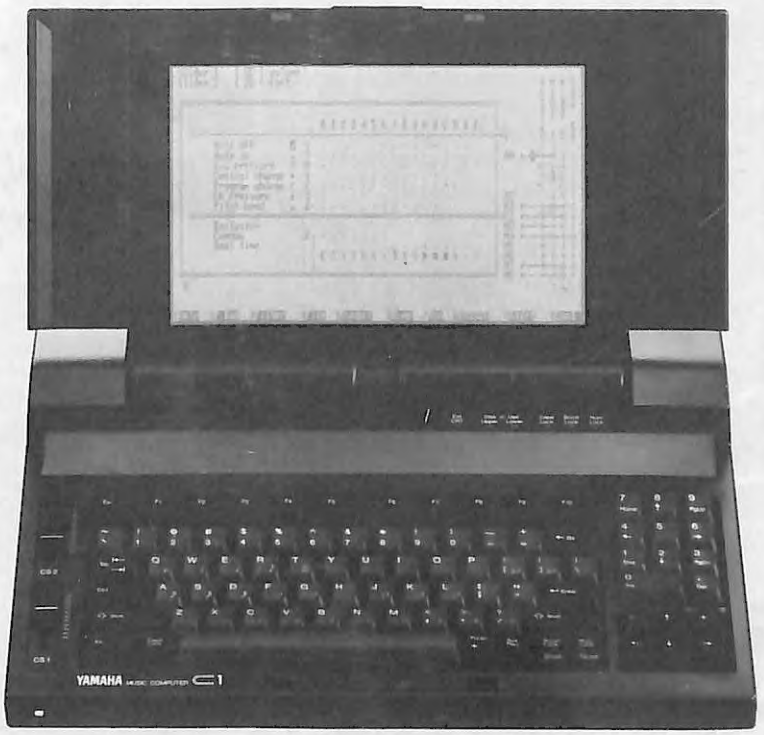
MUSIC COMPUTER C1

SERVICE MANUAL



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YAMAHA CORP.
HAMAMATSU, JAPAN

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IMPORTANT NOTICE

This manual has been provided for the use of authorized Yamaha Retailers and their service personnel. It has been assumed that basic service procedures inherent to the industry, and more specifically Yamaha Products, are already known and understood by the users, and have therefore not been restated.

WARNING: Failure to follow appropriate service and safety procedures when servicing this product may result in personal injury, destruction of expensive components and failure of the product to perform as specified. For these reasons, we advice all Yamaha product owners that all service required should be performed by an authorized Yamaha Retailer or the appointed service representative.

IMPORTANT: The presentation or sale of this manual to any individual or firm does not constitute authorization, certification, recognition of any applicable technical capabilities, or establish a principle-agent relationship of any form.

The data provided is believed to be accurate and aplicable to the unit(s) indicated on the cover. The research, engineering, and service departments of Yamaha are continually striving to improve Yamaha products. Modifications are, therefore, inevitable and changes in specification are subject to change without notice or obligation to retrofit. Should any discrepancy appear to exist, please contact the distributor's Service Division.

WARNING: Static discharges can destroy expensive components. Discharge any static electricity your body may have accumulated by grounding yourself to the ground buss in the unit (heavy gauge black wires connect to this buss).

IMPORTANT: Turn the unit OFF during disassembly and parts replacement. Recheck all work before you apply power to the unit.

