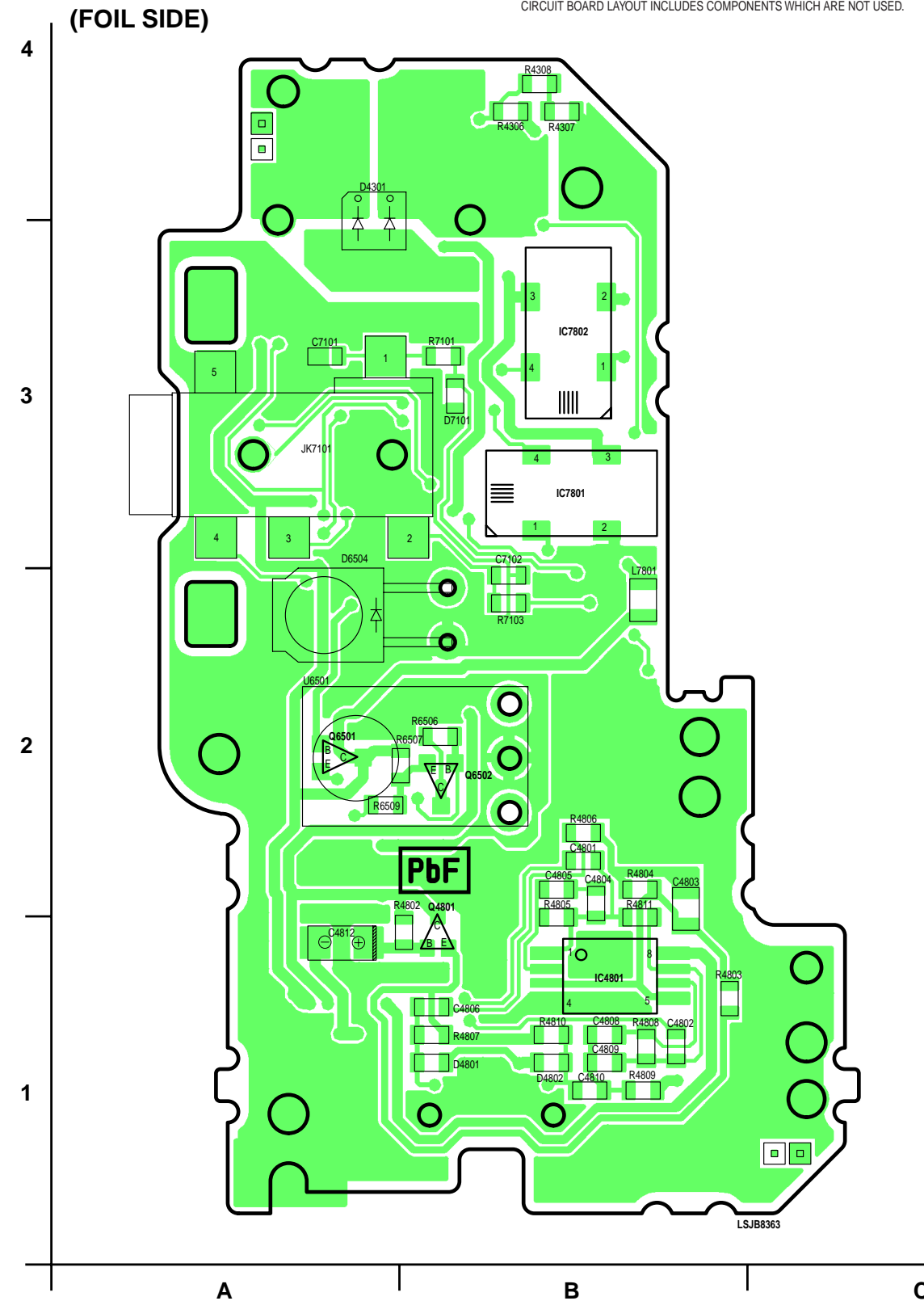
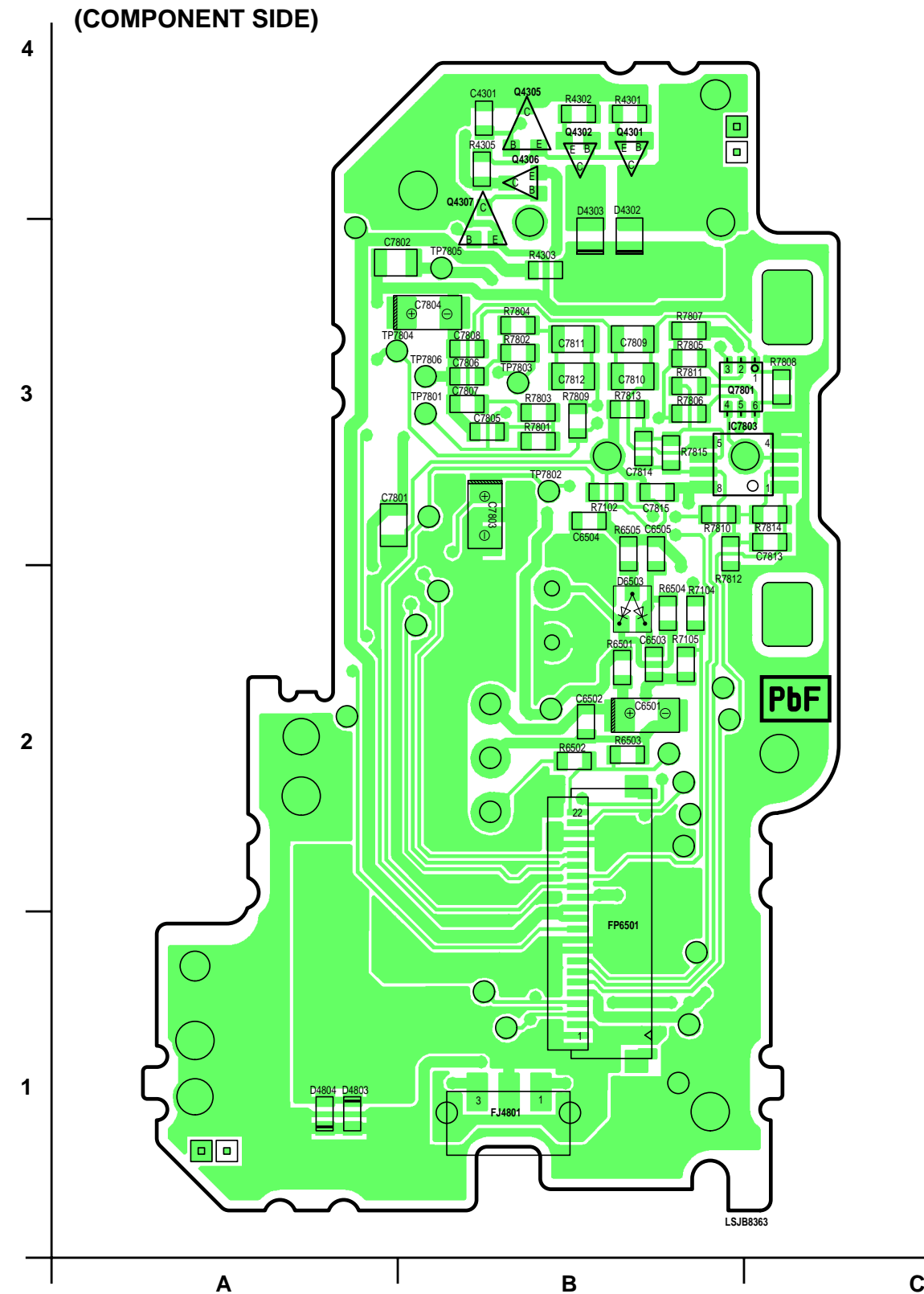
12.1. FRONT P.C.B.

FRONT P.C.B. LSEP8363B1 NV-GS80EG/EF/E/EP/EB/EK/EE
 LSEP8363C1 NV-GS85EE/GC, NV-GS88GK

NOTE:
 FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES,
 REFER TO BEGINNING OF SCHEMATIC SECTION.

NOTE:
 CIRCUIT BOARD LAYOUT SHOWS COMPONENTS INSTALLED FOR VARIOUS MODELS.
 FOR PROPER PARTS CONTENT FOR THE MODEL YOU ARE SERVICING,
 PLEASE REFER TO THE SCHEMATIC DIAGRAM AND PARTS LIST.

NOTE:
 CIRCUIT BOARD LAYOUT INCLUDES COMPONENTS WHICH ARE NOT USED.



