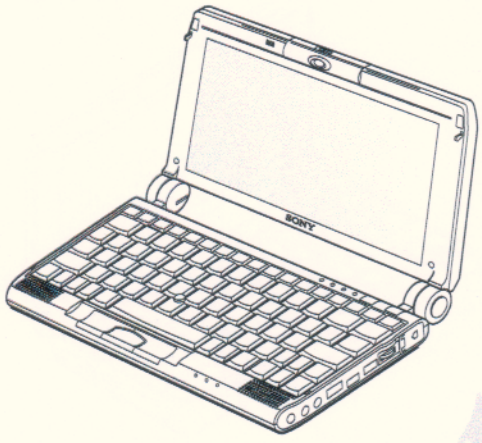
PCG-C1VN

SERVICE MANUAL

US Model
Canadian Model



i S400

VAIO

Notebook Computer

SONY®

9-872-126-11

Information in this document is subject to change without notice.

Caution Markings for Lithium/Ion Battery - The following or similar texts shall be provided on battery pack of equipment or in both the operating and the service instructions.

CAUTION: Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions.

CAUTION: The battery pack used in this device may present a fire or chemical burn hazard if mistreated. Do not disassemble, heat above 100°C (212°F) or incinerate.
Dispose of used battery promptly.
Keep away from children.

CAUTION: Changing the back up battery.

- Overcharging, short circuiting, reverse charging, multilation or incineration of the cells must bi avoided to prevent one or more of the following occurrences; release of toxic materials, release of hydrogen and/or oxygen gas, rise in surface temperature.
- If a cell has leaked or vented, it should be replaced immediately while avoiding to touch it without any protection.

Service and Inspection Precautions

1. Obey precautionary markings and instructions

Labels and stamps on the cabinet, chassis, and components identify areas requiring special precautions. Be sure to observe these precautions, as well as all precautions listed in the operating manual and other associated documents.

2. Use designated parts only

The set's components possess important safety characteristics, such as noncombustibility and the ability to tolerate large voltages. Be sure that replacement parts possess the same safety characteristics as the originals. Also remember that the ⚠ mark, which appears in circuit diagrams and parts lists, denotes components that have particularly important safety functions; be extra sure to use only the designated components.

3. Always follow the original design when mounting parts and routing wires

The original layout includes various safety features, such as inclusion of insulating materials (tubes and tape) and the mounting of parts above the printer board. In addition, internal wiring has been routed and clamped so as to keep it away from hot or high-voltage parts. When mounting parts or routing wires, therefore, be sure to duplicate the original layout.

4. Inspect after completing service

After servicing, inspect to make sure that all screws, components, and wiring have been returned to their original condition. Also check the area around the repair location to ensure that repair work has caused no damage, and confirm safety.

5. When replacing chip components...

Never reuse components. Also remember that the negative side of tantalum capacitors is easily damaged by heat.

6. When handling flexible print boards...

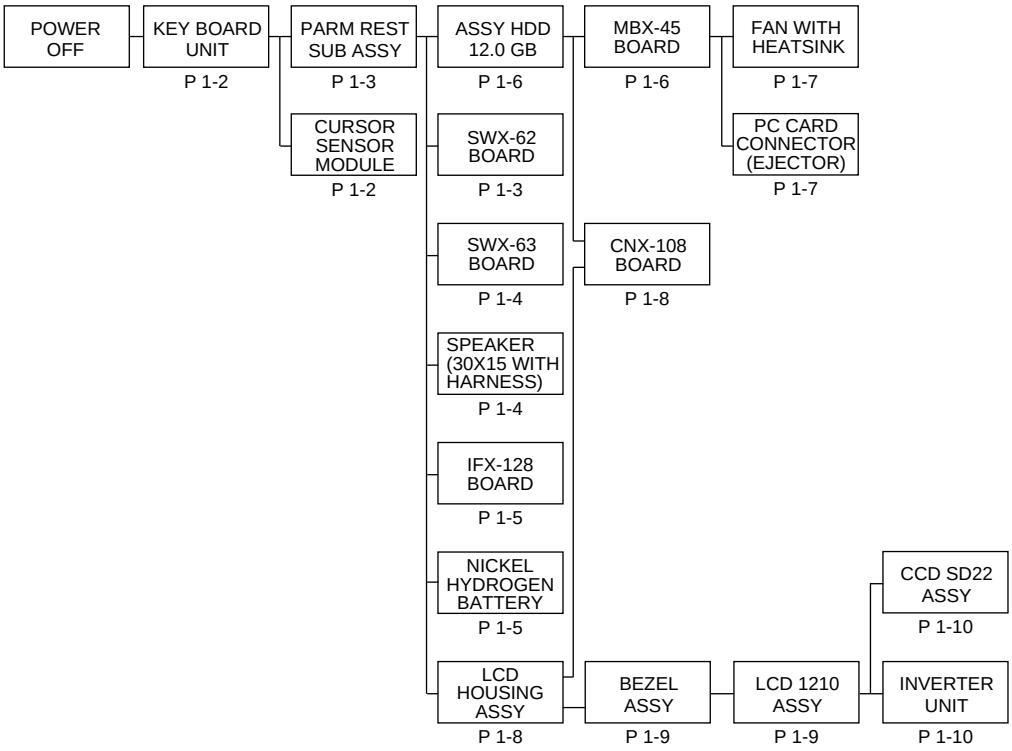
- The temperature of the soldering-iron tip should be about 270C.
- Do not apply the tip more than three times to the same pattern.
- Handle patterns with care; never apply force.

Caution: Remember that hard disk drives are easily damaged by vibration. Always handle with care.

TABLE OF CONTENTS

- Abbreviations
  UC : US model / Canadian model

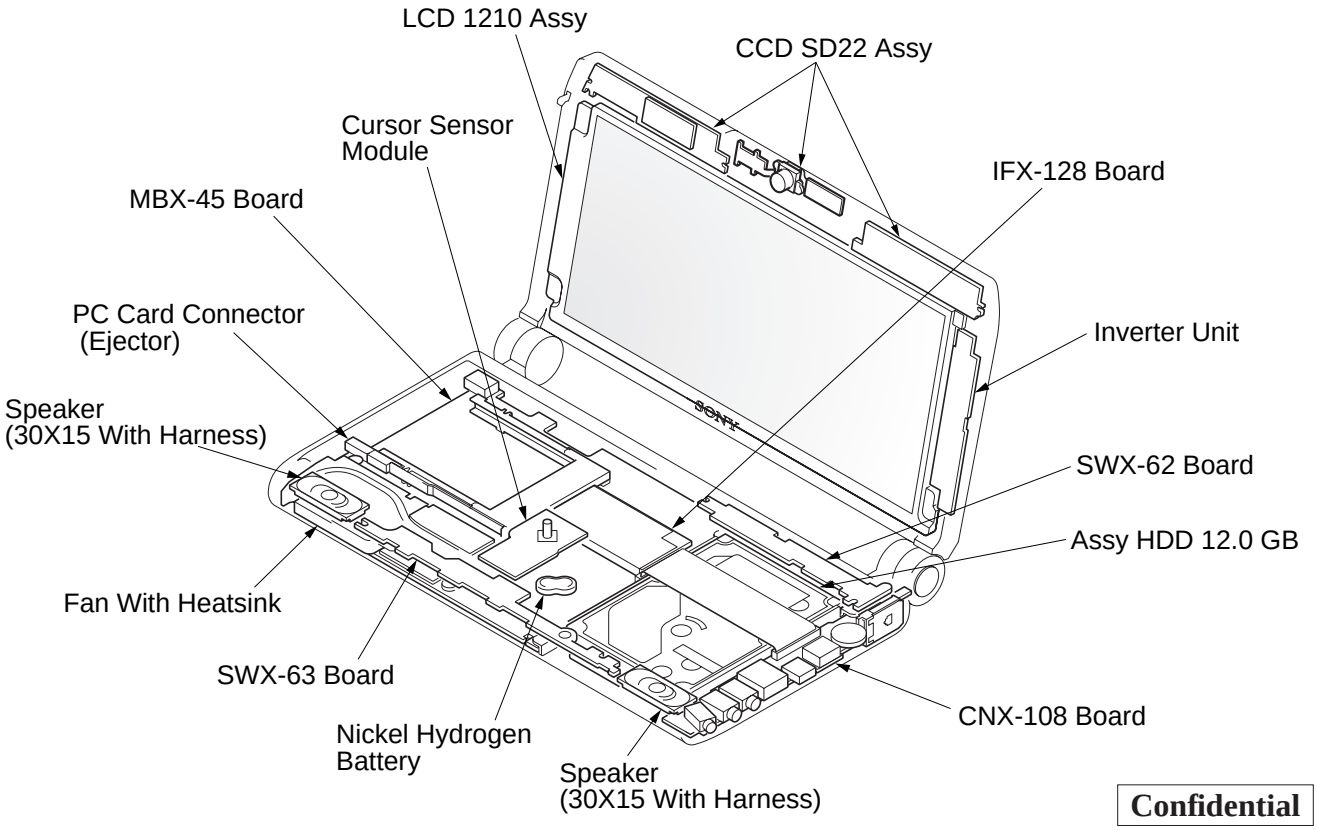
1-1. Flowchart



• P XX means pages that appears in this manual.

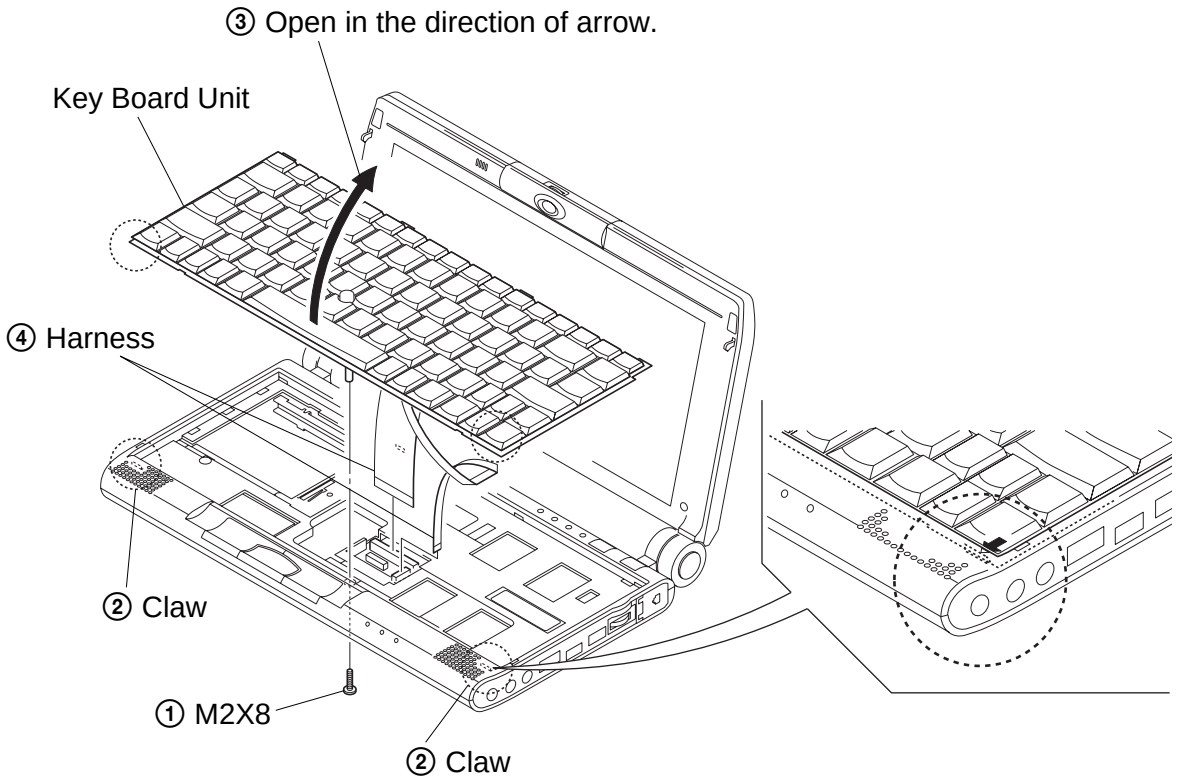
• Remember that hard disk drives are easily damaged by vibration. Always handle with care.