■ SPECIFICATIONS

CPU:	80286 (switchable clock 10/8 MHz)
RAM:	640K bytes main, 512K bytes extension
ROM:	64K bytes
Disk:	FDD model: 2 x 3.5" 2DD floppy disk HDD model: 1 x 3.5" 2DD floppy disk 1 x 3.5" 20M byte hard disk
Display:	640 x 400 dot backlit LCD
VRAM:	64K bytes
External Display Output:	Digital RGB, Video (Monochrome Display mode)
Interface:	1 x Printer (Centronics) 2 x Serial (RS232C) 2 x MIDI IN 8 x MIDI OUT 1 x MIDI THRU Time Code In, Time Code Out, Expansion Card Slot
Dimensions:	394 (W) x 382 (D) x 82 (H) mm (15-1/2" x 15" x 3-1/4")
Weight:	FDD model: 8.2 kg (18 lb 2 oz) HDD model: 8.5 kg (18 lb 12 oz)
Power Requirements:	120V 60Hz
Power Consumption:	120V/0.6A Max.
AC Outlet:	132V/1A Max.
Backup Battery:	Ni-Cd
Included Items:	Power cable, 2 x 3.5" disk (MS-DOS 3.3, MIDI Monitor and Bulk Manager), Operating manual

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■ PRODUCT SUMMARY

The Yamaha C1 is a lap top computer designed for music applications. The C1 computer contains a built-in 640 x 400 dot Liquid Crystal Display (LCD) unit. While the C1 computer specification also provides for an optional hard disk drive, the most common C1 configuration contains two 3.5-inch double sided, double density floppy disk drives. The C1 computer provides hardware interfaces, and software programs for MIDI control and SMPTE time code management.

■ BASIC FUNCTIONS AND FEATURES

Since the C1 is a self-contained computer with two floppy disk drives and a panel display, the computer only requires a system DOS boot-up disk to be inserted into the (A) upper disk drive. Also, the display configuration switch (SW1) on the rear panel must be in the LCD (up) position. After power-on, the display will come on with the following messages:

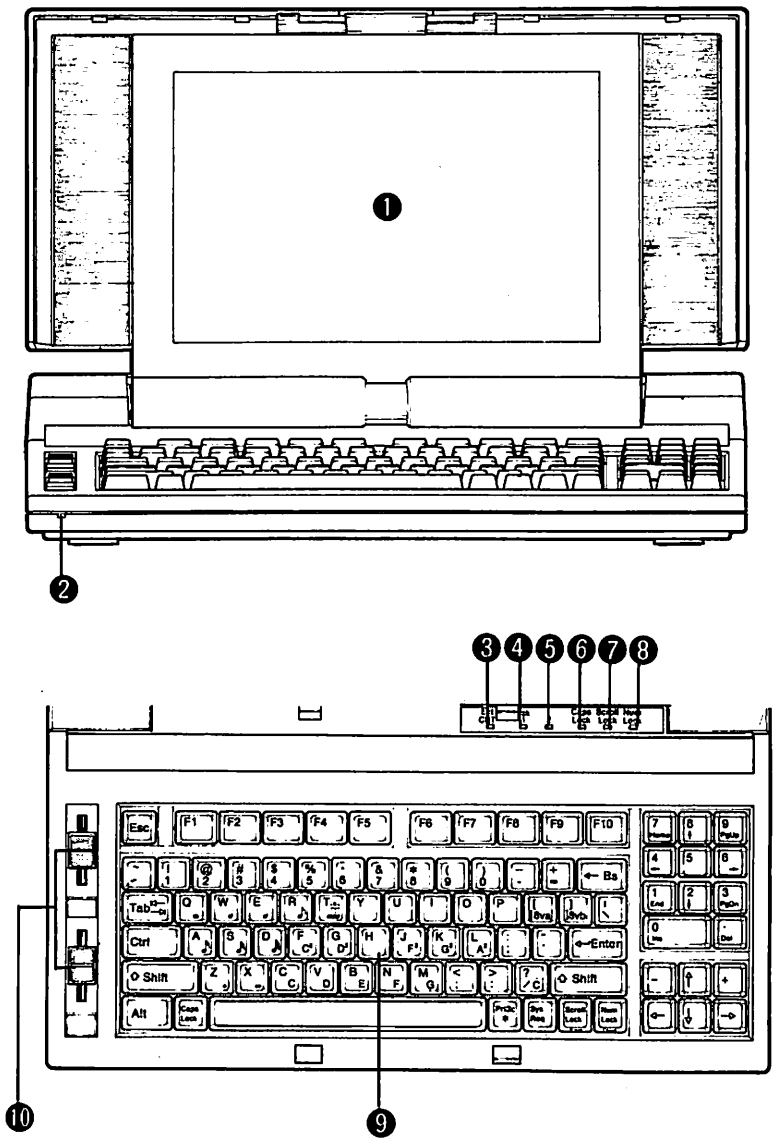
```
Date:
Time:
A >
```

The date and time inputs can be by-passed by pressing the "Enter" key on the computer keyboard. (A>) is a DOS prompt indicating you must enter a legitimate DOS command at this point, or the command can be the name of an operating program which resides in drive (A). Also, the prompt indicates the computer will use the (A) drive to retrieve subsequent files unless the operator changes the DOS prompt.

Features:

- The C1 is operated by an 80286 micro-processor operating at 10 MHz.
- 640K bytes basic memory plus 512K bytes extended memory for a total of 1.152M bytes of working memory.
- The C1 contains two 3.5-inch floppy disk drives. The floppy disks are double sided, double density providing approximately 720K bytes each.
- The display controller is a Yamaha V6366 Panel or CRT Display Controller (PCDC). Using the PCDC, display modes compatible with the IBM Color Graphics monitor Adapter (CGA) and the Hercules Graphic Card (HGC) are supported.
- A 640 x 400 dot LCD with an electroluminescent (EL) backlight is the built-in display device. The display is automatically turned on/off by opening/closing the LCD panel. An external CRT display can also be used. The internal LCD can only display in CGA mode. When using the CGA mode, the display can also be switched to the external CRT display. HGC mode can only be displayed on the external CRT display.
- A Ni-Cad battery pack provides approximately 600 hours of computer operation after 48 hours of charging.
- An 88-key keyboard with numeric key pad.
- 2 serial RS232C ports
  1 parallel printer (Centronics) port
- For music application the following are provided:
  MIDI IN — 2 channels
  MIDI OUT — 8 channels
  MIDI THRU — 1 channel
  SMPTE Time Code interface IN/OUT
  2 analog sliders
  2 application timers

■ PARTS AND CONTROLS



❶ LCD Display:
Backlit 640 x 400 dot Liquid Crystal Display. When this display screen is folded down, the backlight is automatically turned off. The left side panel has controls for LCD contrast and backlight brightness.

❷ Power LED:
This LED lights when the C1's power is turned on.

❸ Use External CRT:
This LED indicates that an external display is being used instead of the C1's built-in LCD screen.

❹ Disk in Use Upper Drive:
This LED lights red to indicate that the floppy disk in drive A is being accessed. *Do not remove the floppy disk or turn the power off while this LED is on.*

❺ Disk in Use Lower Drive:
This LED lights red to indicate that the floppy disk in drive B (or the hard disk in drive C for hard disk models) is being accessed. For the hard disk model, this LED lights green to indicate that the read/write head is unparked. (The hard disk read/write head automatically parks itself to a safe position when there has been no disk access for 5 seconds.) *Do not remove the floppy disk or turn the power off while this LED is on.*

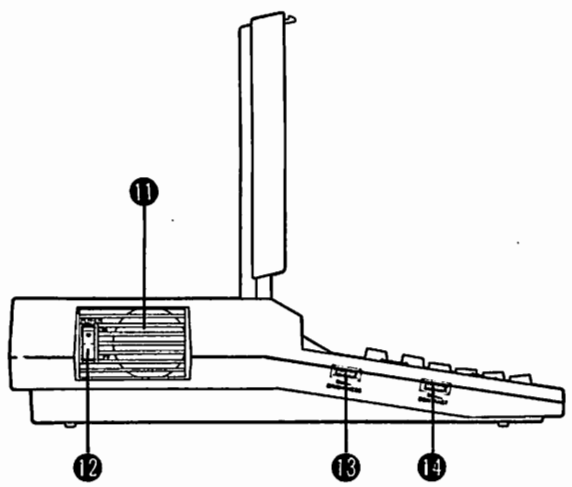
⑥ Caps Lock LED:
The "Caps Lock" key toggles this LED on/off. When this LED is on and the Shift key is released, alphabet keys A — Z will produce uppercase letters. When the Shift key is pressed, lowercase letters will be produced.