Parts Location

FRONT P.C.B.			
Integrated Circuits			
IC4801	B-1	F	C7805 B-3 C
IC7801	B-3	F	C7806 B-3 C
IC7802	B-3	F	C7807 B-3 C
IC7803	B-3	C	C7808 B-3 C
			C7809 B-3 C
			C7810 B-3 C
Transistors			
Q4801	B-2	F	C7811 B-3 C
Q6501	A-2	F	C7812 B-3 C
Q6502	B-2	F	C7813 C-3 C
Q7801	B-3	C	C7814 B-3 C
			C7815 B-3 C
Test Points			
TP7801	B-3	C	
TP7802	B-3	C	
TP7803	B-3	C	
TP7804	B-3	C	
TP7805	B-3	C	
TP7806	B-3	C	
Connectors			
FP6501	B-1	C	
Diodes			
D4803	A-1	C	R4802 B-2 F
D4804	A-1	C	R4803 B-1 F
D6503	B-2	C	R4804 B-2 F
D6504	A-3	F	R4805 B-2 F
D7101	B-3	F	R4806 B-2 F
			R4807 B-1 F
Coil			
L7801	B-2	F	R4808 B-1 F
			R4810 B-1 F
Capacitors			
C4801	B-2	F	R6501 B-2 C
C4802	B-1	F	R6502 B-2 C
C4803	B-2	F	R6503 B-2 C
C4804	B-2	F	R6504 B-2 C
C4805	B-2	F	R6505 B-3 C
C4806	B-1	F	R6506 B-2 F
C4808	B-1	F	R6507 B-2 F
C4809	B-1	F	R6509 A-2 F
C4810	B-1	F	R7101 B-3 F
C4812	A-1	F	R7102 B-3 C
C6501	B-2	C	R7103 B-2 F
C6502	B-2	C	R7801 B-3 C
C6503	B-2	C	R7802 B-3 C
C6504	B-3	C	R7803 B-3 C
C6505	B-3	C	R7804 B-3 C
C7101	A-3	F	R7805 B-3 C
C7102	B-3	F	R7806 B-3 C
C7801	B-3	C	R7807 B-3 C
C7802	B-3	C	R7808 C-3 C
C7803	B-3	C	R7809 B-3 C
C7804	B-3	C	R7810 B-3 C
			R7811 B-3 C
			R7814 C-3 C
			R7815 B-3 C
			Miscellaneous
			JK7101 A-3 F
			U6501 A-2 F

(DUAL PATTERNS)

(DUAL PATTERNS)

FRONT P.C.B.
 LSEP8363B1/LSEP8363C1
 NV-GS80EG/EF/E/EP/EB/EK/EE, NV-GS85GC/EE, NV-GS88GK

12.2. LCD BACKLIGHT P.C.B.

LCD BACKLIGHT P.C.B. LSEP8367A1

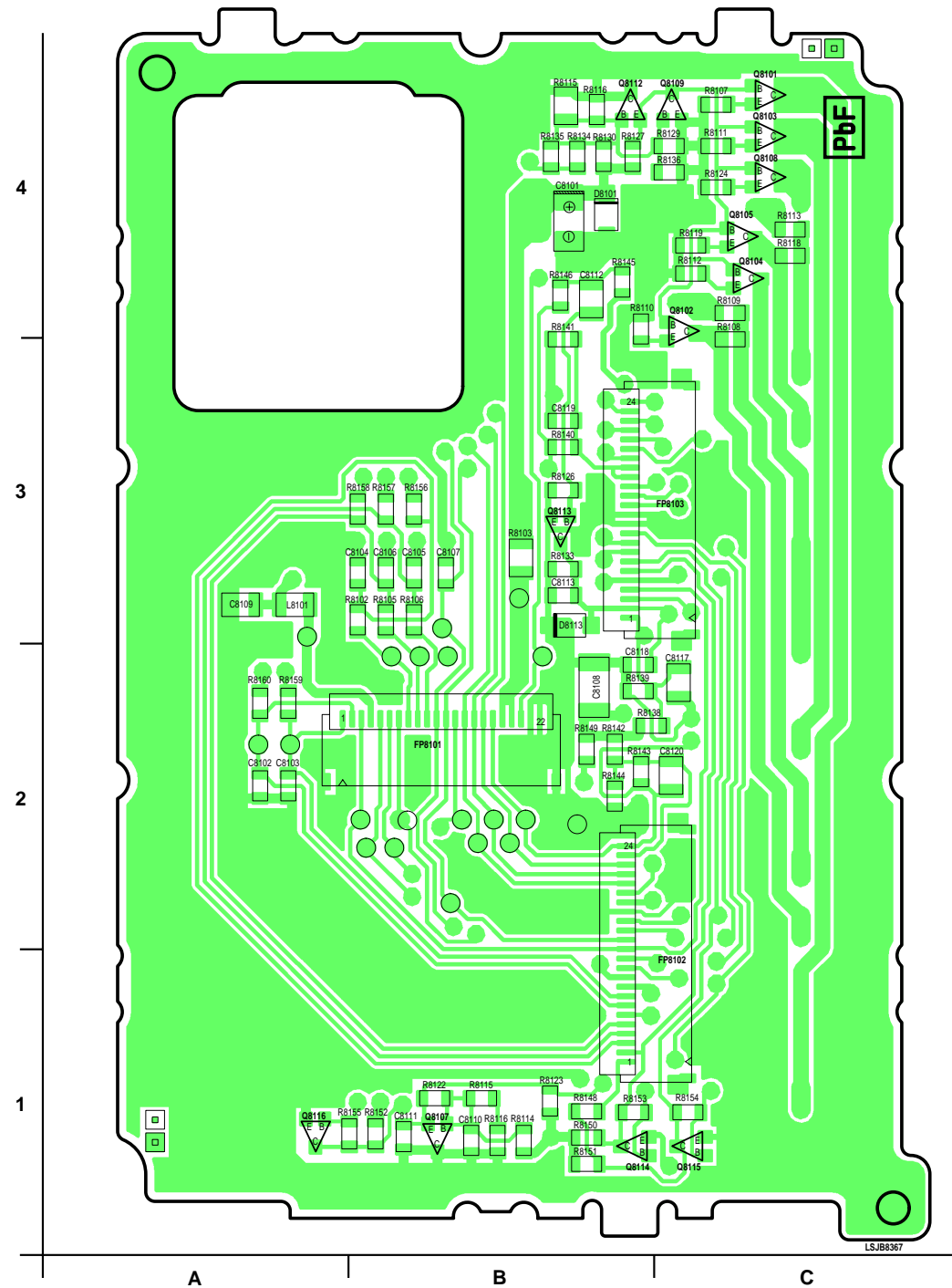
NOTE:
CIRCUIT BOARD LAYOUT SHOWS COMPONENTS INSTALLED FOR VARIOUS MODELS.
FOR PROPER PARTS CONTENT FOR THE MODEL YOU ARE SERVICING,
PLEASE REFER TO THE SCHEMATIC DIAGRAM AND PARTS LIST.

NOTE:
CIRCUIT BOARD LAYOUT INCLUDES COMPONENTS WHICH ARE NOT USED.

NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES,
REFER TO BEGINNING OF SCHEMATIC SECTION.

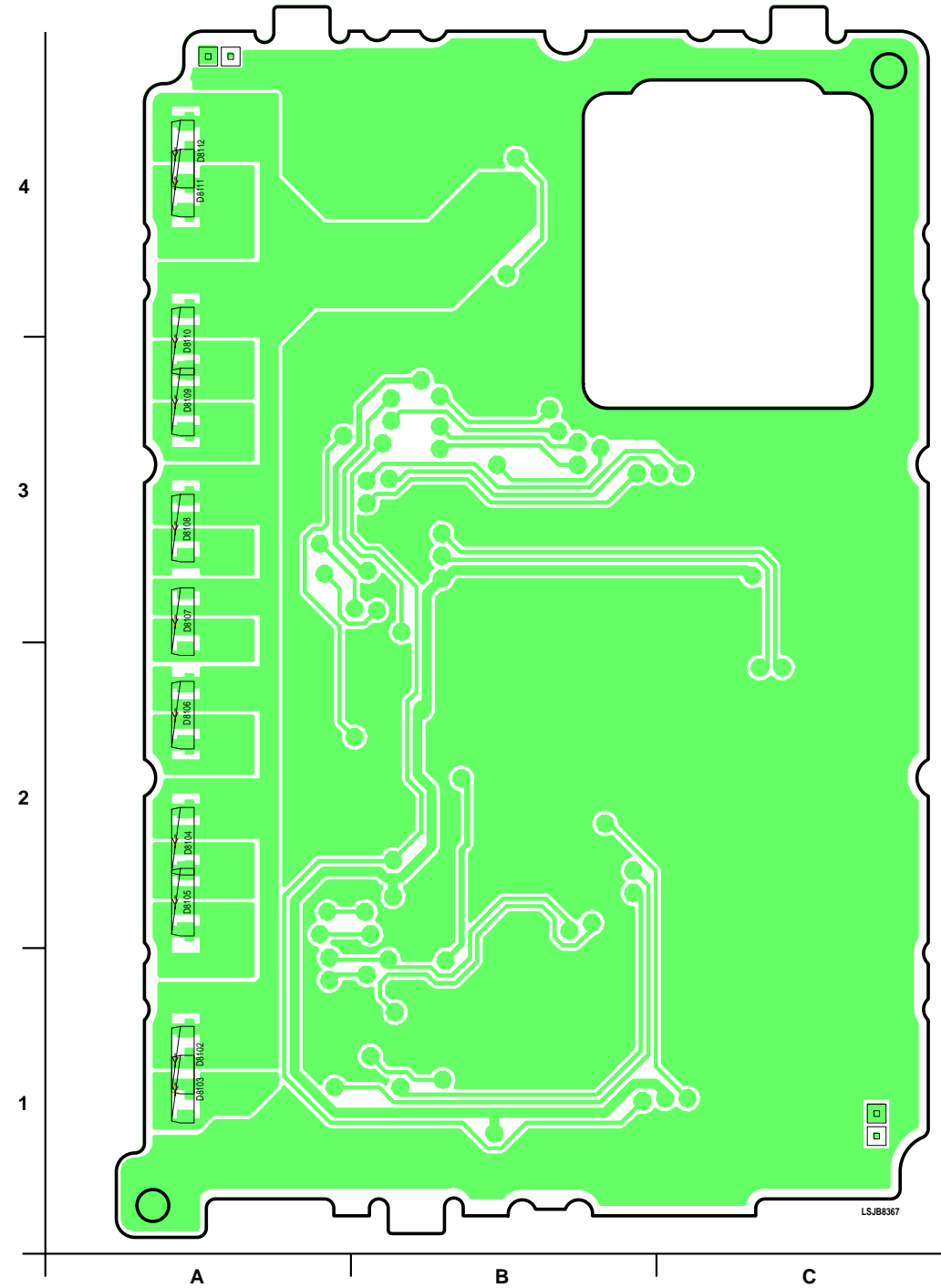
NOTE:
ALL INDIVIDUAL PARTS EXCEPT D8102, D8104, D8107, D8109 AND D8111
ON LCD BACKLIGHT P.C.B. ARE SUPPLIED AS REPLACEMENT PARTS.
WHEN SERVICING THESE PARTS, REPLACE LCD BACKLIGHT P.C.B.
INSTEAD OF INDIVIDUAL PARTS.