1-2. Main Electrical Parts Location Diagram

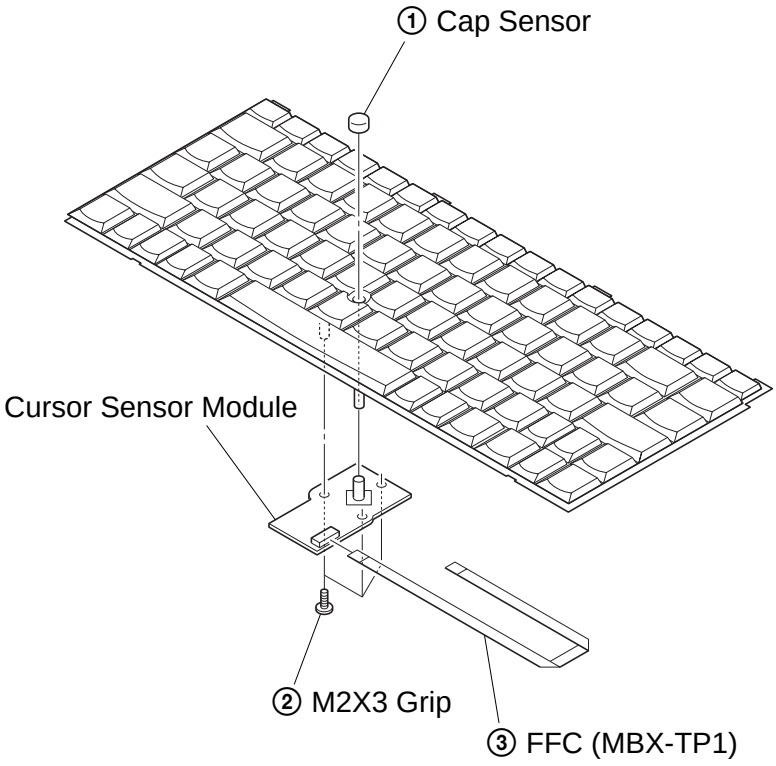


1-3. Removal

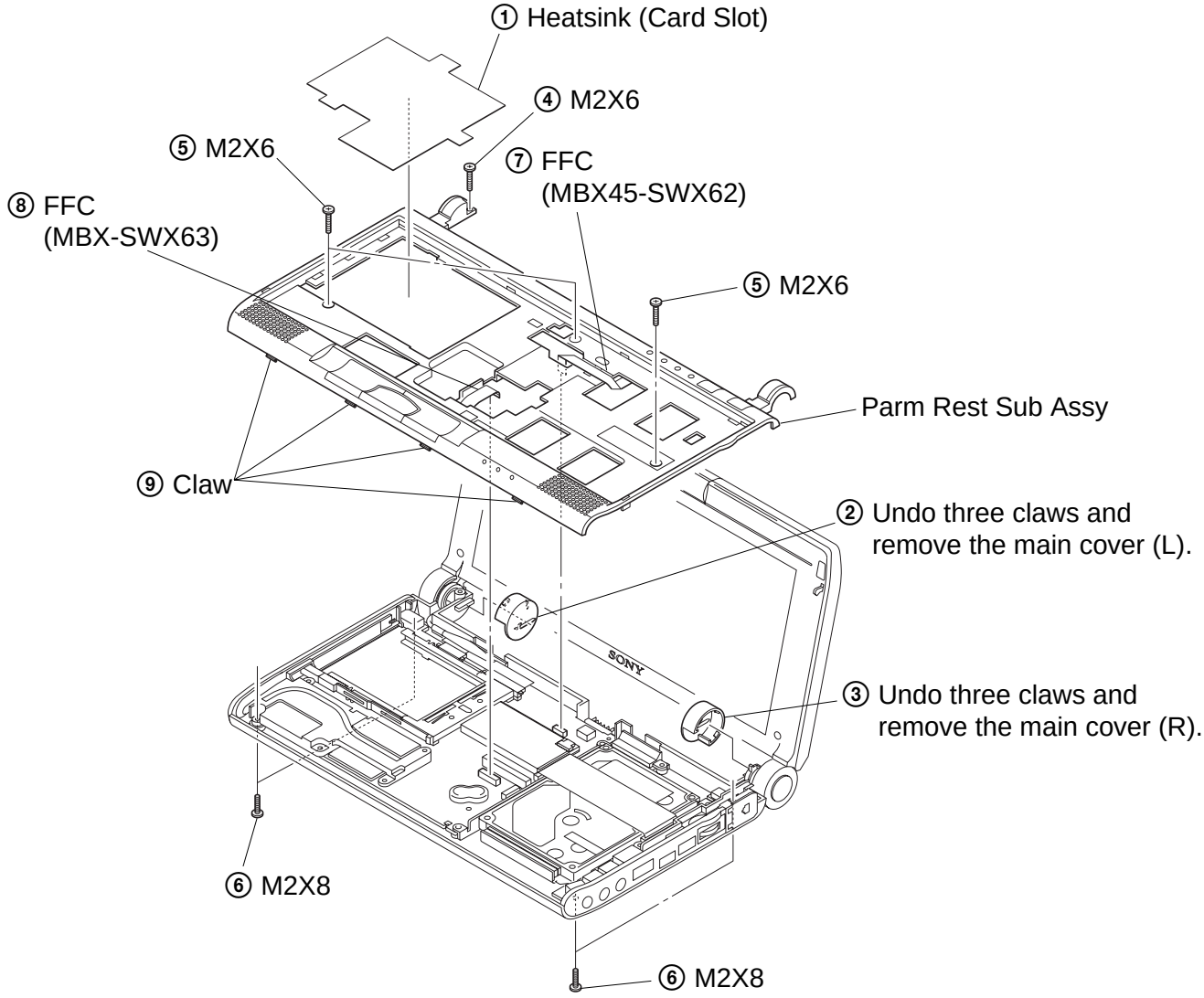
1. Key Board Unit



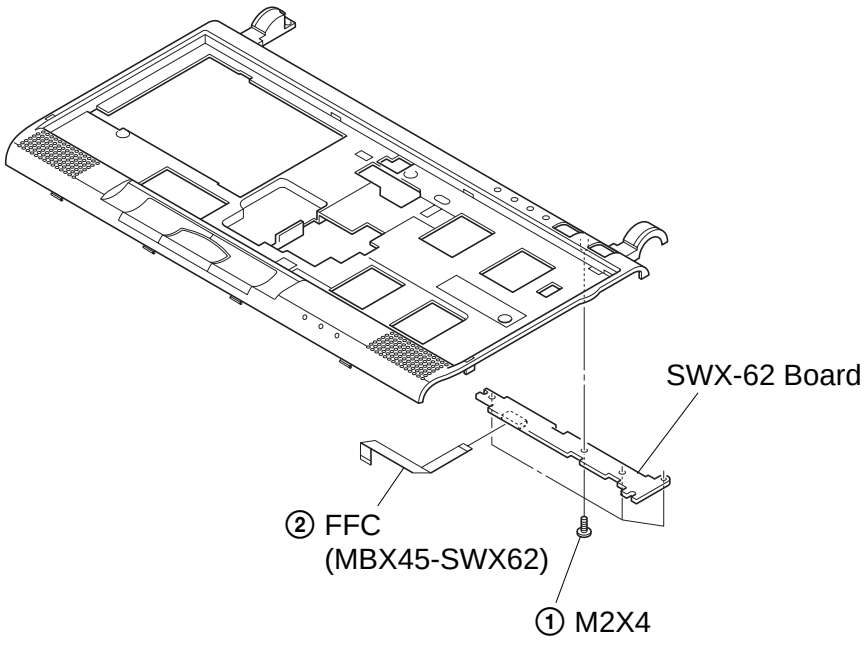
2. Cursor Sensor Module



