

PCG-FRV23/FRV25/FRV26/FRV27/FRV28

SERVICE MANUAL

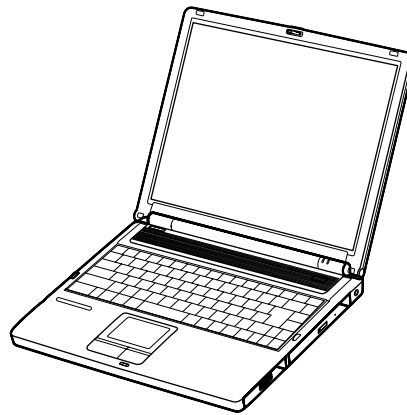
For American Area

US Model

Canadian Model

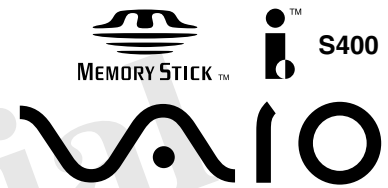
Ver 4-2003I

Revision History



Illust : PCG-FRV27

Lineup : PCG-FRV28
PCG-FRV27
PCG-FRV26
PCG-FRV25
PCG-FRV23



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- Design and specifications are subject to change without notice.

NOTEBOOK COMPUTER

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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.

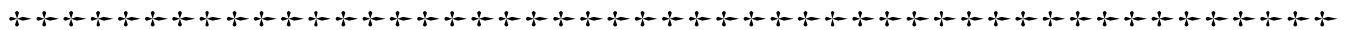
CAUTION: Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Discard used batteries according to the manufacturer’s instructions.

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 be 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 Δ 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.

ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!

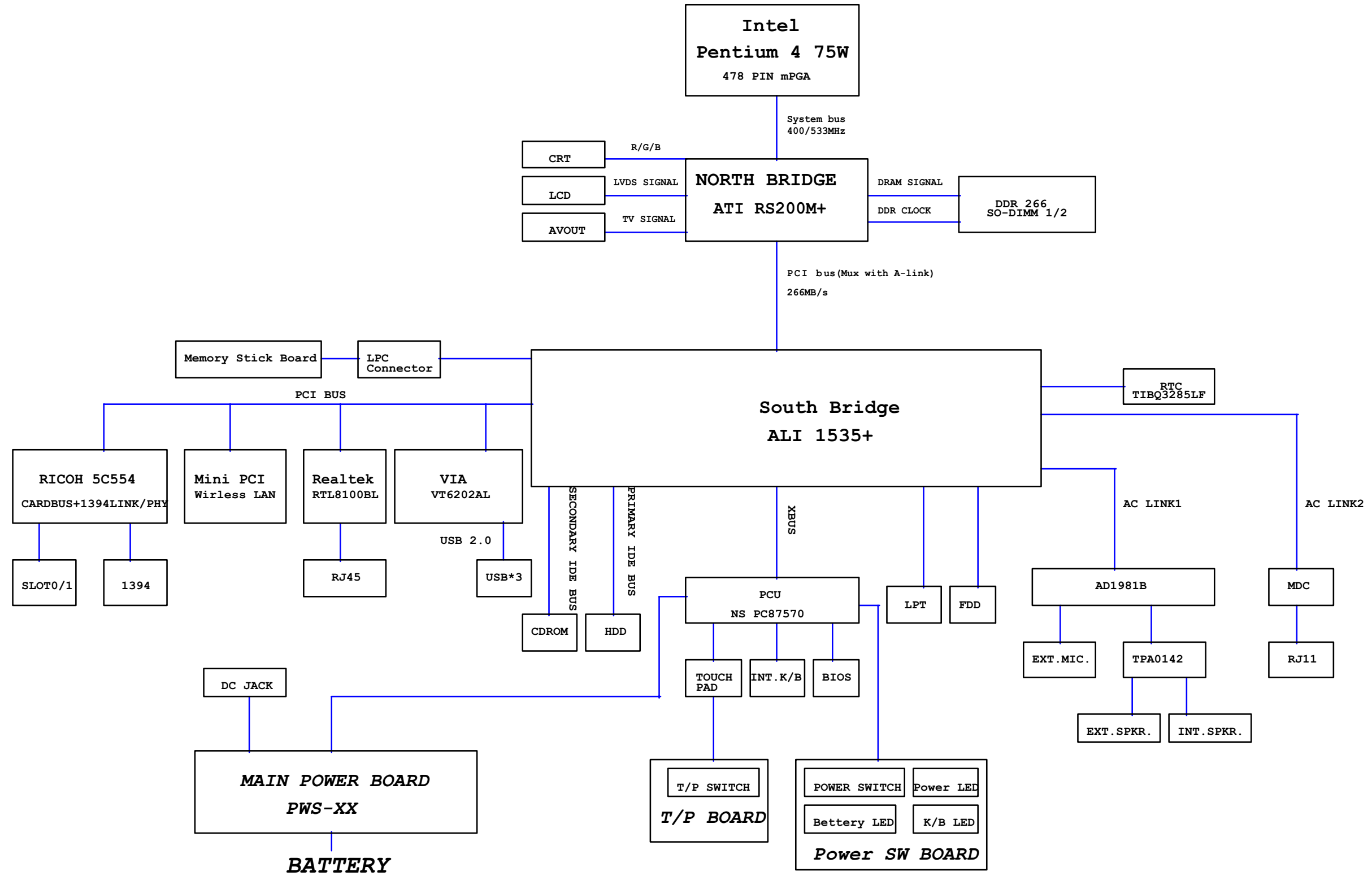
LES COMPOSANTS IDENTIFÉS PAR UNE MARQUE Δ SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈSES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPÉMENTS PUBLIÉS PAR SONY.