(COMPONENT SIDE)



(DUAL PATTERNS)

(FOIL SIDE)



(DUAL PATTERNS)

Parts Location

LCD BACKLIGHT P.C.B.					
Transistors			Resistors		
Q8101	C-4	C	R8102	B-3	C
Q8102	C-4	C	R8103	B-3	C
Q8104	C-4	C	R8105	B-3	C
Q8105	C-4	C	R8106	B-3	C
Q8107	B-1	C	R8107	C-4	C
Q8108	C-4	C	R8108	C-4	C
Q8112	B-4	C	R8110	B-4	C
Q8113	B-3	C	R8112	C-4	C
			R8113	C-4	C
Connectors					
FP8101	B-2	C	R8114	B-1	C
FP8102	C-1	C	R8115	B-1	C
			R8116	B-1	C
Diodes					
D8101	B-4	C	R8119	C-4	C
D8113	B-3	C	R8123	B-1	C
Coil					
L8101	A-3	C	R8124	C-4	C
			R8126	B-3	C
			R8127	B-4	C
Capacitors					
C8104	B-3	C	R8135	B-4	C
C8105	B-3	C	R8136	C-4	C
C8106	B-3	C	R8143	B-2	C
C8107	B-3	C	R8145	B-4	C
C8109	A-3	C	R8153	B-1	C
C8111	B-1	C	R8154	C-1	C
C8112	B-4	C	R8155	B-1	C
C8113	B-3	C			
C8116	B-4	C			


LCD BACKLIGHT P.C.B.
LSEP8367A1
NV-GS80EG/EF/E/EP/EB/EK/EE, NV-GS85GC/EE, NV-GS88GK

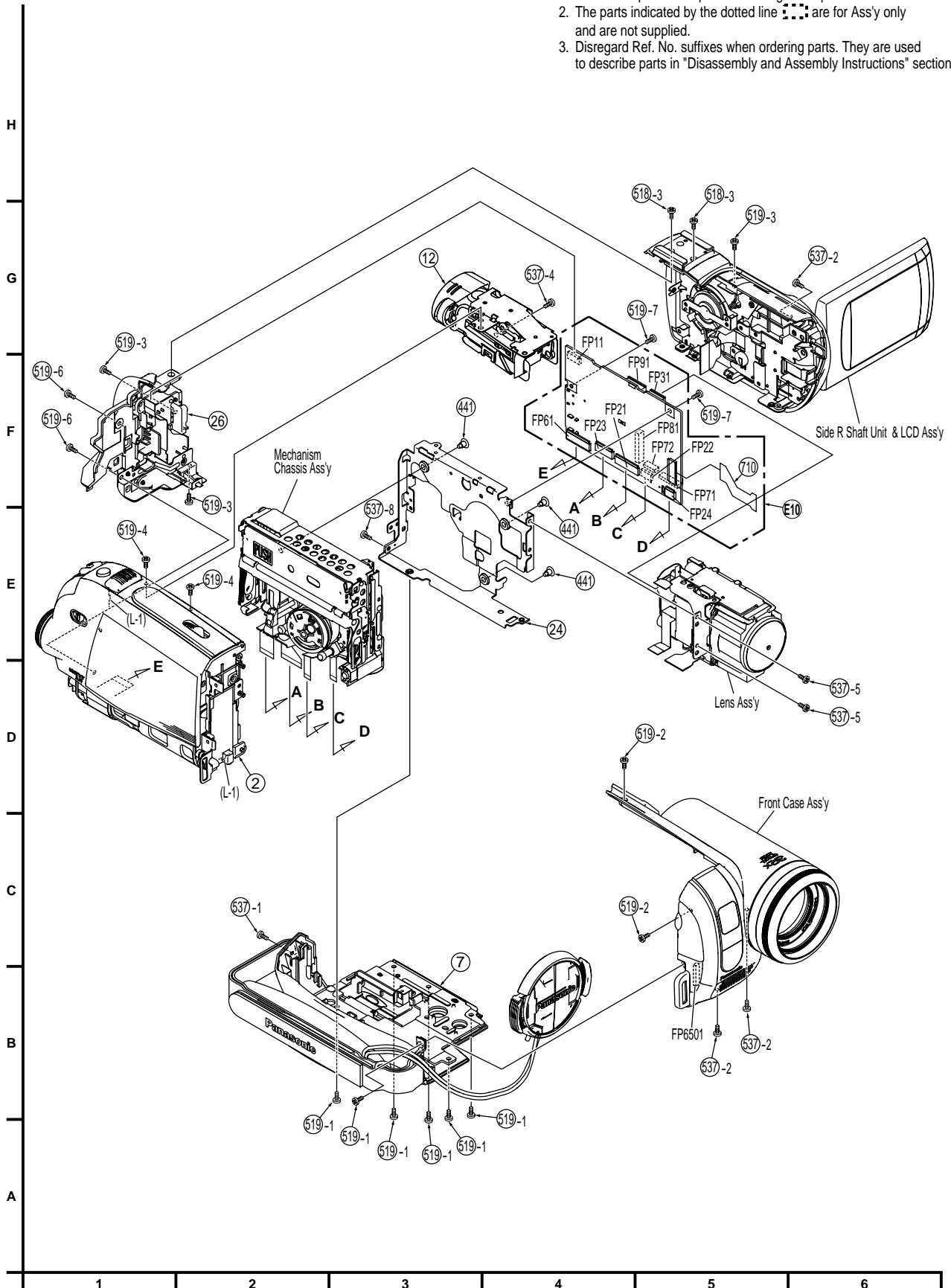
13 Exploded Views

13.1. MAIN PARTS SECTION

1 MAIN PARTS SECTION

Note:


1. Parts with no Ref. No. in "EXPLODED VIEW" are not supplied. And some Ref. No. will be skipped. Be sure to make your orders of replacement parts according to the parts list.
2. The parts indicated by the dotted line  are for Ass'y only and are not supplied.
3. Disregard Ref. No. suffixes when ordering parts. They are used to describe parts in "Disassembly and Assembly Instructions" section.

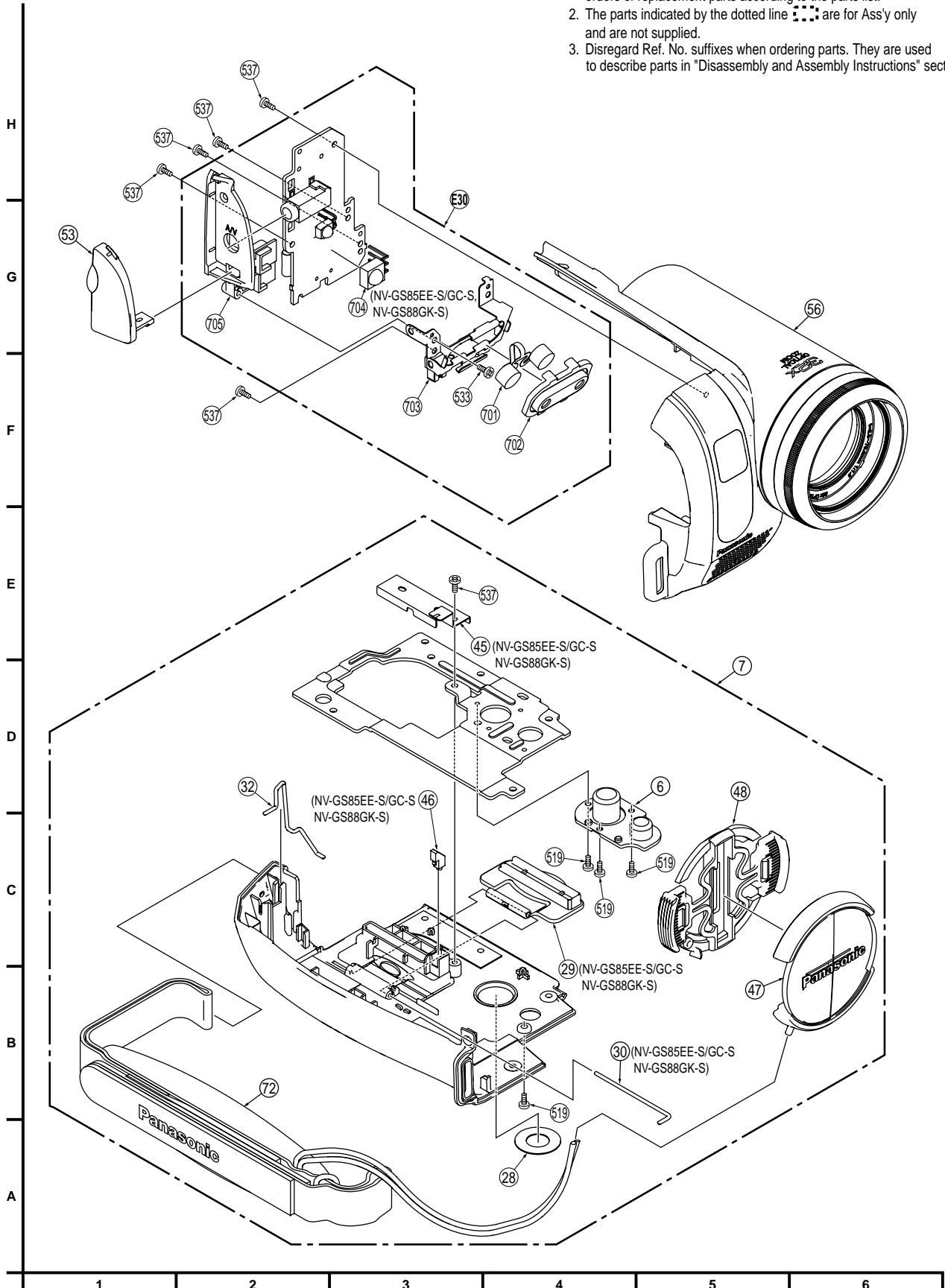


13.2. FRONT AND BOTTOM CASE SECTION

2 FRONT AND BOTTOM CASE SECTION

Note:


1. Parts with no Ref. No. in "EXPLODED VIEW" are not supplied. And some Ref. No. will be skipped. Be sure to make your orders of replacement parts according to the parts list.
2. The parts indicated by the dotted line  are for Ass'y only and are not supplied.
3. Disregard Ref. No. suffixes when ordering parts. They are used to describe parts in "Disassembly and Assembly Instructions" section.