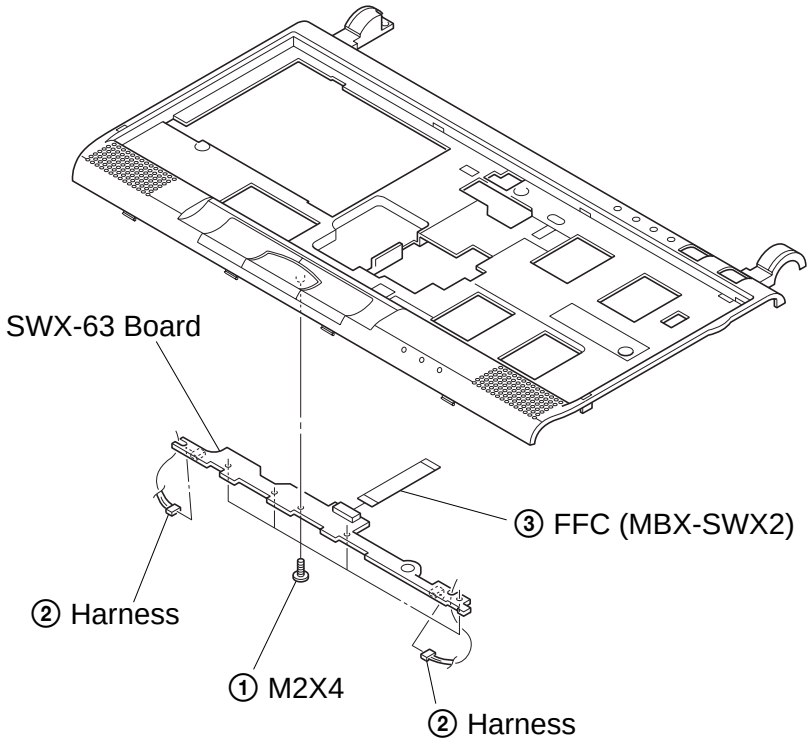
3. Parm Rest Sub Assy



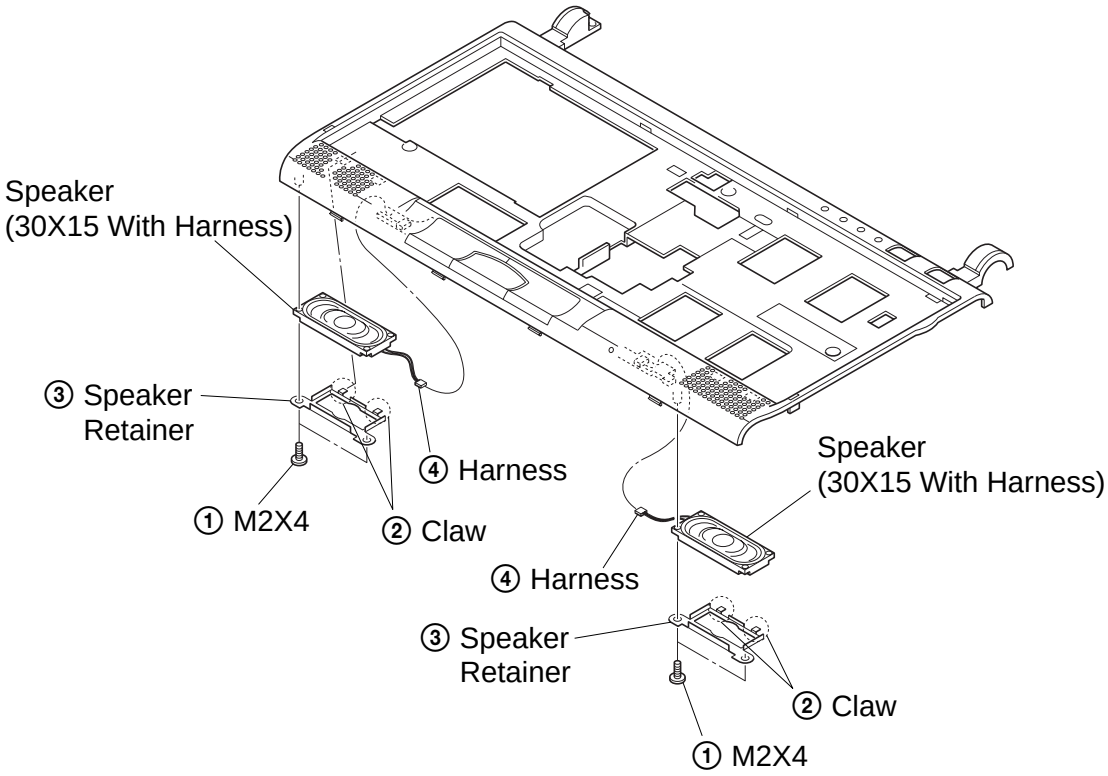
4. SWX-62 Board



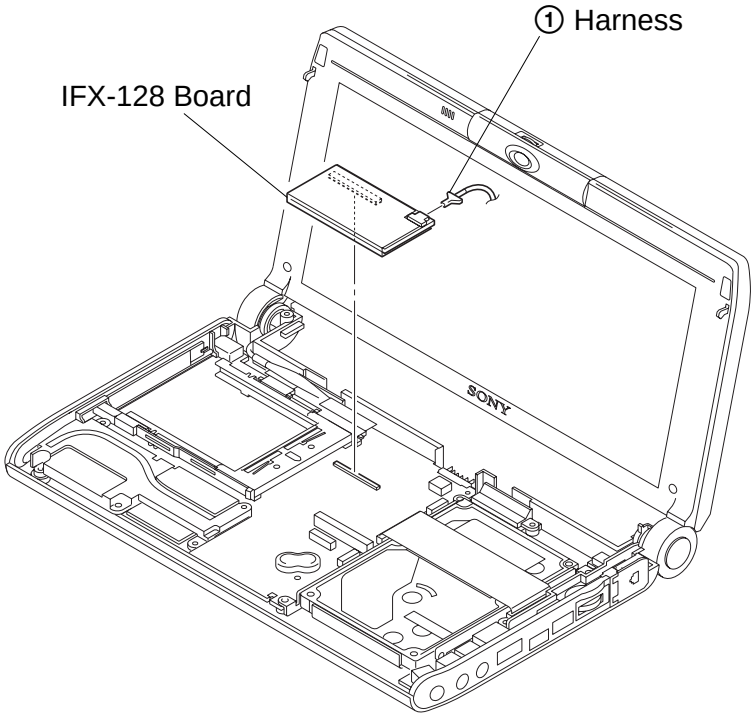
5. SWX-63 Board



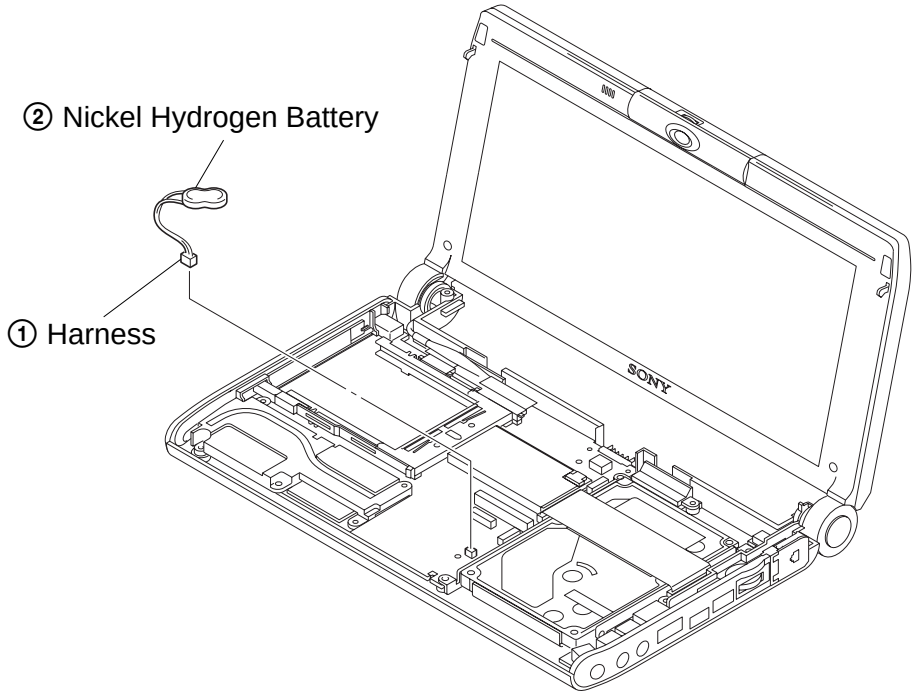
6. Speaker (30X15 With Harness)