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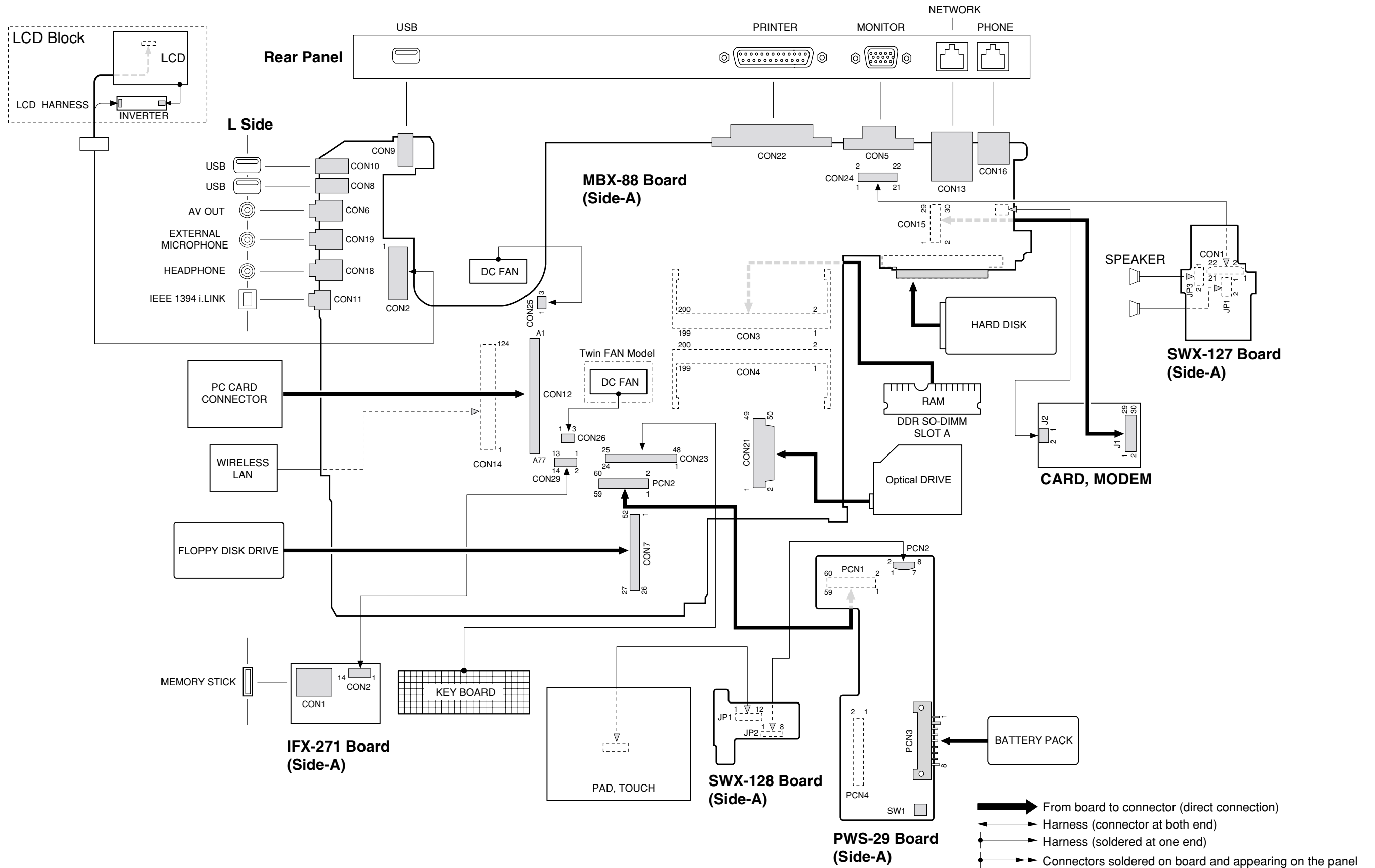
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History of the changes is shown as the “Revision History” at the end of this data.

CHAPTER 1. BLOCK DIAGRAM



CHAPTER 2. FRAME HARNESS DIAGRAM



NOTE:

- Items marked “ * ” are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- When two or more parts are shown, use the part described first as the main part.
- The parts marked “ \$ ” are the High Value Modules (HVM).
- The parts marked “ # ” are the parts on which barcode label is attached.
- The parts marked “ & ” are the “Customer Replacable Parts (CRP)” that can be replaced by Field Customer Support.
Especially the parts with the <&> mark require the special attention to use them. Here fore, check first whether the desired part is one of the targetted parts of the Customer Replaceable Parts(CRP), or the non-targetted parts by referring to the exploded view.
- Regarding the boards of this model, the discrete parts on the boards cannot be replaced. However, Some connectors can be replaced.

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

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

【使用上の注意】

- * 印の部品は常備在庫しておりません。
- 図面番号のない部品は供給しません。
- 併記部品の場合、上部記載部品をメイン部品として使用してください。
- 部品名称の前に\$ 印のついた部品は、High Value Module (HVM) です。
- 商品名称の前に# 印のついた部品は、バーコードラベル貼付部品です。
- 部品名称の前に& 印のついた部品は、お客様窓口などでも交換可能な Customer Replacable Parts (CRP) です。
特に<&> 印のついた部品は、使い分けが必要な部品ですので、分解図で Customer Replacable Parts 対象部品か、対象外部部品かを必ず御確認ください。
- 本モデルの基板については、基板上の各部品の修理は行うことができません。ただし、一部のコネクタについては、修理可能です。