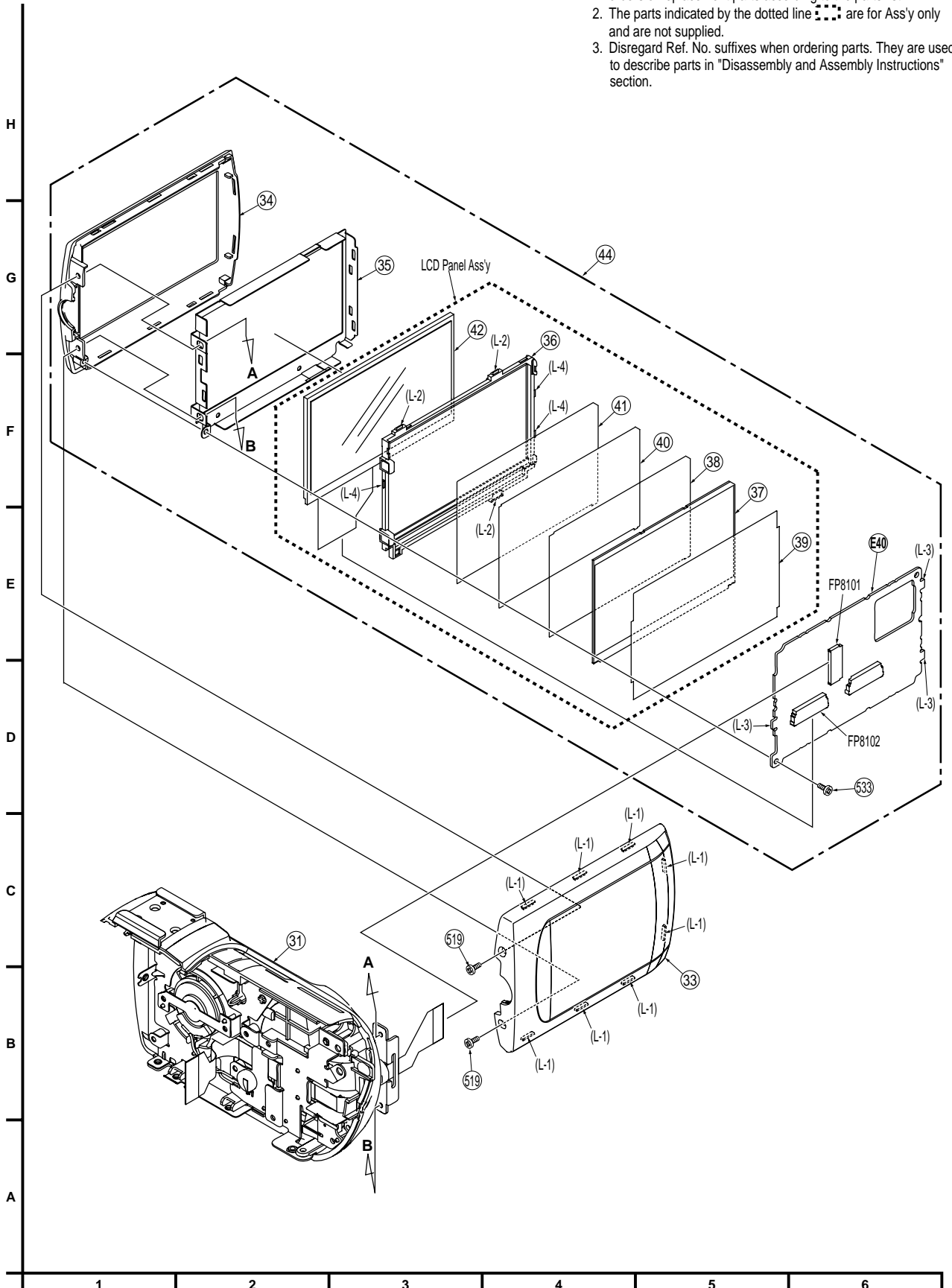


13.3. SIDE R SHAFT UNIT AND LCD SECTION

③ SIDE R SHAFT UNIT AND LCD SECTION

Note:


1. Parts with no Ref. No. in "EXPLODED VIEW" are not supplied. And some Ref. No. will be skipped. Be sure to make your orders of replacement parts according to the parts list.
2. The parts indicated by the dotted line  are for Ass'y only and are not supplied.
3. Disregard Ref. No. suffixes when ordering parts. They are used to describe parts in "Disassembly and Assembly Instructions" section.



13.4. CCD AND LENS SECTION



4 CCD AND LENS SECTION

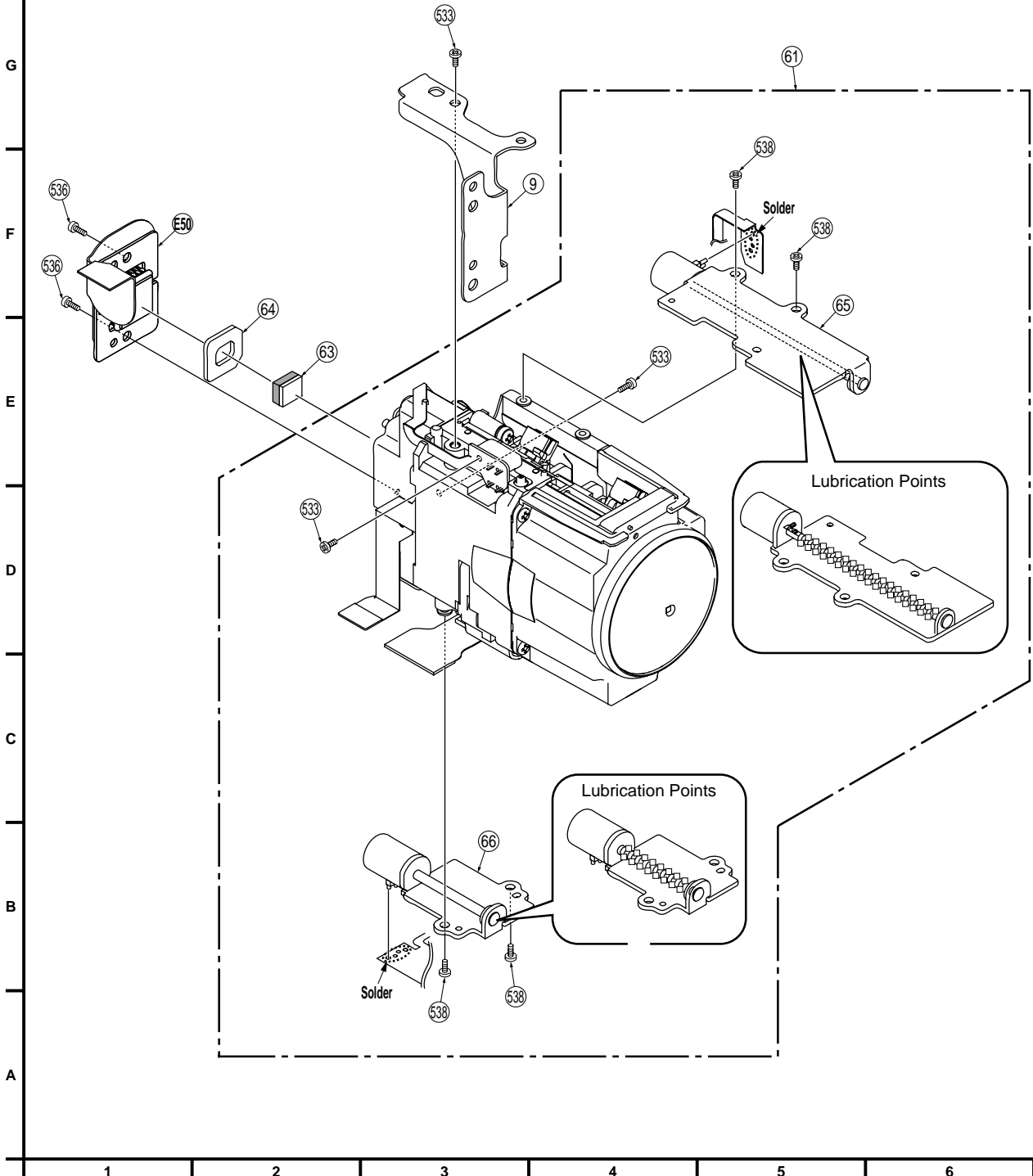
Note:

1. Parts with no Ref. No. in "EXPLODED VIEW" are not supplied. And some Ref. No. will be skipped. Be sure to make your orders of replacement parts according to the parts list.
2. The parts indicated by the dotted line  are for Ass'y only and are not supplied.
3. Disregard Ref. No. suffixes when ordering parts. They are used to describe parts in "Disassembly and Assembly Instructions" section.

LUBRICATION POINTS

When the marked parts are replaced, apply the recommended lubricants or adhesive for better maintenance of the unit.