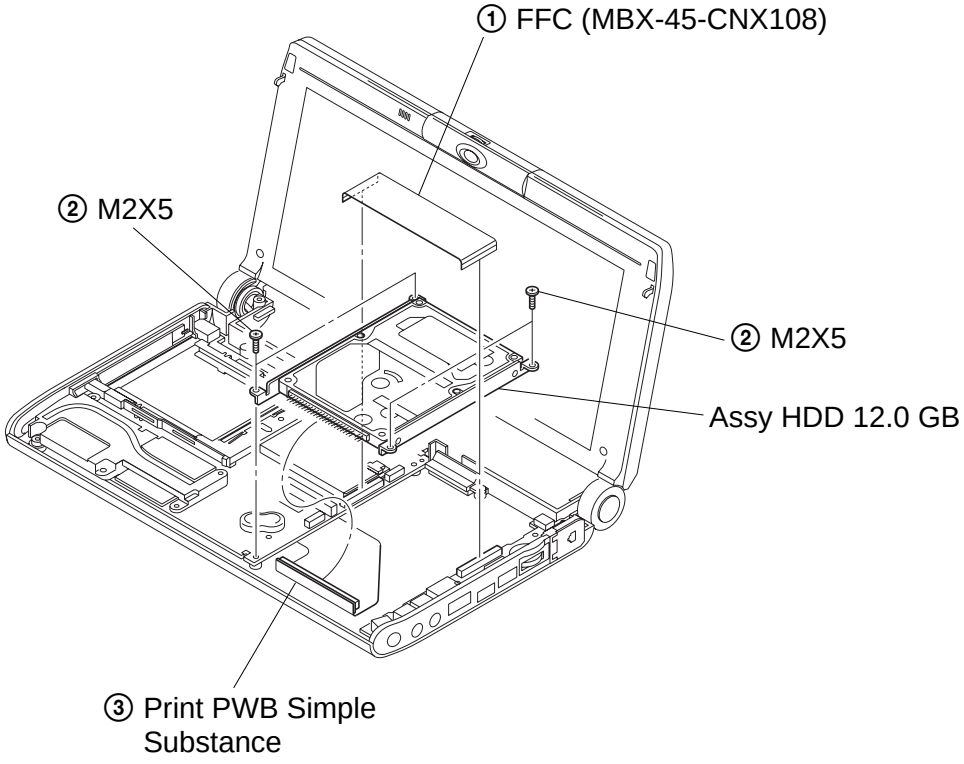
7. IFX-128 Board



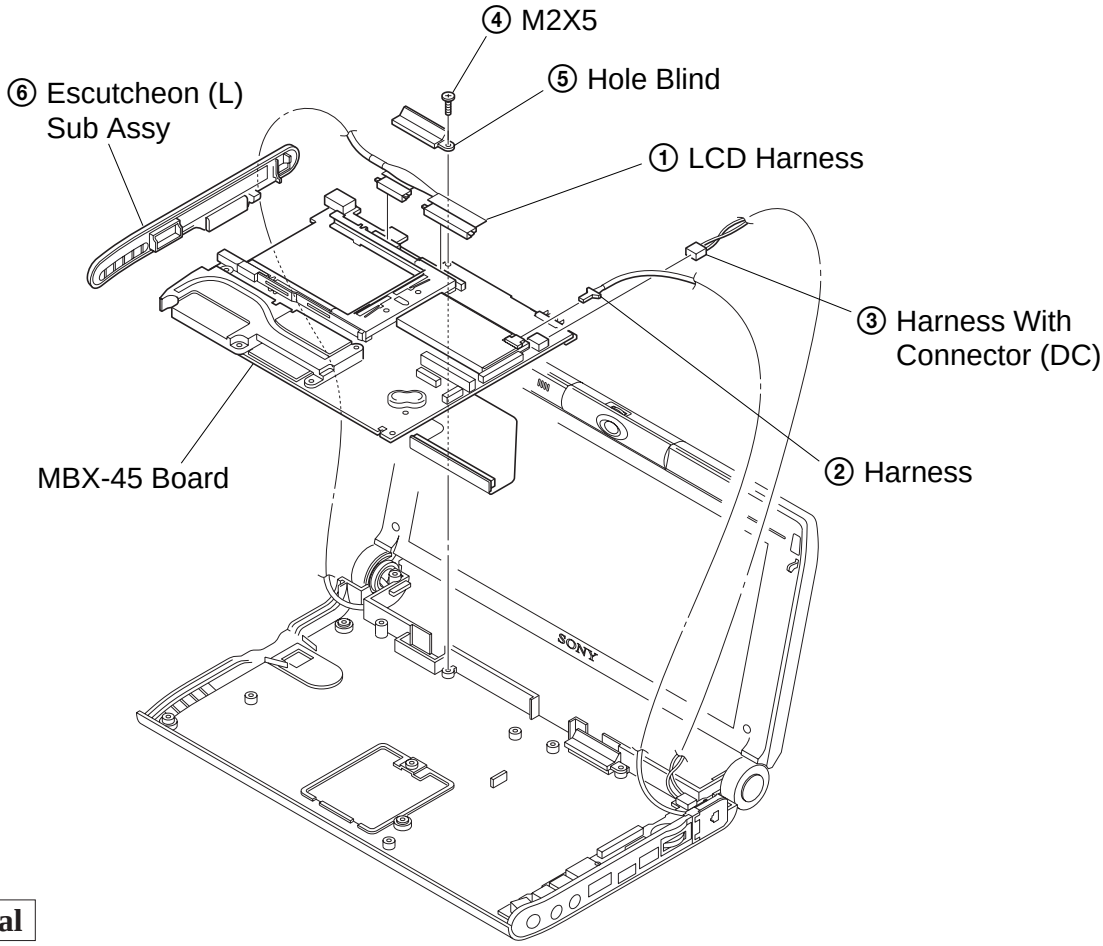
8. Nickel Hydrogen Battery



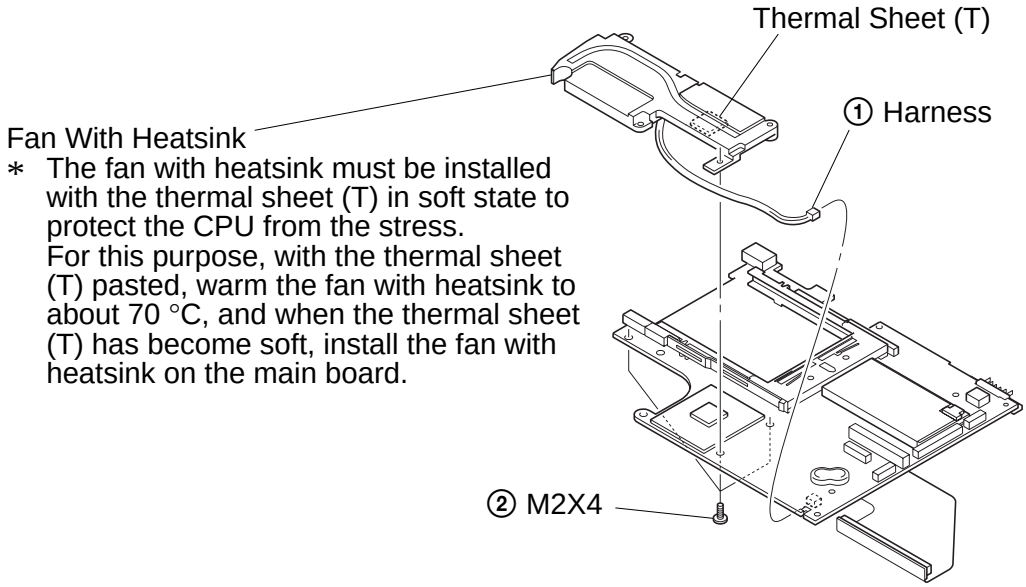
9. Assy HDD 12.0 GB



10. MBX-45 Board

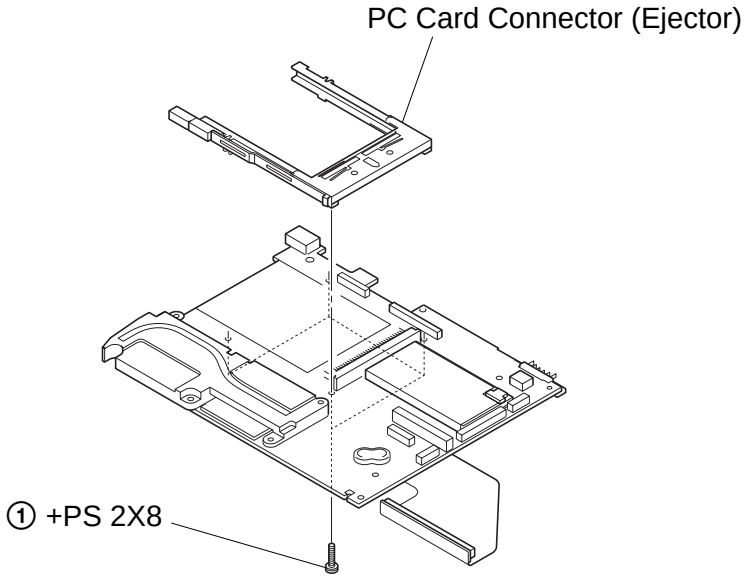


11. Fan With Heatsink

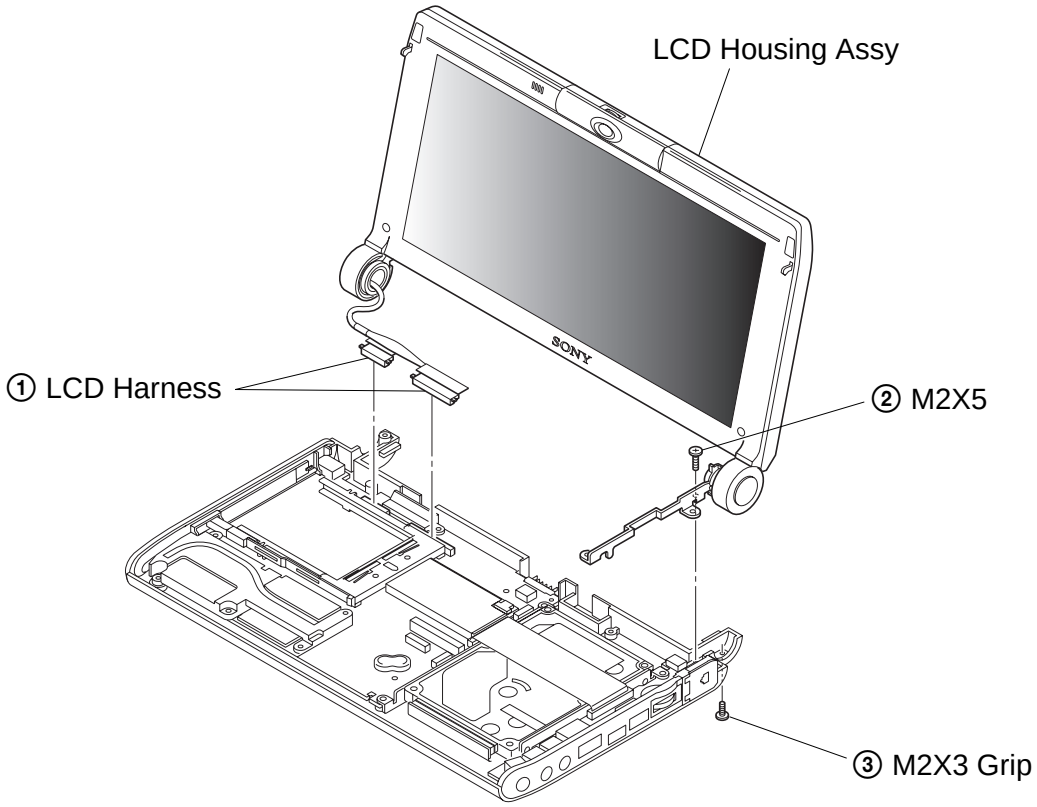


∗ The fan with heatsink must be installed with the thermal sheet (T) in soft state to protect the CPU from the stress.
For this purpose, with the thermal sheet (T) pasted, warm the fan with heatsink to about 70 °C, and when the thermal sheet (T) has become soft, install the fan with heatsink on the main board.

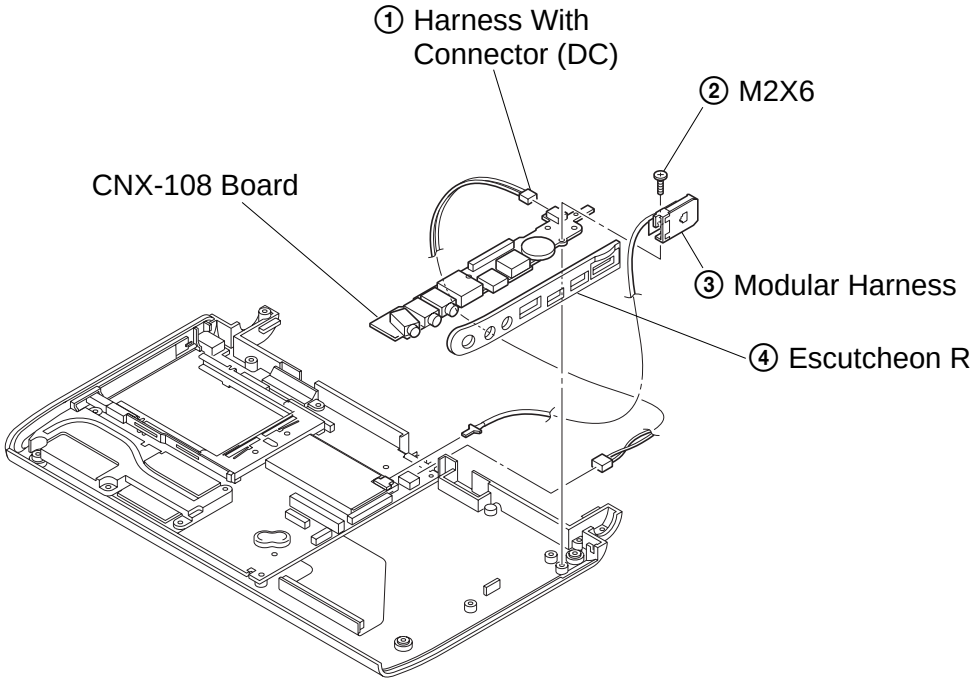
12. PC Card Connector (Ejector)