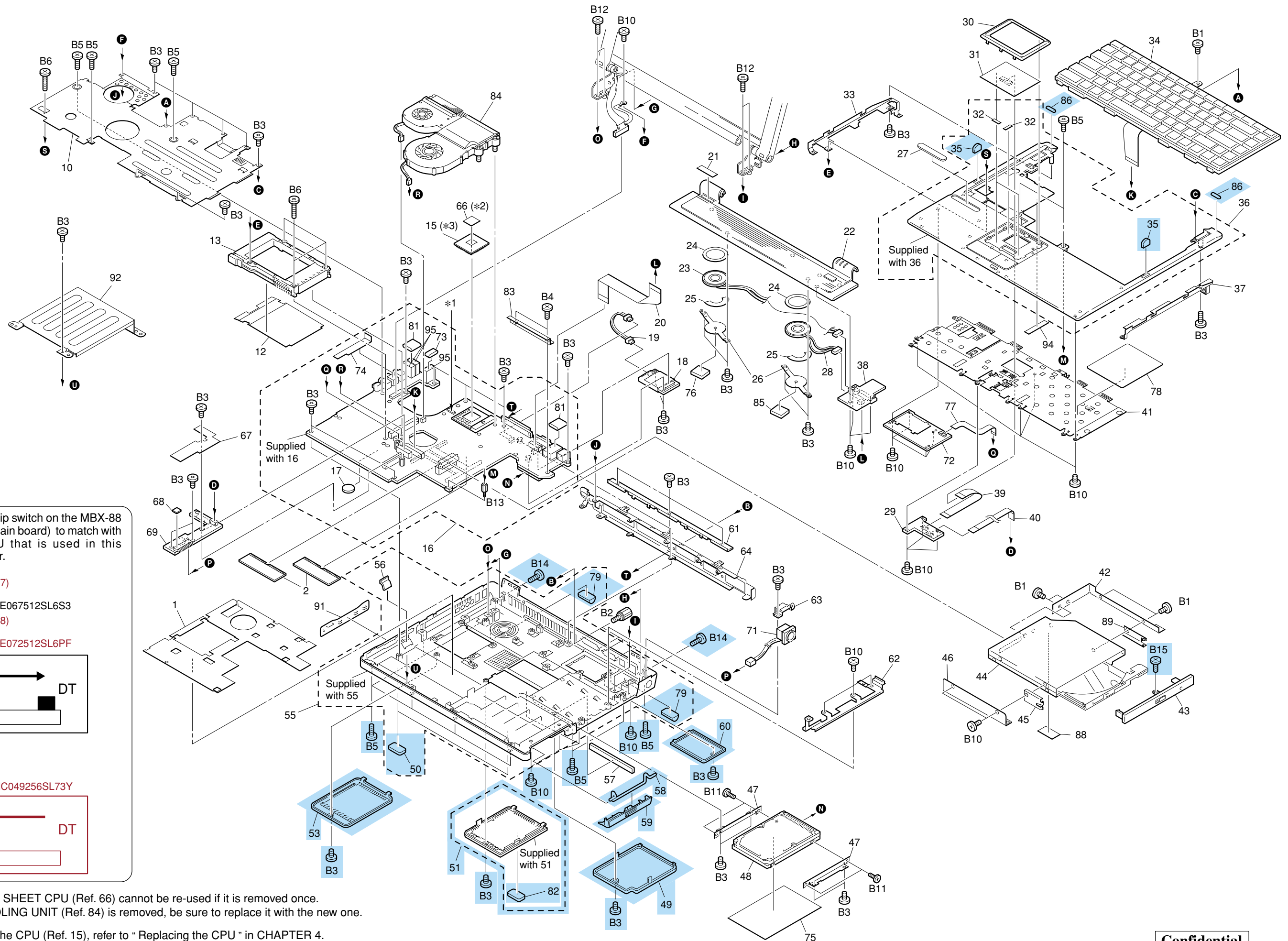
\triangle 印の部品、または \triangle 印付きの点線で囲まれた部品は、安全性を維持するために重要な部品です。従って交換時は、必ず指定の部品を使用してください。