Mark	Kind of Lubricant	Availability	Part Number
 	Grease	Available from Factory	LSUQ0050

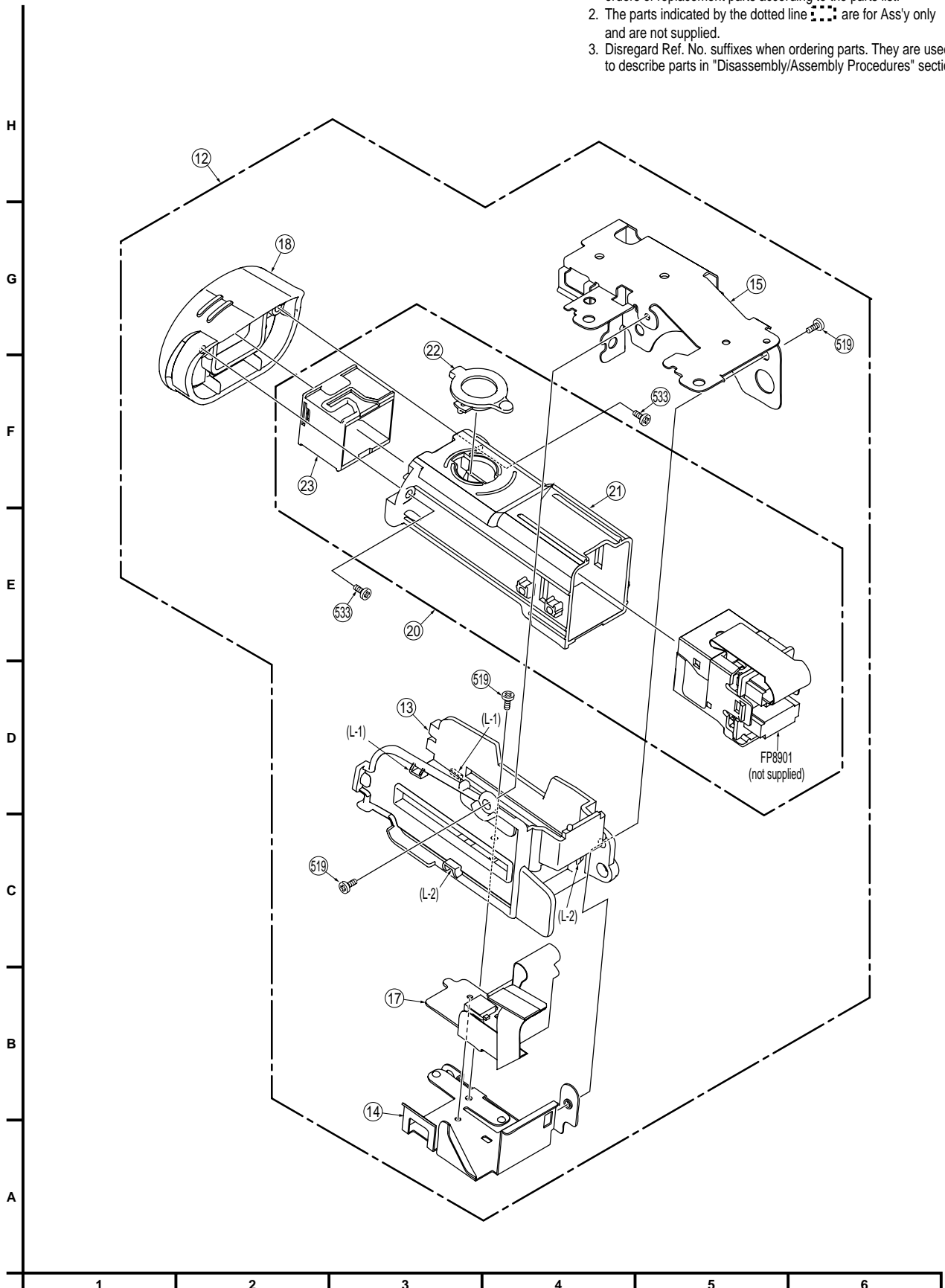


13.5. EVF SECTION

5 EVF SECTION

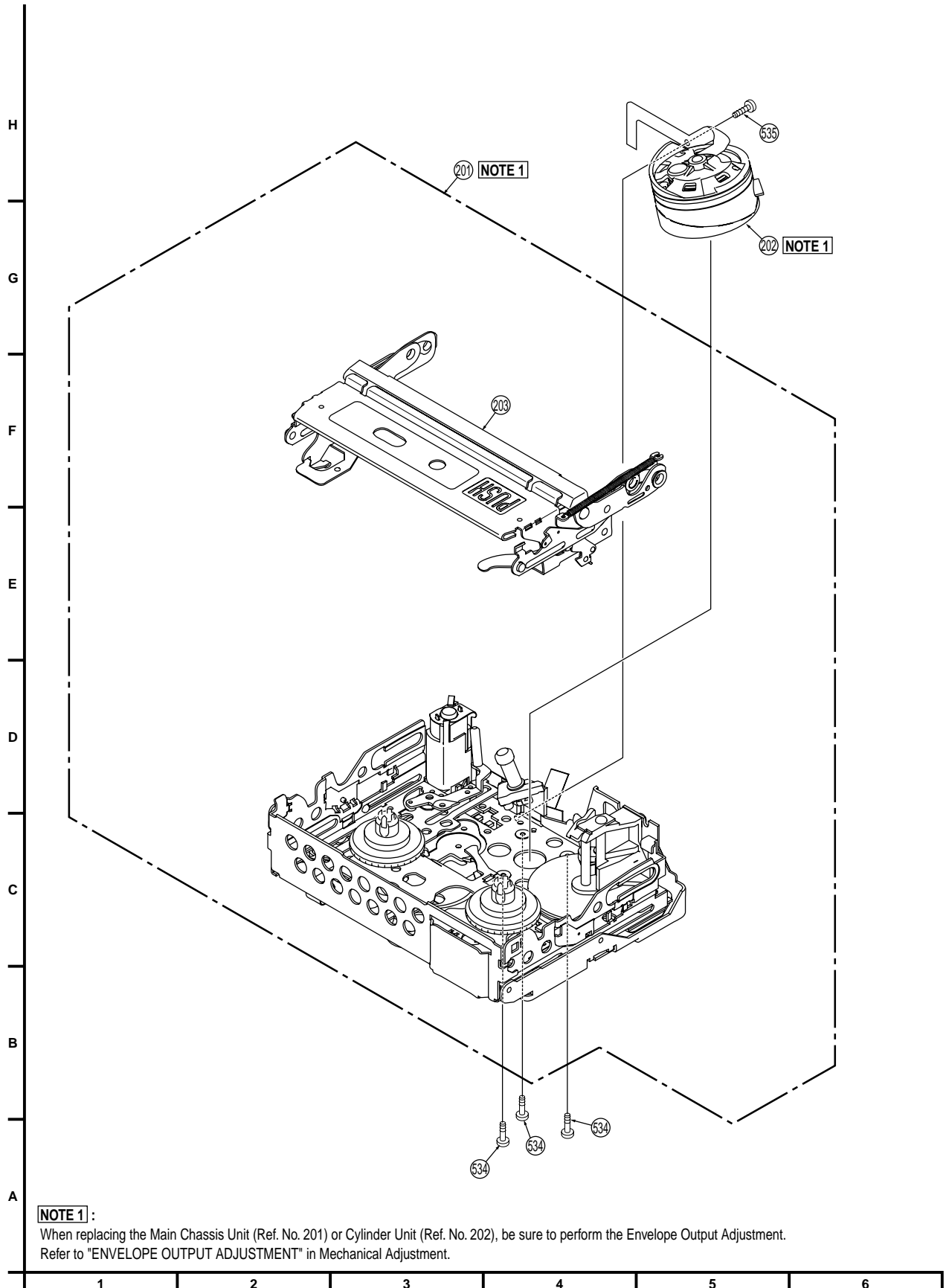
Note:

1. Parts with no Ref. No. in "EXPLODED VIEW" are not supplied. And some Ref. No. will be skipped. Be sure to make your orders of replacement parts according to the parts list.
2. The parts indicated by the dotted line  are for Ass'y only and are not supplied.
3. Disregard Ref. No. suffixes when ordering parts. They are used to describe parts in "Disassembly/Assembly Procedures" section.