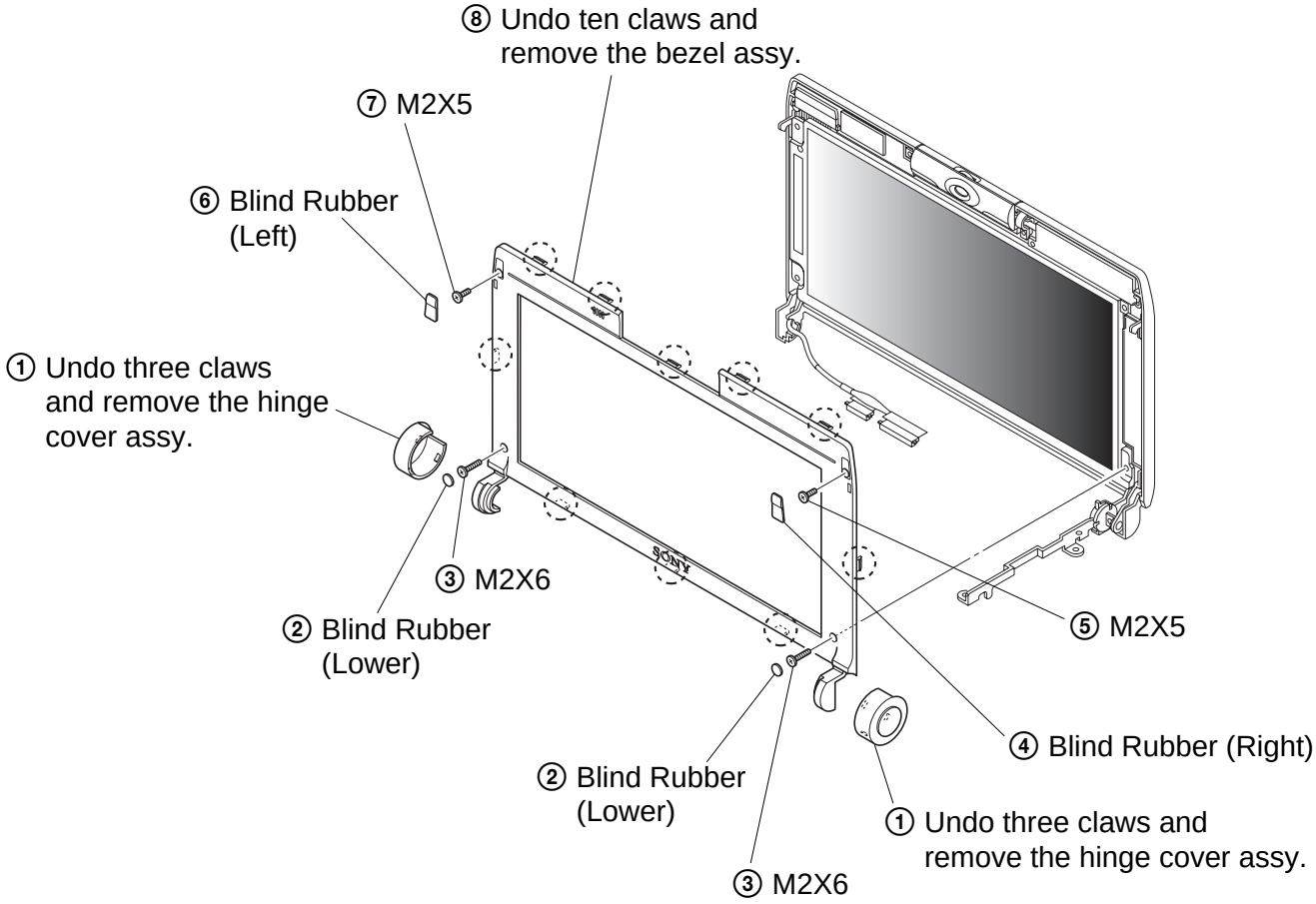
13. LCD Housing Assy



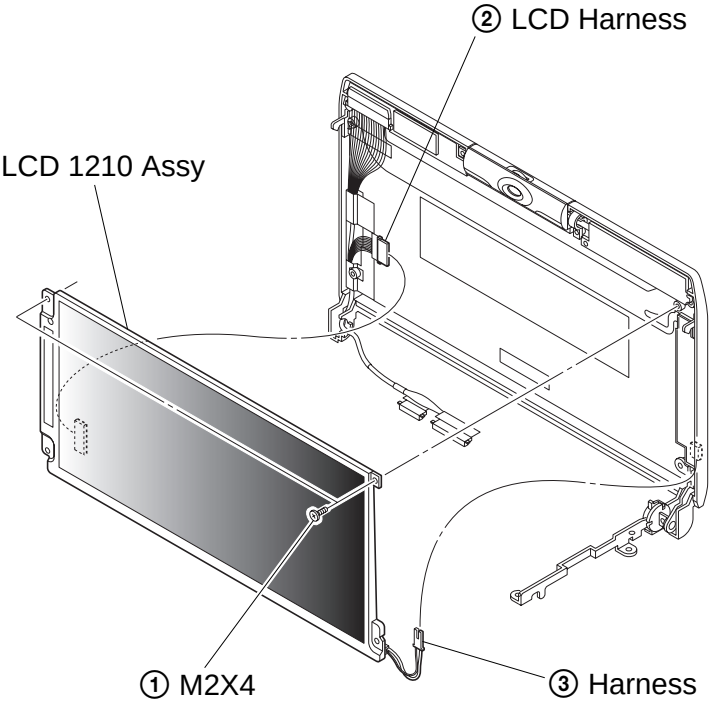
14. CNX-108 Board



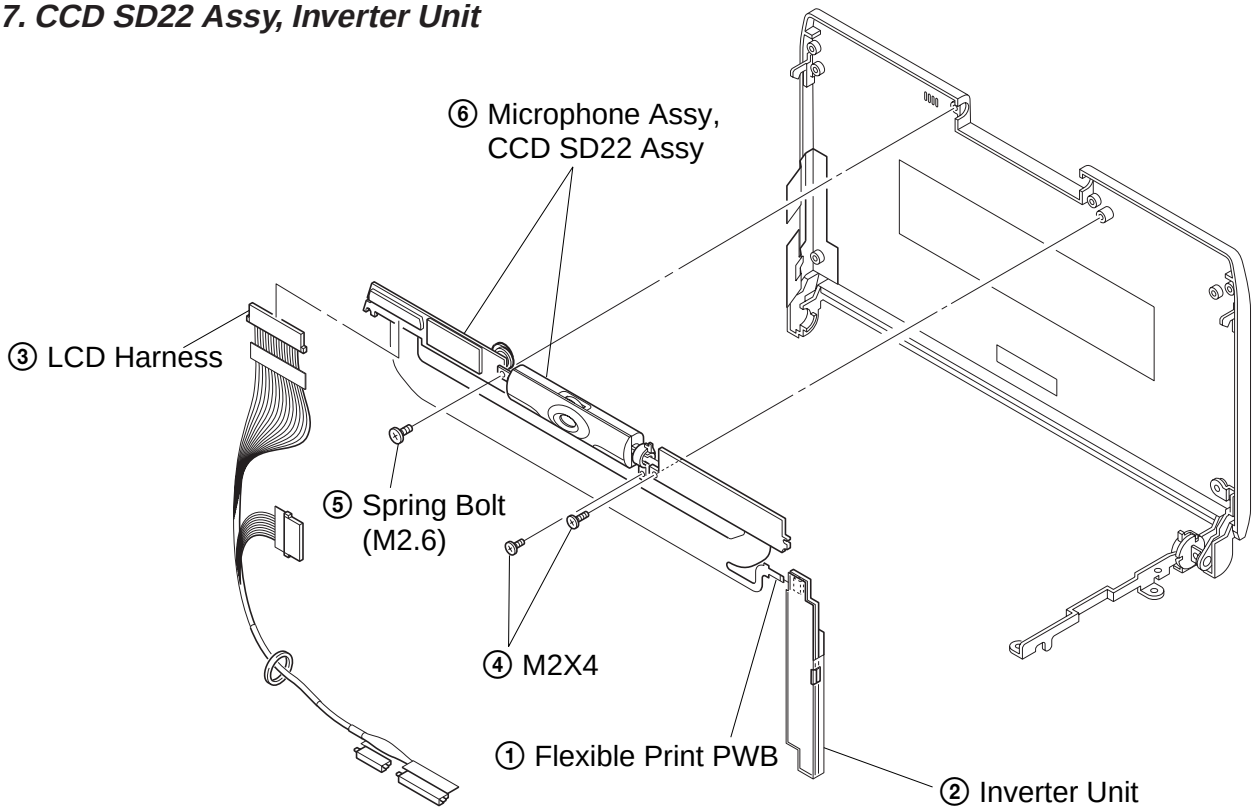
15. Bezel Assy

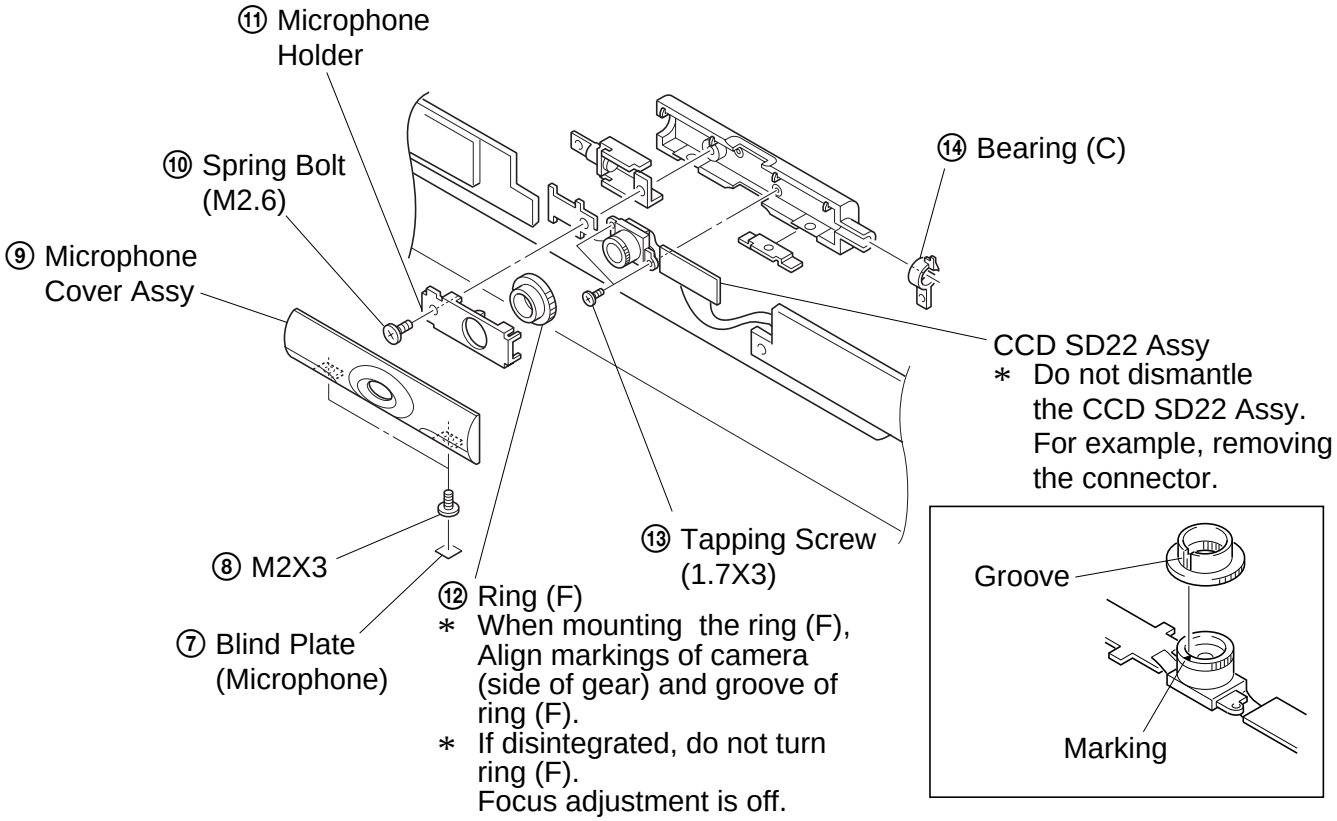


16. LCD 1210 Assy



17. CCD SD22 Assy, Inverter Unit





CHAPTER 2.
SELF DIAGNOSTICS

2-1. Note

This diagnostics document covers the checking items and the selftest that can be conducted on the set and the FDD & CD-ROM drive.