3-1. Main Section

Ref.No.	Part No.	Description	Ref.No.	Part No.	Description
1	4-677-632-01	INSULATOR BOTTOM	48	A-8113-859-A	\$ # ASSY HDD 40GB (H) (S)
2	6-600-158-01	IC HYS64D32020GDL-7-B (DDR DIMM 256MB)	49	4-673-851-01	& COVER HDD
2	6-600-116-01	IC M470L3224DT0-CB0 (DDR DIMM 256MB)	50	4-677-197-01	& FOOT FRONT
* 10	4-674-025-01	BRACKET KEYBOARD	51	X-4626-185-1	& COVER MEMORY ASSY (S)
12	4-677-636-01	INSULATOR PC CARD	53	X-4626-186-1	& COVER MINIPCI ASSY (S)
△ [MA] 13	1-761-695-11	NE5.1 PC CARD(EJECTER)	55	X-4626-181-1	HOUSING BOTTOM ASSY (S)
15	6-704-132-01	(FRV25/FRV27)... IC RK80532PE067512SL6S3 (P4 2.66GHz)	56	4-670-193-01	LENS FDD
15	6-704-957-01	(FRV23)...IC RH80532NC049256SL73Y (Mobile Cel 2.2GHz)	57	4-677-640-01	CUSHION HDD
15	6-704-665-01	(FRV26/FRV28)... IC RK80532PE072512SL6PF (P4 2.8GHz)	58	4-671-645-01	& DOOR BATTERY SPRING
△ [MA] 16	A-8068-048-A	\$ # COMPLETE PWB MBX-88	59	4-673-853-01	& DOOR BATTERY
17	1-756-148-11	SECONDARY, BATTERY, LITHIUM	60	4-673-852-01	& COVER MODEM
18	1-761-606-14	# CARD, MODEM	61	4-670-194-01	COVER HOOD
19	1-827-193-11	NE5.1 CABLE(MDC-MBX)	* 62	4-676-348-01	BRACKET DC
20	1-827-605-11	JEL1.1 FFC(PWR)	* 63	4-674-019-01	PLATE DC
21	4-675-849-02	(FRV27)...ID LABEL U	* 64	4-674-018-01	BRACKET IO
21	4-675-849-12	(FRV25:US)...ID LABEL U	66	4-668-785-01	THERMAL SHEET CPU
21	4-676-839-01	(FRV23)...ID LABEL CA	67	4-677-635-01	INSULATOR PWS
21	4-676-839-11	(FRV25:Canadian)...ID LABEL CA	68	4-673-303-01	SPACER TOUCHPAD BUTTON
21	4-675-849-31	(FRV28)...ID LABEL U	69	A-8068-050-A	\$ COMPLETE PWB PWS-29
21	4-675-849-41	(FRV26)...ID LABEL U	71	1-827-606-11	JEL1.1 DC CABLE (INT)
△ [MA] 22	X-4626-183-1	HOOD KEYBOARD ASSY (S)	72	A-8068-051-A	\$ COMPLETE PWB IFX-271
23	1-825-426-11	NE5.1 SPEAKER	73	4-677-639-01	GASKET USB
24	4-644-357-01	CUSHION SPK	74	4-677-637-01	CUPPER TAPE
25	4-654-631-01	GUARD SPK	75	4-672-852-01	SHEET HDD
26	4-671-631-01	BRACKET SPEAKER	76	4-672-855-01	GASKET SPEAKER
27	4-674-042-01	MEMORY STICK WINDOW	77	1-860-222-11	JEL1.1 FPC (MS)
28	1-825-427-11	NE5.1 SPEAKER (R)	78	4-672-858-01	SHEET BRACKET TOUCHPAD
29	A-8067-868-A	COMPLETE PWB SWX-128	79	4-674-041-01	& FOOT REAR
30	4-670-198-01	ESCUSHION TOUCHPAD	81	4-672-849-01	GASKET LAN
31	1-796-319-31	PAD, TOUCH	82	4-671-635-01	& FOOT
32	4-672-077-01	ADHESIVE TAPE TP	* 83	4-674-030-01	GUIDE DRIVE
* 33	4-674-023-01	BRACKET PALMREST L	84	A-8115-824-A	\$ (FRV25/FRV27/FRV26/FRV28)... ASSY COOLING UNIT (DTP) (S)
34	1-478-086-21	# KEY BOARD UNIT (US)	84	A-8115-823-A	\$ (FRV23)... ASSY COOLING UNIT (M) (S)
35	4-671-634-01	& CUSHION PALMREST	85	4-673-615-01	GASKET SPEAKER R
36	X-4626-182-1	HOUSING PALMREST ASSY (S)	86	4-677-536-01	& SHEET RUBBER JEL
* 37	4-674-022-01	BRACKET PALMREST R	88	4-677-647-01	INSULATOR DRIVE
38	A-8068-049-A	\$ COMPLETE PWB SWX-140	89	4-677-259-01	SPRING DRIVE L
39	1-827-189-11	NE5.1 FFC(TP)	91	4-675-126-01	CAP FDD
40	1-827-192-11	NE5.1 FFC(PWS-TP)	* 92	4-676-347-01	BRACKET DUMMY FDD
* 41	4-674-024-01	BRACKET TOUCHPAD	94	4-673-304-01	SPACER PC CARD
* 42	4-674-028-01	BRACKET DRIVE R	95	9-885-029-05	CONNECTOR, USB (A)
43	X-4626-071-1	(FRV27)...ASSY TOS DVDRW BEZEL	B1	4-216-272-01	SCREW (M2), +
43	X-4626-113-1	(FRV23/FRV25/FRV26)... ASSY QSI COMBO BEZEL	B2	4-635-966-01	SCREW (HEX)
43	X-4626-070-1	(FRV28)...ASSY KME DVDRW BEZEL	B3	4-641-726-12	<& SCREW (M2), SPECIAL HEAD
44	1-796-506-11	\$ # (FRV27)...W-DVD(SD-R6012)	B4	4-641-726-41	SCREW (M2), SPECIAL HEAD
44	1-796-627-11	\$ # (FRV23/FRV25/FRV26)... COMBO DRIVE (SBW-241)	B5	4-644-637-01	<& GRIP, M2 EG
44	1-796-480-11	\$ # (FRV28)...W-DVD(UJ-810B)	B6	4-644-637-42	GRIP, M2 EG
45	4-670-244-01	SPRING DRIVE R	B10	4-665-205-01	<& SPECIAL FLAT HEAD (EG GRIP),M2
* 46	4-674-029-01	BRACKET (DRIVE) (L)	B11	4-673-018-02	SCREW SPECIAL HEAD
* 47	4-674-033-01	BRACKET HDD	B12	4-673-019-01	SCREW +B
			B13	4-673-121-01	SCREW PWS
			B14	4-673-655-01	& SCREW +B
			B15	4-650-481-01	& SCREW(B1.7), TAPPING

△[CHG] A-8068-379-A COMPLETE PWB SWX-141

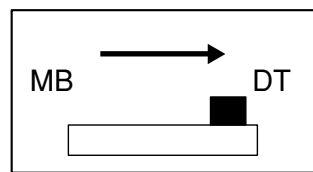
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⚠ [MA]

*1 NOTE : Set the dip switch on the MBX-88 board (Main board) to match with the CPU that is used in this computer.

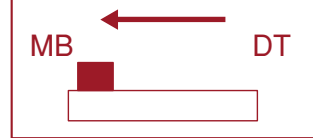
CPU: (FRV25/FRV27)
 6-704-132-01
 IC RK80532PE067512SL6S3
 (FRV26/FRV28)
 6-704-665-01
 IC RK80532PE072512SL6PF



⚠ [MA]

CPU: (FRV23)
 6-704-957-01
 IC RH80532NC049256SL73Y

⚠ [MA]