13.6. MECHANISM SECTION


⑥ MECHANISM SECTION

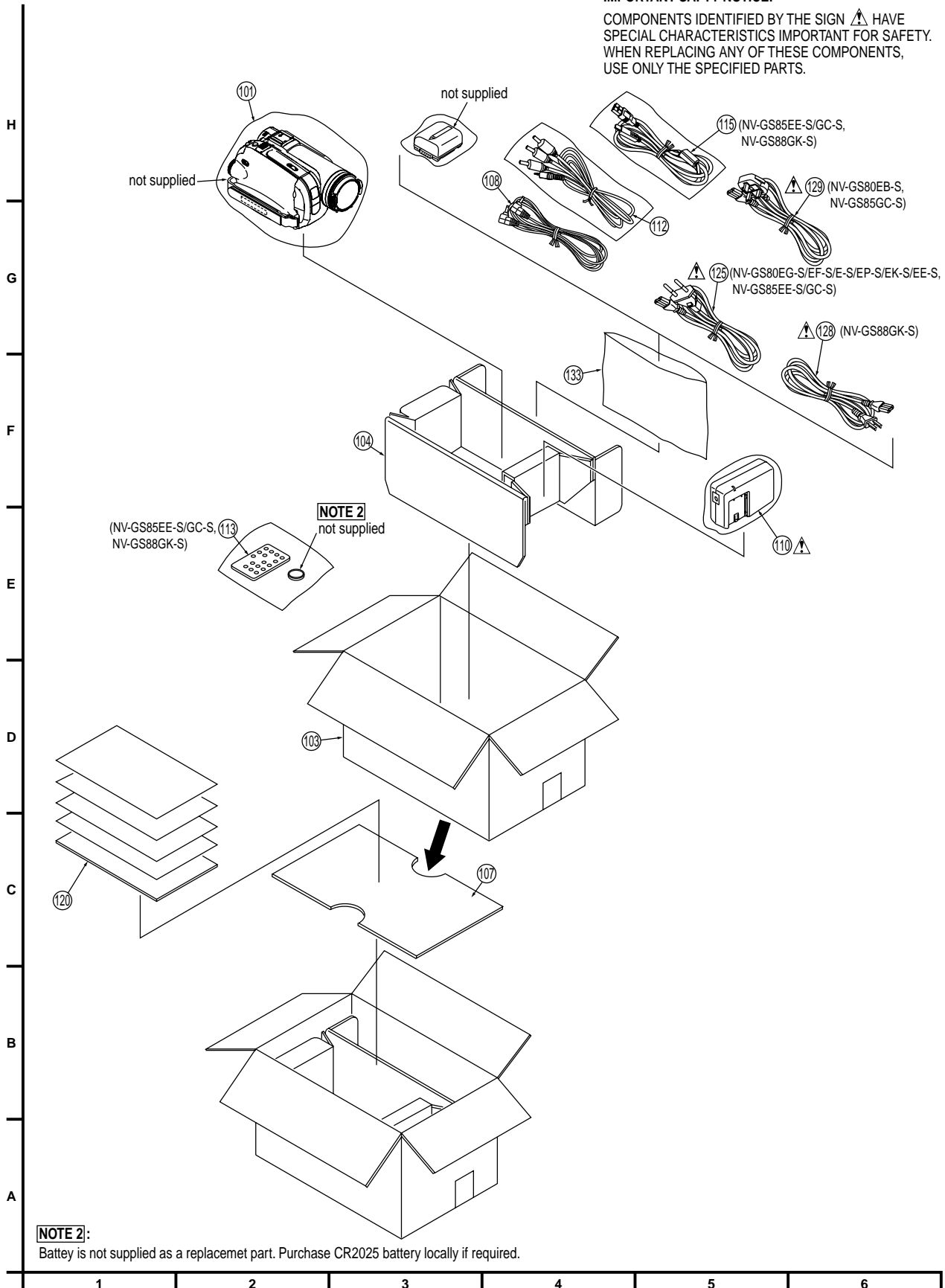


13.7. PACKING PARTS AND ACCESSORIES SECTION

7 PACKING PARTS AND ACCESSORIES SECTION

IMPORTANT SAFTY NOTICE:

COMPONENTS IDENTIFIED BY THE SIGN  HAVE SPECIAL CHARACTERISTICS IMPORTANT FOR SAFETY. WHEN REPLACING ANY OF THESE COMPONENTS, USE ONLY THE SPECIFIED PARTS.



14 Replacement Parts Lists

BEFORE REPLACING PARTS, READ THE FOLLOWING:

1. Use only original replacement parts:

To maintain original function and reliability of repaired units, use only original replacement parts which are listed with their part numbers in the parts list.

2. IMPORTANT SAFETY NOTICE

Components identified by the sign Δ have special characteristics important for safety. When replacing any of these components, use only the specified parts.

3. Definition of Parts supplier:

a. Parts with mark "SPC" in the Remarks column are supplied from Spare Parts Center of Panasonic AVC Company.

b. Parts without mark in the Remarks column are supplied from PSEC.

4. Parts whose Ref. Nos. are the same are interchangeable as replacement parts. Any of these parts may be ordered and used as a replacement part.

5. Model Number Indication:

Model numbers are indicated in the Remarks column without "NV-GS."

6. Unless otherwise specified;

All resistors are in Ω , K = 1,000 Ω , M = 1,000 k Ω .

7. Abbreviation

RTL: Retention Time Limited

This indicates that the retention time is limited for this item. After the discontinuation of this item in production, it will no longer be available.

NR: Non Repairable Board Ass'y

MGF CHIP: Metal Glaze Film Chip

C CHIP: Ceramic Chip

COMPLX CMP: Complex Component

W FLMPRF: Wirewound Flameproof

P.C.B.: Circuit Board Assembly

P.C.B.: Printed Circuit Board

E.S.D.: Electrostatically Sensitive Devices

CSP: Chip Size Package

8. AC Adaptor

a. VSK0561 is indicated on the AC Adaptor used in the following models:

NV-GS88GK

However, the AC Adaptor replacement part number is DE-974HC which should be used when ordering.

b. VSK0561 is indicated on AC Adaptor used in the following models:

NV-GS80EG, NV-GS80EF, NV-GS80E, NV-GS80EP, NV-GS80EB, NV-GS80EK, NV-GS80EE, NV-GS85EE, NV-GS85GC, NV-GS88GK

However, the AC Adaptor replacement part number is DE-974GC which should be used when ordering.

14.1. MECHANICAL REPLACEMENT PARTS LIST

Definition of Parts supplier:

1. Parts with mark "SPC" in the Remarks column are supplied from Spare Parts Center of Panasonic AVC Company.

2. Parts without mark in the Remarks column are supplied from PSEC.

MECHANICAL REPLACEMENT PARTS

Ref. No.	Part No.	Part Name & Description	Remarks
2	LSYK1900	SIDE L OPERATION UNIT	80EG/EF /E/EP/E B/EK/EE
2	LSYK1931	SIDE L OPERATION UNIT	85EE/GC ,88GK
6	LSHN0020	TRIPOD	
7	LSXK0288	BOTTOM UNIT	80EG/EF /E/EP/E B/EK/EE
7	LSXK0287	BOTTOM UNIT	85EE/GC ,88GK
9	LSMA0968	LENS ANGLE	
12	LSXK0286	EVF UNIT	RTL
13	LSKM1233	EVF BASE FRAME	
14	LSMA0970	EVF SPRING	
15	LSMA0971	EVF EARTH PLATE	
17	LSEP8372A1	EVF BACKLIGHT F.P.C.	
18	LSGQ0221	EYE CAP	
20	LSYK1904	EVF CASE 1 UNIT,ABS RESIN	
21	LSKM1234	EVF CASE,ABS RESIN	
22	LSGT0615	EYE SIGHT LEVER	
23	LSYK1907	EVF LENS UNIT	
24	LSYK1884	MAIN FRAME UNIT	
26	LSYK1916	BATTERY CASE UNIT,ABS RESIN	
28	LSGQ0222	TRIPOD SHEET	
29	LSKF0671	SD COVER	85EE/GC ,88GK
30	LSMB0331	SD COVER PIN	85EE/GC ,88GK
31	LSYK1988	SIDE R SHAFT UNIT	
32	LSMB0332	BELT PIN	
33	LSKM1251	LCD CASE A,ABS RESIN	80EG/EF /E/EP/E B/EK/EE
33	LSKM1524	LCD CASE A,ABS RESIN	85EE/GC
33	LSKM1228	LCD CASE A,ABS RESIN	88GK
34	LSKM1232	LCD CASE B,ABS RESIN	
35	LSSC0924	LCD SHIELD CASE,ABS RESIN	
36	LSYK1924	PANEL HOLDER UNIT	
37	LSGL0505	LEAD LIGHT PANEL	
38	LSGL0511	DIFFUSION SHEET	
39	LSGL0506	REFLECT SHEET	
40	LSGL0443	BEF SHEET	
41	LSGL0444	BEF SHEET A	
42	L5BDDYH00025	LIQUID CRYSTAL DISPLAY PANEL	
44	LSYK1923	LCD CASE B UNIT,ABS RESIN	RTL
45	LSSC0927	SD EARTH PLATE	85EE/GC ,88GK
46	LSGL0510	ACCESS LED PANEL	85EE/GC ,88GK
47	LSKF0668	LENS CAP COVER	
48	LSKF0669	LENS CAP HINGE	
53	LSKF0670	JACK COVER	
56	LSYK1912	FRONT CASE UNIT,ABS RESIN	
61	LSXN0046	LENS UNIT	
63	LSFL0292	OPTICAL LOW PASS FILTER	
64	LSMX0230	FILTER RUBBER	
65	L6HA66NB0007	ZOOM MOTOR UNIT	