2-2. Necessary Equipment

- PCG-C1VN set
- Floppy disk drive
- CD-ROM drive
- Battery
- AC adapter
- CD-ROM for Diagnostics
- FD for Diagnostics (DOS system should be loaded)
- Other jigs and tools necessary for the test
  (All may not be required, but if not missing, some items cannot be tested.)
- PCG-C1VN series (IEEE 1394 Interface, etc.)

2-3. Starting the Diagnostics

Connect the FDD, CD-ROM drive, battery, and AC adapter to the PCG-C1VN set (simply called the set).
Insert the FD for Diagnostics in the FDD, and CD-ROM for Diagnostics in the CD-ROM drive.

2-4. Diagnosis with Diagnostic Program

With the FD for Diagnostics inserted in the FDD and the CD-ROM for Diagnostics in the CD-ROM drive, turning on the power switch on the set allows the diagnostic program to start from the CD, then the following screen to appear.

- Diagnostics Menu

```
************ Main Menu ************

1:Check ROM Information...      c:GUID (IEEE1394) test...
2:Battery test...               d:IEEE1394 Interface test...
3:HDD test...                   e:IrDA test...
4:Keyboard test...              f:Jog dial test...
5:LED test...                   g:Camera test...
6:Main memory test...           h:Shutter Button test...
7:Main system test...           i:Short aging test...
8:Fan test...                   j:Long aging test...
9:Touch pad test...             k:Aging test including the HDD test...
a:Video test...                 l:Exit from Diagnostics MENU
b:PPK test...
```

Select one menu item, and that item will be tested automatically.
As some items will prompt you to press a key or hear a sound, perform operation following the instructions.

- For the contents of menu items, refer to 2-5. Test Items. (Contents may change a little.)

If the test successfully completed,

```
******
PASS
******
```

or, if the test failed

```
******
FAIL
******
```

is displayed.
To abort the test, press the [Esc] key.

2-5. Test Items

- Check ROM Information...
  Model information, serial number, BIOS, etc. written to the BIOS ROM are displayed.
  Whether the information is correct is not tested.

- Battery test...
  The battery test is conducted. Battery mounting/demounting, AC power supply/shut-off, and battery charging/discharging are checked.
  As the test procedure is displayed, conduct the test following the displayed procedure.
  Battery mount/demount → Check (Mount/demount the battery)
  AC power connect/disconnect → Check (Supply/shut off the AC power)
  Battery mount/dismount → Check (Charge/discharge the battery)

- HDD test...
  Communication is made to the HDD to check if a response is returned.
  In this test, the data in HDD are temporarily transferred to the memory, and therefore no data are destroyed (HDD formatting is not executed).
  The HDD data may be destroyed if the power is interrupted during the test.
  In this test, the following items are executed automatically.

  1. HDD interface test (whether HDD is recognized is checked)
  2. HDD seek test
  3. HDD read test
  4. HDD write test
  5. HDD random read/random write test
     (It takes about 2 hours to test 18 GB HDD. The time will vary depending on the model.)
  6. Return to Main Menu

- Keyboard test...

  The keyboard is tested. Choose “Auto select”, and the test will be executed by judging the type of keyboard following the specifications at the shipment from the model information written to the ROM. Choosing JP, US, or UK allows each type of keyboard to be tested.

  When the keyboard was replaced with US or UK type even if the type of the set is JP, select US or UK type used at present.

  Note: To check the [Fn] key in the test, press the [Fn] + [→] keys. In checking the other keys, press each key.

- LED test...

  The LED is tested. Each LED is lit sequentially. An inspector checks visually whether LED is normal or not.

  First, check LEDs on the front side (left → right), and then check LEDs in the center (left → right).

  Note: The memory stick access test cannot be executed on the MS-DOS. Execute it on the Windows.

- Main Memory test...

  The memory is tested. The test consists of three test menus, and therefore select the desired menu.

  Respective tests quit automatically when they successfully completed.

  Fast : 1 time (1 minute 30 seconds to 2 minutes)

  Medium : 10 times

  Heavy : 20 times

  To abort the test, press the [Esc] key.

- Main System test...

  Fundamental functions of the CPU are tested. The test quits automatically when the test of all items successfully completed.

- FAN test...

  The fan is tested. The fan rotation and stop are checked.

  Check the fan operating condition from the sound or airflow. Execute the test following the message. First press the [Y] key if the fan stops. Then, press the [Y] key when the fan rotates.

- Touch pad test...

  The touch pad is tested.

  The cursor movement and the left/right clicking are checked. As the dialog box is displayed three times, move the cursor into the dialog box.

  Conduct the test in the following order.

  1. Left click button
  2. Right click button
  3. Touch pad*

  (* If you operate with the touch pad before this test starts up, the test fails in starting up.)

- Video test...

  The video is tested. Each time the key is pressed, several patterns are displayed. The inspector checks visually whether the patterns are normal or not. If normal, press the [Y] key.

  Note: Conduct this test after making sure which patterns are normal.

- PPK test...

  This test cannot be executed for this set.

- GUID (IEEE1394) test...

  Normally, this is not used. GUID (i.LINK ID) value is displayed. Whether this value is correct is not checked.

- IEEE1394 Interface test...

  The communication test of 1394 is executed. Another PC is required as a communication counterpart. The models released after year 2000 will operate normally. For the models released earlier than year 2000, the model having same 1394 chip as that of PC to be tested will operate normally. (Accordingly, it is recommended to use the models released after year 2000 as a communication counterpart.)

  Connect the i.LINK cable, and start the communication counterpart PC using the TOOL FD created from the CD in advance. (To create the TOOL FD, copy the contents of TOOL folder in the CD to the FD that stores the DOS system.)

  From the MENU in the communication counterpart PC, select the 1394 test to place the PC in the receive state. After confirming that the communication counterpart PC is in the receive state, select the 1394 test on the machine to be tested, and the test will start. Random data transmission and receiving are repeated 10 times. (This test is repeated 10 times.)

- IrDA test...

  This test is not executed for this set.

- Camera test...

  The built-in camera is tested. Whether an image captured in the camera is displayed correctly and the camera rotation switch functions normally can be checked. Perform operation sequentially following the instructions given on the screen.

- Shutter Button test...

  The Shutter button on the camera is tested. The time-out has been set, and if the button is not operated for the specified time, an error occurs.

- Jog dial test...

  The jog dial turning and clicking are tested. The < > mark will be displayed, then turn the jog dial downward to meet with (^_^) mark and click the jog dial. Next, turn the jog dial upward to meet with (^_^) mark displayed upward and click the jog dial.

- Short aging test.../Long aging test...

  The aging test is executed. The short test quits when the test of all items is executed once. In the long test, respective items are tested repeatedly over a total of about 10 hours.

- Aging test including the HDD test...

  Execute this test when destructive test is applied to the HDD. The HDD read/write test is executed after the aging test. Though two test menus, short and long, are available, the contents of aging test are same as Short aging test.../Long aging test... The test will start immediately if the menu is selected.

  Note: Executing this test will destroy the contents of user's HDD, thus requiring extreme care.

- Exit from Diagnostics MENU

  The diagnostic test quits and the DOS prompt is displayed. If you exited from diagnostic test by mistake, restart the diagnostic program.

2-6. Windows Test

There are two kinds of menus in the Windows test, as follows:

Audio

Modem

Before the test, create the FD from the CD for service diagnostics of the model concerned.

The files used for each test are saved in the following directories in the CD. Copy all files in the folder.

Audio ¥windiag¥wave

Modem ¥windiag¥modem

- Audio

  This test requires the microphone and headphone.

  Double-click the t_auw01 icon (MS-DOS icon) in the FD created in advance.

  The DOS prompt screen will open and the test will start. After that, execute the test following the instructions on the screen.

- Modem

  This test requires the modem and circuit simulator.

  Double-click the Modem icon (MS-DOS icon) in the FD created in advance.

  The DOS prompt screen will open and the test will start.

2-7. Other Test not Supported

- PCMCIA test

  The 16 bit PC-CARD test is substituted by using the CD-ROM.

  The CardBUS and ZV cannot be tested because special tools are necessary.

CHAPTER 3.

BLOCK DIAGRAM

BusMaster	PCLK	IDSEL	INTA
REQ0/GNT0	PCLK0 AD19	PIRQD	i.LINK (Sony)
REQ1/GNT1	PCLK1 AD20	PIRQC	Audio (YAMAHA)
REQ2/GNT2	PCLK5 AD23	PIRQB	CardBus (Richo)
REQ3/GNT3	PCLK6 AD16	PIRQA	Video (ATI)
REQ4/GNT4	PCLK4 AD21	PIRQB	Modem
REQ5/GNT5	PCLK2 AD22	PIRQB	M-Chip (Kawatetsu)
	PCLKF AD18		PIIX4E (Intel)
	PCLK0/3		TM5400

(TRANSEMETA)