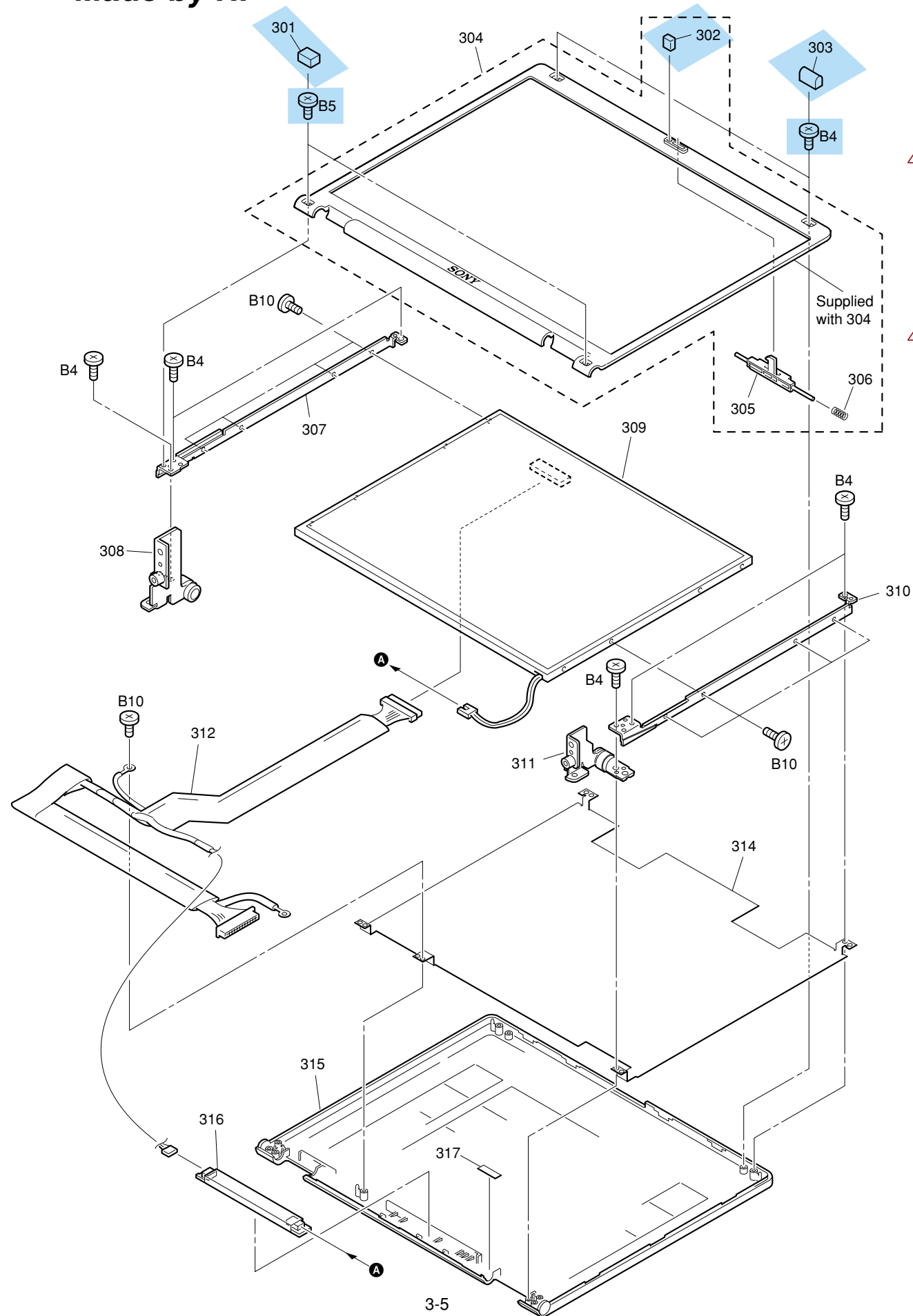


*2 The THERMAL SHEET CPU (Ref. 66) cannot be re-used if it is removed once.
 When the COOLING UNIT (Ref. 84) is removed, be sure to replace it with the new one.

*3 When change the CPU (Ref. 15), refer to "Replacing the CPU" in CHAPTER 4.

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3-2. LCD Section (FRV23/FRV25/FRV27 Model)
– Made by HI –



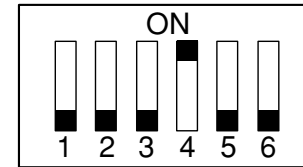
Ref.No.	Part No.	Description
301	4-671-639-01	& CUSHION HINGE
302	4-671-637-01	& CUSHION LATCH
303	4-671-638-01	& CUSHION LCD
304	X-4625-822-1	BEZEL DISPLAY ASSY(15) (S)
305	4-670-228-01	BUTTON LATCH LCD
306	4-671-640-01	SPRING LATCH LCD
* 307	4-671-454-01	BRACKET LCD L (15)
308	4-671-457-01	HINGE L
309	A-8067-507-A	(\$ #) (FRV27)...ASSY LCD 15HI AP2 (S)
309	A-8113-852-A	(\$ #) (FRV23/FRV25)... ASSY LCD 15(H) GT2 (S)
* 310	4-671-453-01	BRACKET LCD R (15)
311	4-671-456-01	HINGE R
312	1-962-514-11	LCD HARNESS
314	4-671-636-01	LCD SHIELDING
315	X-4625-820-1	HOUSING DISPLAY ASSY(S)
316	1-476-316-31	(FRV27)...INVERTER UNIT
316	1-476-317-21	(FRV23/FRV25)...INVERTER UNIT
317	4-673-299-01	INVERTER TAPE
B4	4-641-726-41	<&#gt; SCREW (M2), SPECIAL HEAD
B5	4-644-637-01	& GRIP, M2 EG
B10	4-665-205-01	SPECIAL FLAT HEAD (EG GRIP), M2

[MA]

[MA]

NOTE :

Set the DIP switch on the MBX-88 board (Main board) to match with the LCD that is used in this computer.



The upper position where ON indication is shown is the ON position. The lower position is the OFF position.