Ref. No.	Part No.	Part Name & Description	Remarks
66	L6HA66NB0008	FOCUS MOTOR UNIT	
72	LSGQ0223	GRIP BELT	
101	VPF1129	POLY BAG	
103	LSPG2339	PACKING CASE,PAPER	80EG/EF /E/EP/E B/EK
103	LSPG2438	PACKING CASE,PAPER	80EE
103	LSPG2337	PACKING CASE,PAPER	85EE/GC
103	LSPG2338	PACKING CASE,PAPER	88GK
104	LSPN0767	PAD	
107	LSPN0772	TOP PAD	
108	K2GJ2DC00015	DV CABLE W/PLUG	
110	DE-974GC	AC ADAPTOR	△ 80EG/EF /E/EP/E B/EK/EE ,85EE/GC
110	DE-974HC	AC ADAPTOR	△ 88GK
112	K2KC4CB00022	AUDIO VIDEO CABLE W/PLUG	
113	N2QAEC000021	INFRARED REMOTE CONTROL UNIT	85EE/GC ,88GK
115	K1HA05CD00015	USB CABLE W/PLUG	85EE/GC ,88GK
120	LSQT1127-A	INSTRUCTION BOOK (GERMAN/FRENCH/ITALIAN/DUTCH/TURKISH)	80EG/EK
120	LSQT1128-A	INSTRUCTION BOOK (FRENCH)	80EF
120	LSQT1129-A	INSTRUCTION BOOK (PORTUGUESE/SPANISH/SWEDISH/DANISH)	80E
120	LSQT1130-A	INSTRUCTION BOOK (ENGLISH/POLISH/CZECH/HUNGARIAN)	80EP
120	LSQT1131-A	INSTRUCTION BOOK (ENGLISH)	80EB
120	LSQT1234-A	INSTRUCTION BOOK (RUSSIAN/UKRAINIAN)	80EE
120	LSQT1124-A	INSTRUCTION BOOK (RUSSIAN/UKRAINIAN)	85EE
120	LSQT1123-A	INSTRUCTION BOOK (CHINESE (TRADITIONAL)/ENGLISH/RUSSIAN/ARABIC)	85GC
120	LSQT1126-A	INSTRUCTION BOOK (CHINESE (SIMPLIFIED))	88GK
125	K2CR2DA00004	AC CORD W/PLUG	△ 80EG/EF /E/EP/E K/EE,85EE/GC
128	K2CA2CA00020	AC CORD W/PLUG	△ 88GK
129	K2CT3CA00004	AC POWER CORD W/PLUG,250V	△ 80EB,85GC
133	LSPF0107	POLY BAG	
201	VXY1979Z1	MAIN CHASSIS UNIT	
202	VEG1663-M	CYLINDER UNIT	
or 202	VEG1704-M	CYLINDER UNIT	
or 202	LSEG0179	CYLINDER UNIT	
203	VXA8334	CASSETTE UP UNIT	SPC
441	VHD1133	SCREW,STEEL	
518	XQS2+A35FN	SCREW,STEEL	
519	XQN16+BF4FN	SCREW,STEEL	
533	XQN16+BJ4FN	SCREW,STEEL	
534	VHD1861	SCREW,STEEL	
535	XQN14+B2FN	SCREW,STEEL	
536	XQN16+AJ4FN	SCREW,STEEL	
537	XQN16+BJ5FN	SCREW,STEEL	
538	XQN14+BJ4FN	SCREW,STEEL	
701	LSEK0684	ELECTRIC CONDENSOR MICROPHONE UNIT	
702	LSMG0136	MIC DAMPER	
703	LSSC0926	FRONT EARTH PLATE	
704	B3RAB0000064	INFRARED RECEIVER	85EE/GC ,88GK
705	LSKM1243	JACK PIECE	
710	LSJB8369	FRONT F.P.C.	

Ref. No.	Part No.	Part Name & Description	Remarks
E10	LSEP8361P1	MAIN P.C.B.	RTL 80EG/EF /E/EP/E B
E10	LSEP8361R1	MAIN P.C.B.	RTL 80EK/EE
E10	LSEP8361Q1	MAIN P.C.B.	RTL 85EE/GC ,88GK
E30	LSEP8363B1	FRONT P.C.B.	RTL 80EG/EF /E/EP/E B/EK/EE
E30	LSEP8363C1	FRONT P.C.B.	RTL 85EE/GC ,88GK
E40	LSEP8367A1	LIQUID CRYSTAL DISPLAY BACKLIGHT P.C.B.NR	
E50	LSEQ0831	CCD P.C.B.NR	

SERVICE FIXTURES AND TOOLS

Ref. No.	Part No.	Part Name & Description	Remarks
	VFM3110EDS	COLOR BAR STANDARD TAPE	SPC
	VFK1451	DVC HEAD CLEANING TAPE	SPC
	LSVQ0028	PLIER FOR NON ZIF CONNECTOR	
	LSUQ0050	GREASE	
	LSUA0019	EXTENSION CABLE 8P	
	LSUA0016	EXTENSION CABLE 10P	
	VUVS0007	EXTENSION CABLE 12P	
	VFKW0124A	EXTENSION CABLE 14P	
	LSUA0021	EXTENSION CABLE 26P	
	VFK1174	EXTENSION CABLE 30P	
	LSUA0017	EXTENSION CABLE 18P	
	VUVS0012	EXTENSION CABLE 22P	
	VFK1164LXB1	LIGHT BOX	SPC
	VFK1164TCM02	INFINITY LENS (WITH FOCUS CHART)	SPC
	VFK1164TAR58	ATTACHMENT RING (58mm)	SPC
	VFK1164TAR55	ATTACHMENT RING (55mm)	SPC
	VFK1164TAR52	ATTACHMENT RING (52mm)	SPC
	VFK1164TAR49	ATTACHMENT RING (49mm)	SPC
	VFK1164TAR46	ATTACHMENT RING (46mm)	SPC
	VFK1164TAR43	ATTACHMENT RING (43mm)	SPC
	VFK1164TAR37	ATTACHMENT RING (37mm)	SPC
	VFK1164TAR3A	ATTACHMENT RING (30.5mm)	SPC
	VFK1164TAR27	ATTACHMENT RING (27mm)	SPC
	VFK1164TFCT2	COLOR CONVERSION FILTER (C14)	SPC
	VFK1164TFWC2	WHITE CHART	SPC
	VFK1164TFCB2	COLOR BAR CHART	SPC
	VFK1164TFGS2	GRAY SCALE CHART	SPC
	VFK1899	POST HEIGHT ADJUSTMENT FIXTURE	SPC

14.2. ELECTRICAL REPLACEMENT PARTS LIST

Definition of Parts supplier:

1. All parts are supplied from PSEC.

PRINTED CIRCUIT BOARD ASSEMBLY

Ref. No.	Part No.	Part Name & Description	Remarks
E10	LSEP8361P1	MAIN P.C.B.	E.S.D. RTL 80EG/EF /E/EP/E B
E10	LSEP8361R1	MAIN P.C.B.	E.S.D. RTL 80EK/EE
E10	LSEP8361Q1	MAIN P.C.B.	E.S.D. RTL 85EE/GC ,88GK

Ref. No.	Part No.	Part Name & Description	Remarks
E30	LSEP8363B1	FRONT P.C.B.	RTL 80EG/EF /E/EP/E B/EK/EE
E30	LSEP8363C1	FRONT P.C.B.	RTL 85EE/GC ,88GK
E40	LSEP8367A1	LIQUID CRYSTAL DISPLAY BACKLIGHT P.C.B.NR	
E50	LSEQ0831	CCD P.C.B.NR	

14.2.1. MAIN P.C.B.

FPC CONNECTORS

Ref. No.	Part No.	Part Name & Description	Remarks
FP11	K1MN12BA0197	CONNECTOR 12P	
FP21	K1MN26BA0196	CONNECTOR 26P	
FP22	K1MN10BA0197	CONNECTOR 10P	
FP23	K1MN18BA0197	CONNECTOR 18P	
FP24	K1MN08BA0196	CONNECTOR 8P	
FP31	K1MN14A00088	CONNECTOR 14P	
FP41	K1MN22BA0197	CONNECTOR 22P	
FP61	K1MN26BA0196	CONNECTOR 26P	
FP71	K1MN22A00065	CONNECTOR 22P	
FP72	K1MN12A00075	CONNECTOR 12P	
FP81	K1MN30AA0091	CONNECTOR 30P	
FP91	K1MN18A00064	CONNECTOR 18P	

14.2.2. FRONT P.C.B.

INTEGRATED CIRCUITS

Ref. No.	Part No.	Part Name & Description	Remarks
IC4801	C0ABBB000369	IC, LINEAR	
or IC4801	C0ABBB000262	IC, LINEAR	
IC7801	L2ES00000016	GYROSCOPE	
IC7802	L2ES00000017	GYROSCOPE	
IC7803	C0ABHA000078	IC, LINEAR	

TRANSISTORS

Ref. No.	Part No.	Part Name & Description	Remarks
Q4801	2SD2216J08	TRANSISTOR SI NPN CHIP	
or Q4801	BLABCF000104	TRANSISTOR SI NPN CHIP	
or Q4801	BLABCF000110	TRANSISTOR SI NPN CHIP	
Q6501	BLABCF000098	TRANSISTOR SI NPN CHIP	
or Q6501	BLABCF000099	TRANSISTOR SI NPN CHIP	
Q6502	2SB1218AHL	TRANSISTOR SI PNP CHIP	
or Q6502	BLADCF000063	TRANSISTOR SI PNP CHIP	
or Q6502	BLADCF000075	TRANSISTOR SI PNP CHIP	
Q7801	XP0450100L	TRANSISTOR COMPLX CMP SI NPN CHIP	
or Q7801	B1HBCFA00011	TRANSISTOR COMPLX CMP SI NPN CHIP	
or Q7801	B1HBCFA00016	TRANSISTOR COMPLX CMP SI NPN CHIP	

DIODES

Ref. No.	Part No.	Part Name & Description	Remarks
D4803	B0ACCCJ000027	DIODE SI CHIP	
or D4803	MA2S111008	DIODE SI CHIP	
D4804	B0ACCCJ000027	DIODE SI CHIP	
or D4804	MA2S111008	DIODE SI CHIP	
D6503	B0ADEJ000038	DIODE SI CHIP	
D6504	B3GA00000062	INFRARED SENSOR	
D7101	D4ED1120A005	SURGE ABSORBER	