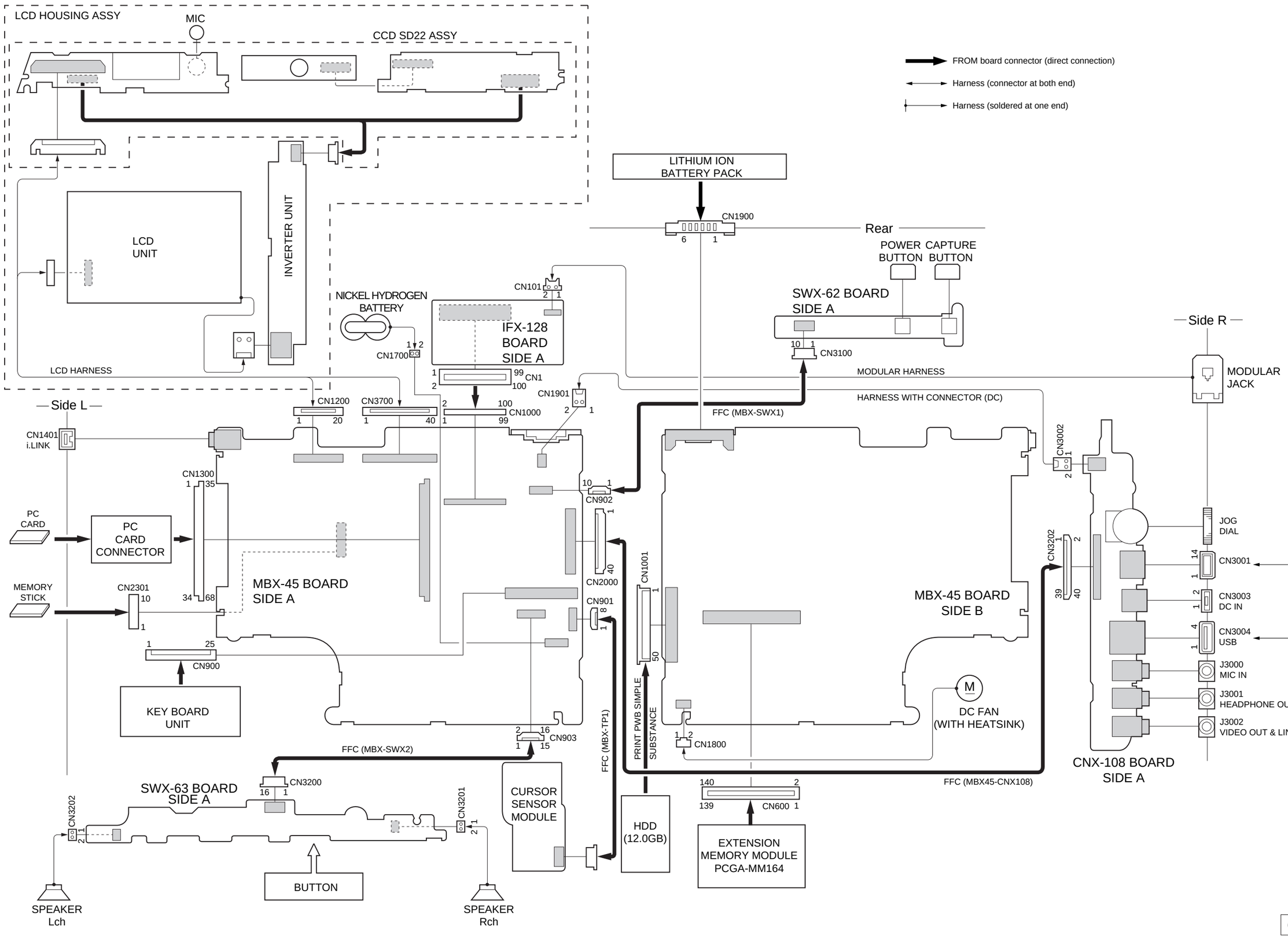
MIC
CAM / BCX-SD22 1A
1/6" 760H + INT/PG CONV
LCD
1024 x 480
Wide XGA
TFT
Inverter
SM Bus 1
CN
CPU
TM5600
CPU CORE & North Bridge
L1(64k) & L2(128k) Cache
Memory Controller
+VCPUCORE(1.3-1.6V)
+3VRUN
+2.5VRUN
Memory
SDR
128MB
VCC 3.3V (+3VSUS)
Exp. Memory
EM-33
SDRAM
VCC 3.3V (+3VSUS)
4
TV OUT
5
6
CN MODEM CARD
CN
i.LINK
Graphics
ATI
Mobility-M1
8MB SGRAM
+3VSUS
+2.5VSUS
+2.5VVID
MJPEG
Kawatetsu
M-CHip
+3VRUN
Frame
Buffer
CardBus
Ricoh
R5C457II
+3VRUN
+2.5VSUS
i.LINK
TI
TSB43LV22
+3VRUN
CN X-108
I/O Connector
DC IN
CN
USB
CN
VGA
CN
MIC
IN
HeadPhone
OUT
AV Jack
JOG
HCLK0
29.4989MHz
VGA
3
33MHz
24.576MHz
PCI (3.3V)
Clock Generator
IMIC9716CTB-D
HCLK0 (66MHz)
PCLK* (33MHz)
REF1 (14.31818MHz)
48MHz (48MHz)
+3VRUN
+2.5VRUN
14.31818MHz
South Bridge
FW8237MB
PIIX4E
+3VALW
+3VRUN
USB0
2
32.768kHz
HDD
5V(+5VPIDE)
6
Audio
YAMAHA
YMF754-R
+2.5VSUS
+2.5VRUN
24.576MHz
Mic in
HeadPhone
Out
LIN IN/OUT
4
8bit X-Bus (3.3V)
SD,Control
PORT80
Ext BIOS
H8 Crisis
(Serial)
BIOS
2MB Flash ROM
+3VRUN
I/O Expander1
(ADR=0111 101x)
+3VALW
I/O Expander0
(ADR=0111 100x)
+3VALW
SM Bus 1
EC+KBC
H8S/2147A
100QFP (16x16)
+3VALW
+5VALW
+3VREF
Flash Memory
MS
TI
F731791PBK
MS_+VSUMIRE
+3VRUN
Magic
Gate
1
DC
PS & Charger
VCC 5V (ALW,SUS, RUN)
VCC 3V (ALW,SUS, RUN)
VCC 2.5V (SUS, RUN)
+VCPUCORE (1.20-1.65V)
5
ATF0 - CPU
ADM1030
(ADR=100110x)
+3VALW
10.000MHz
SM Bus 0
PCGA-BP51 system
BATT
11.1V/1800 mAh
SWX-63
(TP & SP connection)
STBY/PWR/BAT /INFO/BT LED
Track Point SW
SWX-62
PWR&Shutter SW
Power SW
Shutter SW
BT SW
MS/IDE/NUM/CAPS /SCRL LED
JOG G/A
"SOMETARO"
+3VRUN
SLOT
Memory Stick
Keyboad
Track Point
Sensor+Cntl

MBX-45 (Main System Board)

SONY PROPRIETARY INFORMATION

CHAPTER 4.

FRAME HARNESS DIAGRAM



CHAPTER 5.

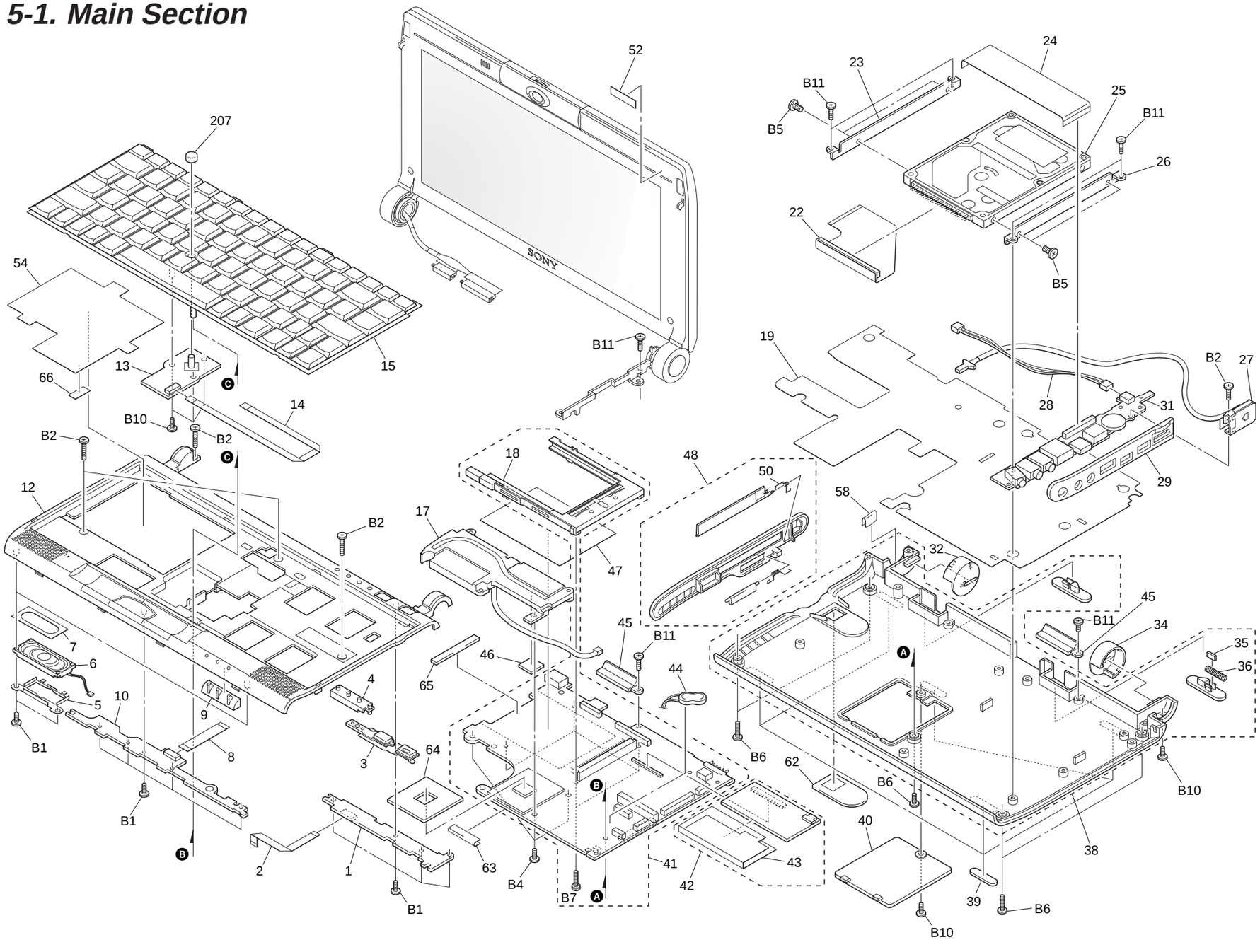
EXPLODED VIEWS AND PARTS LIST

NOTE:

- The mechanical parts with no reference number in the exploded views are not supplied.
- Items marked " * " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- When the same reference numbers are written down in the list, please use the one listed in the first place as the main part.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.
Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