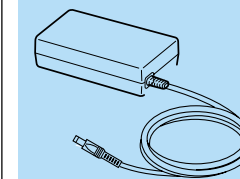
No.	1	2	3	4	5	6
ON/OFF	1	1	1	0	1	1

0 : ON 1 : OFF

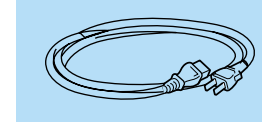
Ref.No.	Part No.	Description
		ACCESSORIES *****
△ 801	1-478-037-12	\$ & ADAPTOR, AC
802	A-8112-427-A	\$ # & BP2NX SNT (U) ASSY (S)
△ 803	1-790-732-32	\$ & (FRV25:US/FRV27/FRV26/FRV28)... CORD, POWER
△ 803	1-757-562-21	\$ & (FRV23/FRV25:Canadian)... CORD, POWER
	4-676-760-01	\$ & (FRV23/FRV25/FRV27)... QUICK START (SD)
	4-675-926-11	\$ & (FRV26/FRV28)...QUICK START (SD)

[MA]

801
AC Adaptor



803
Power Cord



802
Battery Pack



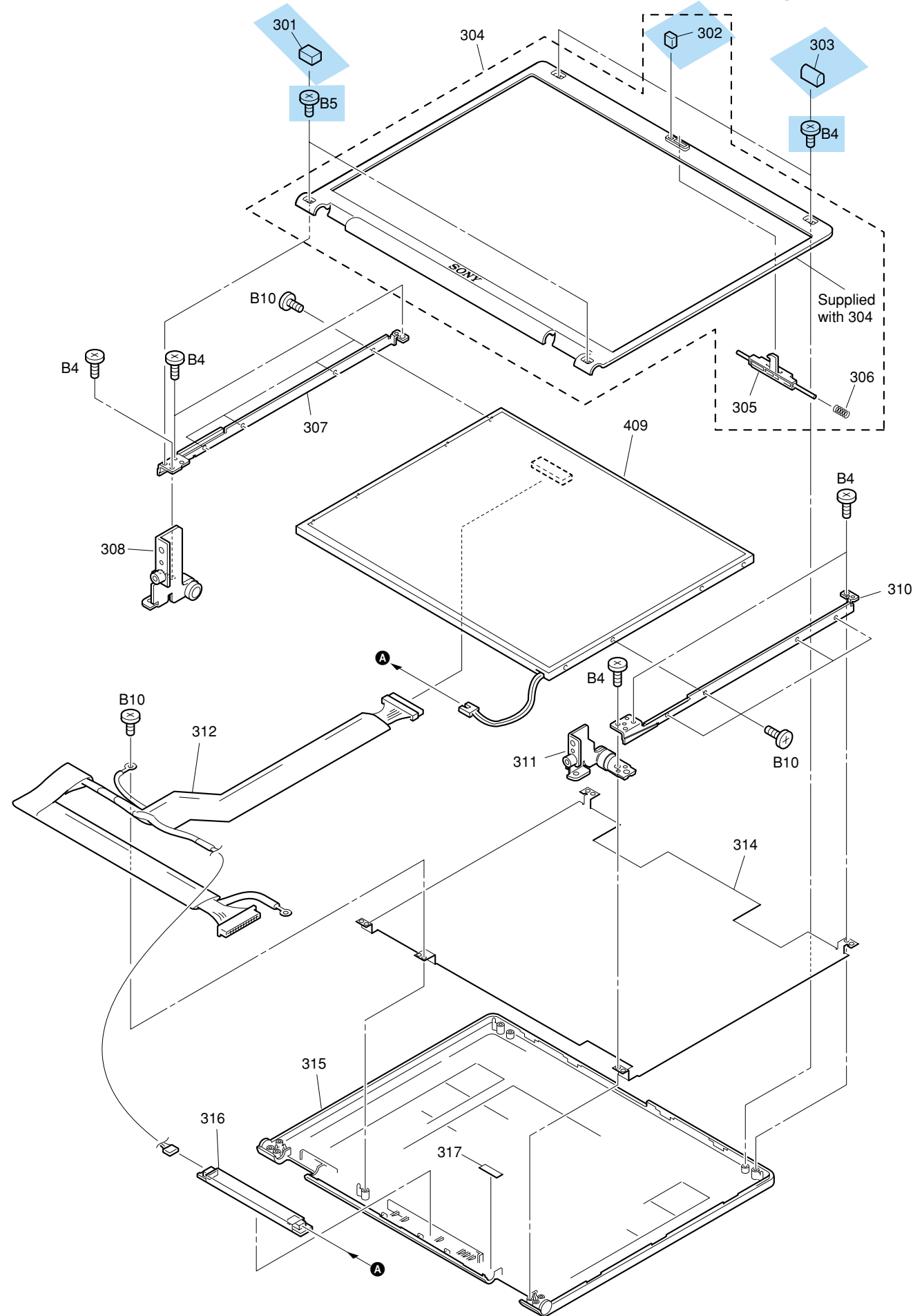
The components identified by mark △ or dotted line with mark △ are critical for safety. Replace only with part number specified.

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

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△ [MA]

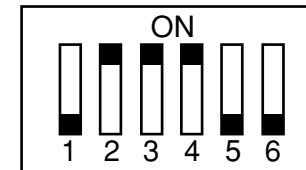
3-3. LCD Section (FRV26/FRV28 Model) – Made by SH –



Ref.No.	Part No.	Description
301	4-671-639-01	& CUSHION HINGE
302	4-671-637-01	& CUSHION LATCH
303	4-671-638-01	& CUSHION LCD
304	X-4625-822-1	BEZEL DISPLAY ASSY(15) (S)
305	4-670-228-01	BUTTON LATCH LCD
306	4-671-640-01	SPRING LATCH LCD
* 307	4-671-454-01	BRACKET LCD L (15)
308	4-671-457-01	HINGE L
* 310	4-671-453-01	BRACKET LCD R (15)
311	4-671-456-01	HINGE R
312	1-962-514-11	LCD HARNESS
314	4-671-636-01	LCD SHIELDING
315	X-4625-820-1	HOUSING DISPLAY ASSY(S)
316	1-476-317-21	INVERTER UNIT
317	4-673-299-01	INVERTER TAPE
409	A-8113-853-A \$ #	ASSY LCD 15 (SH) GT2 (S)
B4	4-641-726-41	<&> SCREW (M2), SPECIAL HEAD
B5	4-644-637-01	& GRIP, M2 EG
B10	4-665-205-01	SPECIAL FLAT HEAD (EG GRIP), M2

NOTE :

Set the DIP switch on the MBX-88 board (Main board) to match with the LCD that is used in this computer.