RESISTORS

Ref. No.	Part No.	Part Name & Description	Remarks
R4802	ERJ3GEYJ472V	MGF CHIP 1/16W 4.7K	
R4803	ERJ3GEYJ223V	MGF CHIP 1/16W 22K	
R4804	ERJ3GEYJ333V	MGF CHIP 1/16W 33K	
R4805	ERJ3GEYJ124V	MGF CHIP 1/16W 120K	
R4806	ERJ3GEYJ333V	MGF CHIP 1/16W 33K	
R4807	D0HB392ZA002	MGF CHIP 1/16W 3.9K	
R4808	ERJ3GEYJ124V	MGF CHIP 1/16W 120K	
R4809	ERJ3GEYJ333V	MGF CHIP 1/16W 33K	
R4810	D0HB392ZA002	MGF CHIP 1/16W 3.9K	
R6501	ERJ3GEYJ560V	MGF CHIP 1/16W 56	85EE/GC ,88GK
R6502	ERJ3GEYJ683V	MGF CHIP 1/16W 68K	85EE/GC ,88GK
R6503	ERJ3GEYJ104V	MGF CHIP 1/16W 100K	
R6504	ERJ3GEYJ106V	MGF CHIP 1/16W 10M	
R6505	ERJ3GEYJ335V	MGF CHIP 1/16W 3.3M	
R6506	ERJ3GEYJ184V	MGF CHIP 1/16W 180K	
R6507	ERJ3GEYJ103V	MGF CHIP 1/16W 10K	
R6509	ERJ3GEYJ102V	MGF CHIP 1/16W 1K	
R7101	J0JBC0000027	FERRITE BEAD CHIP	
R7102	J0JBC0000027	FERRITE BEAD CHIP	
R7103	J0JBC0000027	FERRITE BEAD CHIP	
R7104	ERJ3GEYJ392V	MGF CHIP 1/16W 3.9K	
R7801	ERJ3GEYJ392V	MGF CHIP 1/16W 3.9K	
R7802	ERJ3GEYJ392V	MGF CHIP 1/16W 3.9K	
R7803	ERJ3GEYJ332V	MGF CHIP 1/16W 3.3K	
R7804	ERJ3GEYJ332V	MGF CHIP 1/16W 3.3K	
R7805	ERJ3GEYJ102V	MGF CHIP 1/16W 1K	
R7806	ERJ3GEYJ102V	MGF CHIP 1/16W 1K	
R7807	ERJ3GEYJ103V	MGF CHIP 1/16W 10K	
R7808	ERJ3GEYJ394V	MGF CHIP 1/16W 390K	
R7809	ERJ3GEYJ394V	MGF CHIP 1/16W 390K	
R7810	ERJ3GEYJ472V	MGF CHIP 1/16W 4.7K	
R7811	ERJ3GEYJ472V	MGF CHIP 1/16W 4.7K	
R7814	ERJ3GEYJ274V	MGF CHIP 1/16W 270K	
R7815	ERJ3GEYJ274V	MGF CHIP 1/16W 270K	

CAPACITORS

Ref. No.	Part No.	Part Name & Description	Remarks
C4801	F1H1A105A036	C CHIP 10V 1UF	
C4802	F1H1A105A036	C CHIP 10V 1UF	
C4803	F1J0J106A004	C CHIP 6.3V 10UF	
C4804	F1H1H822A219	C CHIP 50V 8200PF	
C4805	F1H1C273A041	C CHIP 16V 0.027UF	
C4806	F1H1C273A041	C CHIP 16V 0.027UF	
C4808	F1H1C273A041	C CHIP 16V 0.027UF	
C4809	F1H1H822A219	C CHIP 50V 8200PF	
C4810	F1H1C273A041	C CHIP 16V 0.027UF	
C4812	F3F0J226A032	TANTALUM CHIP 6.3V 22UF	
C6501	F3F0J106A032	TANTALUM CHIP 6.3V 10UF	85EE/GC ,88GK
C6502	F1H1C104A008	C CHIP 16V 0.1UF	85EE/GC ,88GK
C6503	F1H1A224A012	C CHIP 10V 0.22UF	
C6504	F1H1C104A041	C CHIP 16V 0.1UF	
C6505	F1H1A224A012	C CHIP 10V 0.22UF	
C7101	F1H1H472A219	C CHIP 50V 4700PF	
C7102	F1H1H472A219	C CHIP 50V 4700PF	
C7801	F1J1A106A023	C CHIP 10V 10UF	
C7802	F1J1A106A023	C CHIP 10V 10UF	
C7803	F3F0J226A032	TANTALUM CHIP 6.3V 22UF	
C7804	F3F0J226A032	TANTALUM CHIP 6.3V 22UF	
C7805	F1H1H153A219	C CHIP 50V 0.015UF	
C7806	F1H1H153A219	C CHIP 50V 0.015UF	
C7807	F1H1H153A219	C CHIP 50V 0.015UF	
C7808	F1H1H153A219	C CHIP 50V 0.015UF	
C7809	F1J1A106A023	C CHIP 10V 10UF	
C7810	F1J1A106A023	C CHIP 10V 10UF	
C7811	F1J1A106A023	C CHIP 10V 10UF	
C7812	F1J1A106A023	C CHIP 10V 10UF	
C7813	F1H1H222A219	C CHIP 50V 2200PF	
C7814	F1H1H222A219	C CHIP 50V 2200PF	
C7815	F1H0J1050012	C CHIP 6.3V 1UF	

COILS

Ref. No.	Part No.	Part Name & Description	Remarks
L7801	G1C100KA0055	COIL CHIP 10UH	

FPC CONNECTOR

Ref. No.	Part No.	Part Name & Description	Remarks
FP6501	K1MN22BA0196	CONNECTOR 22P	

JACK

Ref. No.	Part No.	Part Name & Description	Remarks
JK7101	K2HC105E0007	MIC JACK SOCKET	

MISCELLANEOUS

Ref. No.	Part No.	Part Name & Description	Remarks
533	XQN16+BJ4FN	SCREW, STEEL	
701	LSEK0684	ELECTRIC CONDENSOR MICROPHONE UNIT	
702	LSMG0136	MIC DAMPER	
703	LSSC0926	FRONT EARTH PLATE	
704	B3RAB0000064	INFRARED RECEIVER	85EE/GC, 88GK
705	LSKM1243	JACK PIECE	

CAPACITORS

Ref. No.	Part No.	Part Name & Description	Remarks
C8104	ECJ1VC1H390J	C CHIP 50V 39PF	
C8105	ECJ1VC1H390J	C CHIP 50V 39PF	
C8106	ECJ1VC1H390J	C CHIP 50V 39PF	
C8107	FIH1A105A036	C CHIP 10V 1UF	
C8109	FLJ1A475A023	C CHIP 10V 4.7UF	
C8111	FIH1C104A041	C CHIP 16V 0.1UF	
C8112	FLJ1A2250007	C CHIP 10V 2.2UF	
C8113	FIH1A105A036	C CHIP 10V 1UF	
C8116	FIH0J1050012	C CHIP 6.3V 1UF	

COILS

Ref. No.	Part No.	Part Name & Description	Remarks
L8101	G1C101KA0055	COIL CHIP 100UH	

FPC CONNECTOR

Ref. No.	Part No.	Part Name & Description	Remarks
FP8101	K1MN22BA0197	CONNECTOR 22P	
FP8102	K1MN24BA0196	CONNECTOR 24P	

14.2.3. LIQUID CRYSTAL DISPLAY BACKLIGHT P.C.B.NR

TRANSISTORS

Ref. No.	Part No.	Part Name & Description	Remarks
Q8101	2SC6054J0L	TRANSISTOR SI NPN CHIP	
Q8102	2SC6054J0L	TRANSISTOR SI NPN CHIP	
Q8104	2SC6054J0L	TRANSISTOR SI NPN CHIP	
Q8105	2SC6054J0L	TRANSISTOR SI NPN CHIP	
Q8107	2SA2174J0L	TRANSISTOR SI PNP CHIP	
Q8108	2SC6054J0L	TRANSISTOR SI NPN CHIP	
Q8112	2SA2174J0L	TRANSISTOR SI PNP CHIP	
Q8113	2SA2174J0L	TRANSISTOR SI PNP CHIP	

DIODES

Ref. No.	Part No.	Part Name & Description	Remarks
D8101	MAZ80620ML	DIODE ZENER CHIP 6.2V	
D8113	MAZ80560ML	DIODE ZENER CHIP 5.6V	

RESISTORS

Ref. No.	Part No.	Part Name & Description	Remarks
R8102	ERJ3RBD271V	MGF CHIP 1/16W 270	
R8103	ERJ6GEY0R00V	MGF CHIP 1/10W 0	
R8105	ERJ3RBD271V	MGF CHIP 1/16W 270	
R8106	ERJ3RBD271V	MGF CHIP 1/16W 270	
R8107	ERJ3RED270V	MGF CHIP 1/16W 27	
R8108	ERJ3GEY0R00V	MGF CHIP 1/16W 0	
R8110	ERJ3RED270V	MGF CHIP 1/16W 27	
R8112	ERJ3RED270V	MGF CHIP 1/16W 27	
R8113	ERJ3GEY0R00V	MGF CHIP 1/16W 0	
R8114	ERJ3RBD563V	MGF CHIP 1/16W 56K	
R8115	ERJ3GEY0R00V	MGF CHIP 1/16W 0	
R8116	ERJ3RBD562V	MGF CHIP 1/16W 5600	
R8119	ERJ3RED270V	MGF CHIP 1/16W 27	
R8123	ERJ3GEYJ473V	MGF CHIP 1/16W 47K	
R8124	ERJ3RED270V	MGF CHIP 1/16W 27	
R8126	ERJ3GEYJ104V	MGF CHIP 1/16W 100K	
R8127	ERJ3GEYJ102V	MGF CHIP 1/16W 1K	
R8135	ERJ3RBD473V	MGF CHIP 1/16W 47K	
R8136	ERJ3RBD103V	MGF CHIP 1/16W 10K	
R8143	ERJ3GEY0R00V	MGF CHIP 1/16W 0	
R8145	ERJ3GEY0R00V	MGF CHIP 1/16W 0	
R8153	ERJ3GEY0R00V	MGF CHIP 1/16W 0	
R8154	ERJ3GEY0R00V	MGF CHIP 1/16W 0	
R8155	ERJ3GEY0R00V	MGF CHIP 1/16W 0	