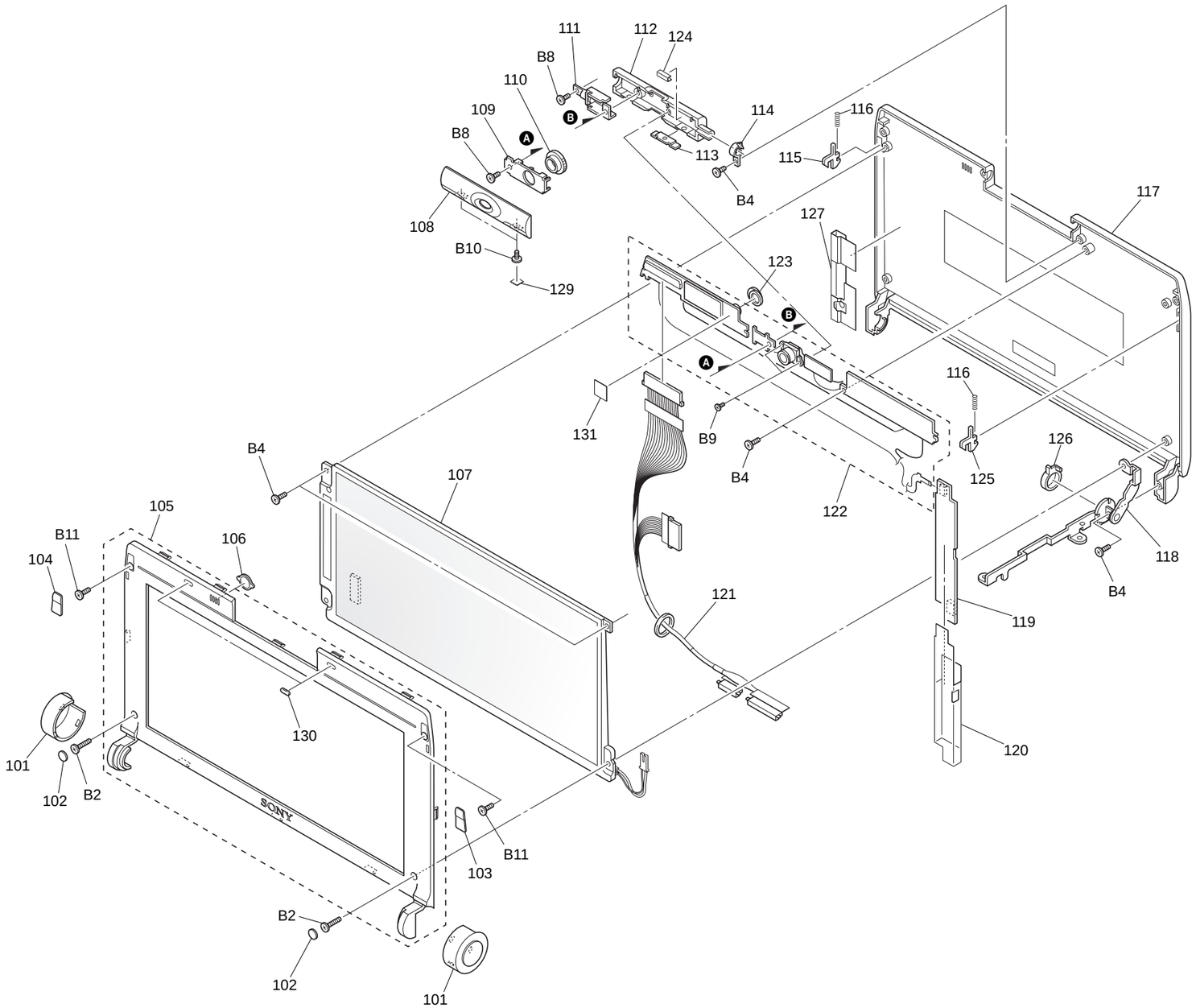
5-1. Main Section



Ref.No.	Part No.	Description
1	A-8066-204-A	SWX-62 MOUNT
2	1-794-957-11	FFC (MBX45-SWX62)
3	4-643-063-01	BUTTON, POWER
4	4-648-579-01	LED (KEY BOARD)
* 5	4-648-584-02	RETAINER, SPEAKER
6	1-529-886-11	SPEAKER (30X15 WITH HARNESS)
7	4-648-697-01	SHEET (SPEAKER), ADHESIVE
8	1-791-607-12	FFC (MBX-SW2)
9	4-648-580-01	LED (POWER)
10	A-8066-206-A	SWX-63 MOUNT
12	X-4622-964-1	REST SUB ASSY, PALM
13	1-772-335-21	SENSOR MODULE, CURSOR
14	1-791-606-11	FFC (MBX-TP1)
15	1-418-674-23	KEY BOARD UNIT
17	1-763-589-11	FAN WITH HEATSINK
18	1-793-637-11	CONNECTOR, PC CARD (EJECTOR)
* 19	4-648-856-01	SHEET (T), INSULATING
22	1-791-650-11	SUBSTANCE, PRINT PWB SIMPLE
* 23	4-643-048-12	BRACKET (L), HDD
24	1-794-958-11	FFC (MBX45-CNX108)
25	A-8066-145-A	ASSY HDD 12.0GB (S)
* 26	4-643-049-12	BRACKET (R), HDD
27	1-959-997-21	HARNESS, MODULAR
28	1-791-608-11	CONNECTOR, HARNESS WITH (DC)
29	4-648-550-01	ESCUTCHEON (R)
31	A-8066-200-A	CNX-108 COMPLE
32	4-643-040-01	COVER (L), MAIN
34	4-643-041-01	COVER (R), MAIN
35	4-636-934-01	SPACER (SPRING)
36	4-635-956-01	SPRING (B), COMPRESSION COIL
38	X-4623-005-2	CABINET SUB ASSY, BOTTOM
39	4-635-946-11	FOOT
40	4-643-028-11	LID, MEMORY
41	A-8047-772-A	MBX-45 J/UC ASSY (S)
42	A-8066-571-A	IFX-128 COMPLE
43	4-643-811-03	SHEET (IFX), INSULATING
44	1-756-038-21	BATTERY, NICKEL HYDROGEN
45	4-643-046-01	BLIND, HOLE
46	4-648-575-02	SHEET (T), THERMAL
47	4-648-586-01	SHEET (M), BLIND
48	X-4623-006-1	ESCUTCHEON (L) SUB ASSY
50	4-643-050-02	SPRING, TORSION
52	4-648-548-21	LABEL, ID
* 54	4-646-035-01	HEATSINK (CARD SLOT)
58	4-645-941-01	GASKET (RING)
62	4-648-546-01	WINDOW (M)
63	4-651-288-01	SHEET (BOARD), BLIND
64	4-651-484-01	SHEET, EMI
65	4-651-287-01	SPACER (CARD)
66	4-640-515-21	GASKET
B1	4-639-112-01	SCREW M2X4
B2	4-644-002-21	SCREW M2 (SB) (2X6)
B4	4-644-002-01	SCREW M2 (SB) (2X4)
B5	4-635-301-01	SCREW M3X4
B6	4-644-637-11	GRIP, M2 EG (2X8)
B7	7-628-253-35	SCREW +PS 2X8
B10	4-645-214-01	GRIP, M2 (2X3)
B11	4-644-002-31	SCREW M2 (SB) (2X5)

* To paste the thermal sheet (T) (46) to the fan with heatsink, warm the thermal sheet (T) adequately until it becomes soft.
For further information, refer to the removal (page 1-7).

5-2. LCD Section

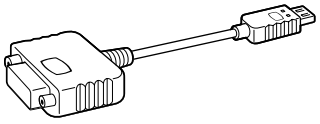


Ref.No.	Part No.	Description
101	X-4623-091-1	COVER ASSY, HINGE
102	4-648-046-01	RUBBER (LOWER), BLIND
103	4-643-076-01	RUBBER (RIGHT), BLIND
104	4-643-077-01	RUBBER (LEFT), BLIND
105	X-4622-406-3	BEZEL ASSY
106	4-644-102-01	INSULATOR (UPPER), MICROPHONE
107	A-8046-178-A	LCD 1210 ASSY (S)
108	X-4622-314-1	COVER ASSY, MICROPHONE
109	4-643-033-02	HOLDER, MICROPHONE
110	4-643-080-01	RING (F)
111	4-643-066-03	HINGE (C)
112	4-643-067-11	CABINET, MICROPHONE
113	4-643-034-01	NUT (MIC), PLATE
114	4-643-079-02	BEARING (C)
115	4-643-035-01	LATCH (L)
116	4-643-051-01	SPRING, COMPRESSION
117	X-4623-099-1	HOUSING ASSY
118	4-643-081-11	HINGE (LCD)
119	1-476-365-11	INVERTER UNIT
120	4-643-064-02	INSULATING SHEET (INVERTER)
121	1-960-040-12	HARNESS, LCD
122	A-8047-774-A	CCD SD22 ASSY (S)
123	4-644-103-01	INSULATOR (UNDER), MICROPHONE
* 124	4-645-340-01	GUARD, CABLE
125	4-643-029-01	LATCH (R)
126	4-643-072-02	LEVER, SWITCH
127	4-643-038-01	CLAMP
129	4-643-812-11	PLATE (MICROPHONE), BLIND
130	4-646-976-02	CUSHION (LATCH)
131	4-651-914-02	TAPE (MICROPHONE)
B2	4-644-002-21	SCREW M2 (SB) (2X6)
B4	4-644-002-01	SCREW M2 (SB) (2X4)
* B8	4-640-695-11	BOLT (M2.6), SPRING
B9	3-318-382-21	SCREW (1.7X3), TAPPING
B10	4-645-214-01	GRIP, M2 (2X3)
B11	4-644-002-31	SCREW M2 (SB) (2X5)

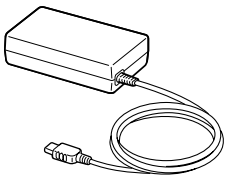
* Do not dismantle the CCD SD22 assy (122).
  For example, removing the connector.
* When mounting the ring (F) (110), align markings of camera (side of gear) and groove of ring (F).
* If disintegrated, do not turn ring (F) (110).
  Focus adjustment is off.

5-3. Accessories

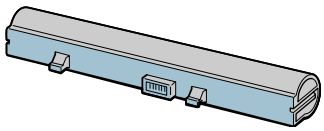
202
Display Adaptor (1)



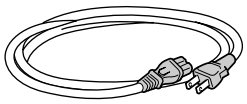
203
AC Adaptor



204
Battery Pack (1)

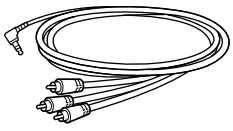


206
Power Cord (1)



207
Spare Cap
(for Stick) (2)

209
AV Connecting Cable

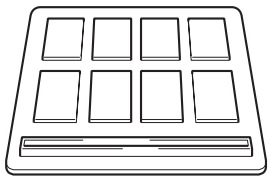


Ref.No.	Part No.	Description
		ACCESSORIES
		**********
202	1-757-026-11	CABLE, VGA
⚠203	1-418-518-21	ADAPTOR, A.C.
204	1-756-074-21	BATTERY PACK, LITHIUM ION
⚠206	1-782-614-31	CORD, POWER
207	4-643-958-01	CAP (IN BAG), SENSOR
209	1-765-080-31	CORD, CONNECTION
210	A-8056-432-A	EM-33 MOUNTED PWB
	4-650-622-11	WELCOME MAT, C1
	4-650-626-11	USER GUIDE, C1
	4-650-629-11	QUICK START, C1

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

210
EM-33 Mounted PWB



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