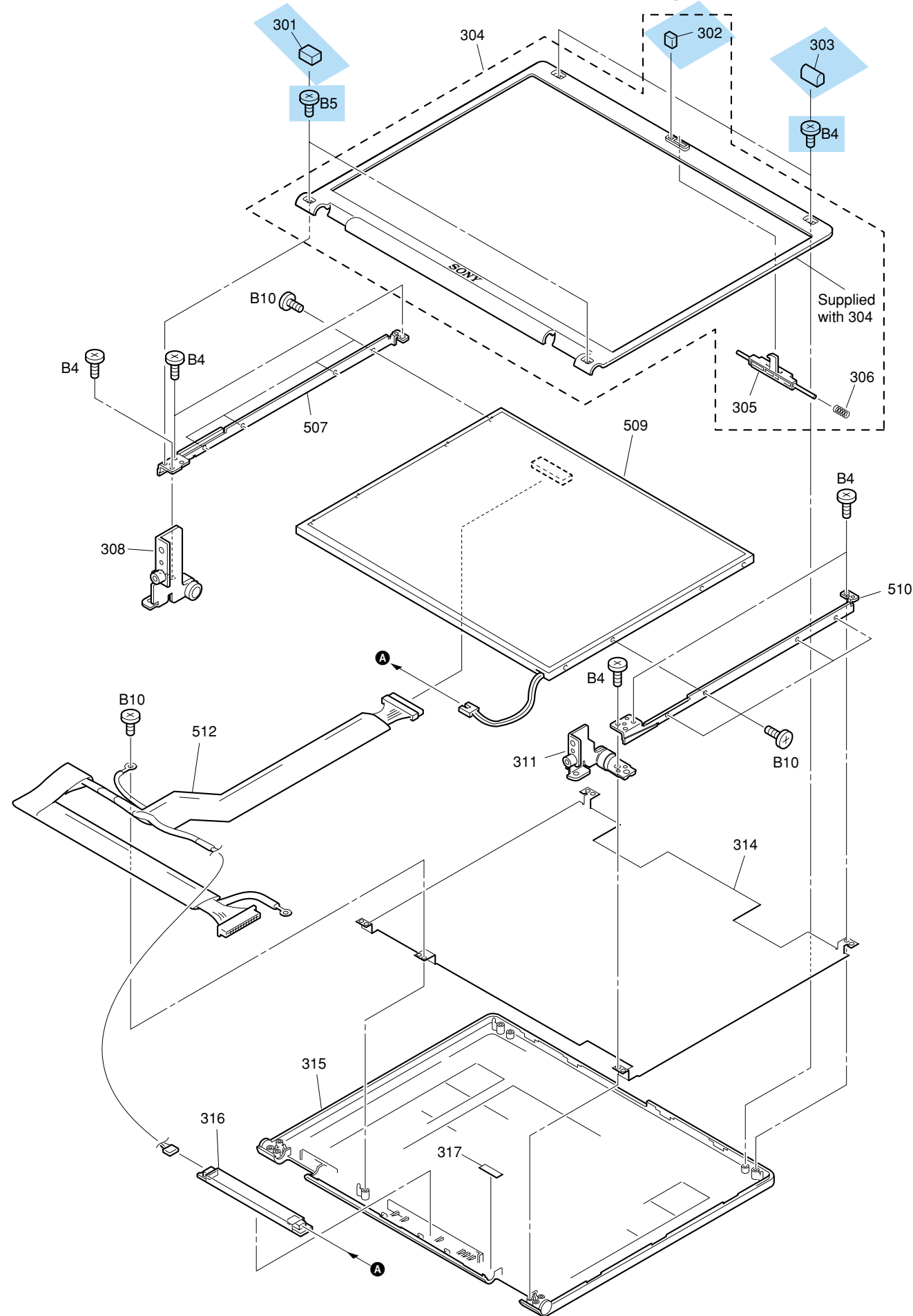
The upper position where ON indication is shown is the ON position. The lower position is the OFF position.

No.	1	2	3	4	5	6
ON/OFF	1	0	0	0	1	1

0 : ON 1 : OFF

△ [MA]

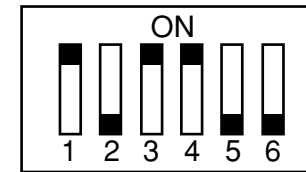
3-4. LCD Section (FRV26 Model) – Made by AU –



Ref.No.	Part No.	Description
301	4-671-639-01	& CUSHION HINGE
302	4-671-637-01	& CUSHION LATCH
303	4-671-638-01	& CUSHION LCD
304	X-4625-822-1	BEZEL DISPLAY ASSY(15) (S)
305	4-670-228-01	BUTTON LATCH LCD
306	4-671-640-01	SPRING LATCH LCD
308	4-671-457-01	HINGE L
311	4-671-456-01	HINGE R
314	4-671-636-01	LCD SHIELDING
315	X-4625-820-1	HOUSING DISPLAY ASSY(S)
316	1-476-317-21	INVERTER UNIT
317	4-673-299-01	INVERTER TAPE
* 507	4-678-902-01	LCD BRKT L AU 15XGA
509	A-8115-791-A \$ #	ASSY LCD 15XGA(AU) (S)
* 510	4-678-903-01	LCD BRKT R AU 15XGA
512	1-962-630-11	HARNESS, LCD (15XGA)
B4	4-641-726-41	<&> SCREW (M2), SPECIAL HEAD
B5	4-644-637-01	& GRIP, M2 EG
B10	4-665-205-01	SPECIAL FLAT HEAD (EG GRIP),M2

NOTE :

Set the DIP switch on the MBX-88 board (Main board) to match with the LCD that is used in this computer.



The upper position where ON indication is shown is the ON position. The lower position is the OFF position.

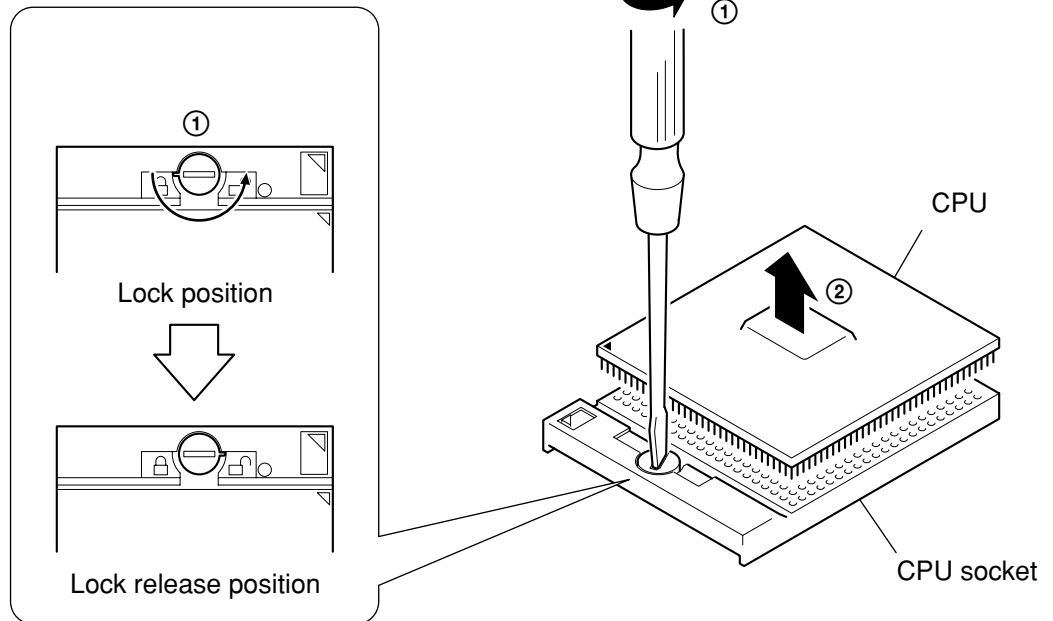
No.	1	2	3	4	5	6
ON/OFF	0	1	0	0	1	1

0 : ON 1 : OFF

4-1. Replacing the CPU

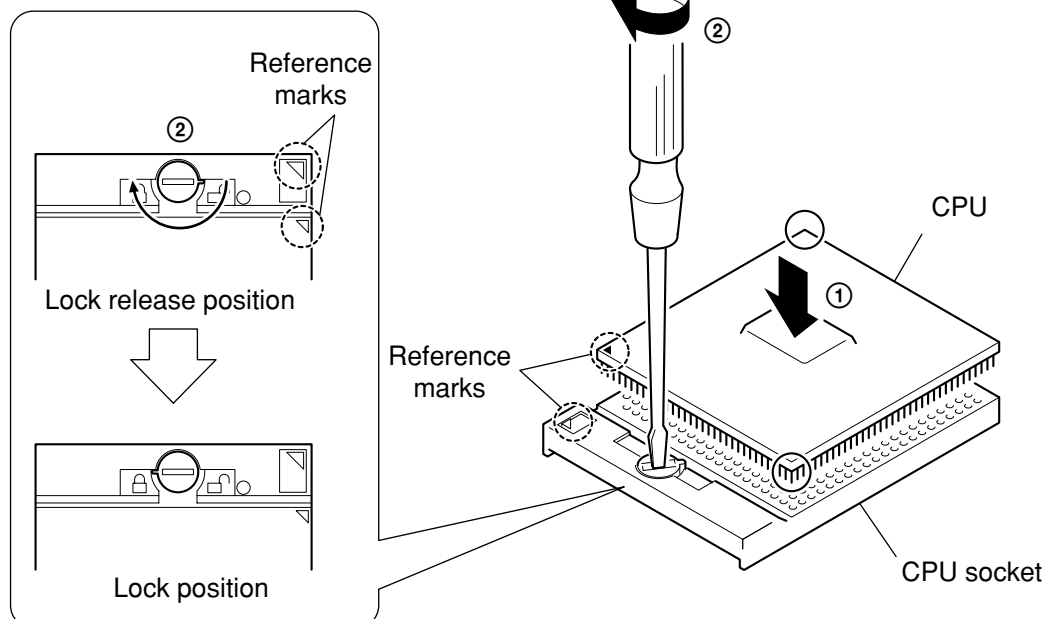
1. Removing the CPU

- ① Insert a flat-blade screwdriver into the notch as shown in the illustration and rotate it so that the protrusion comes to the lock release position.
- ② Pull the CPU gently upward to lift it out of the CPU socket.



2. Installing the CPU


- ① Align the triangle reference mark of the CPU with that of the CPU socket and insert all the pins of the CPU to the corresponding holes of the CPU socket.
- ② While pressing the two positions marked by ○, insert the flat head (-) screwdriver into the specified position and rotate the screwdriver to the LOCK position.



NOTE:

Rotate a flat-blade screwdriver to the lock position securely. If not, the operation of the CPU may become unstable.

List of PCG-FR Series (As of September, 2003)

Model Name	Service Manual Part No.
PCG-FR130	9-876-046-03
PCG-FR780	9-876-048-02
PCG-FRV25 PCG-FRV27 PCG-FRV23 PCG-FRV28 PCG-FRV26	9-876-304-04 

 : Additional Models

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Revision History

Suffix	Ver.	Date	Contents	QM No.
-01	Ver. 1	2003.06.06	First Edition	
-02	Ver. 2	2003.06.23	△ ¹ Front Page (Model Line Up), Page 3-2, Page 3-3, Page 3-6, Back Cover	N2003_040AK
-03	Ver. 3	2003.08.08	△ ² Page 3-2	N2003_053CK
-04	Ver. 4	2003.09.03	△ ³ Front Page (Model Line Up), Page 3, Page 3-2, Page 3-3, Page 3-5, Page 3-6, Page 3-7, Page 3-8, Page 3-9, Page 3-10, Back Cover	N2003_064AK
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