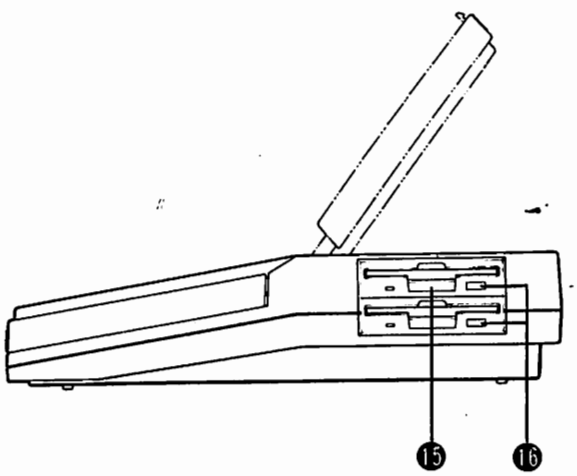
⑦ Scroll Lock LED:
The "Scroll Lock" key toggles this LED on/off. The effect will be determined by the application program.

⑧ Num Lock LED:
The "Num Lock" key toggles this LED on/off. When it is on, the numeric key pad at the right side of the alphabet keys can be used to enter numbers 1 — 9. When it is off, the numeric key pad will act as the cursor (arrow) and other function keys.

⑨ Keyboard:
A standard 88-key ASCII keyboard. The effect of the function keys and control keys will be determined by the application program.

⑩ Control Sliders 1,2:
These general purpose sliders function as determined by the application program (the MIDI Monitor program, etc.).





⑪ Vent:
To prevent overheating, do not obstruct the cooling fan vent.

⑫ Power Switch:
Push this switch up to turn the power on. Push down to turn the power off.

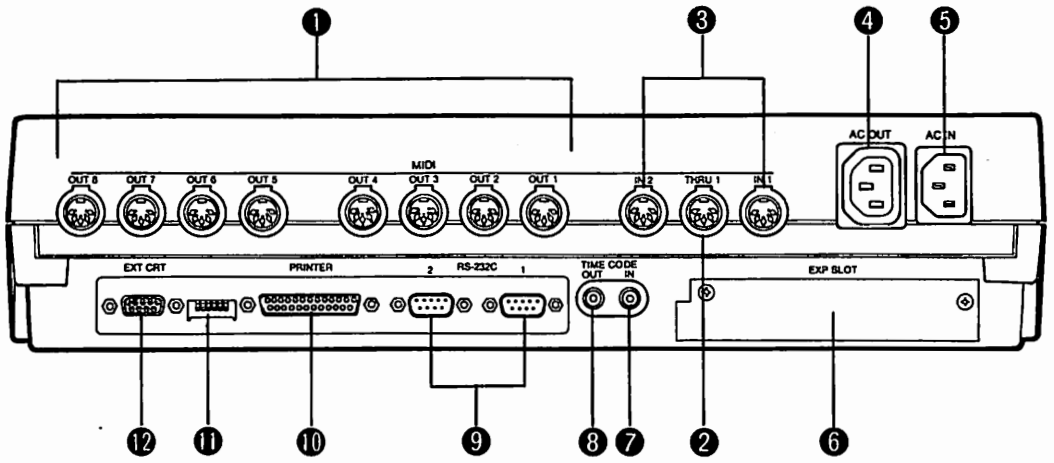
⑬ Backlight Brightness Control:
Rotate this control towards you to darken the backlight.

⑭ LCD Contrast Control:
Rotate this control towards you to decrease the contrast of the LCD. Adjust it to suit your viewing angle. *Extreme settings of this control will make the LCD screen appear blank.*

⑮ 3.5" Floppy Disk Drive:
The C1 has two 3.5" 720K byte floppy disk drives.

3.5" Hard Disk Drive (HDD model):
The hard disk model of the C1 has a 3.5" non-removable hard disk instead of the lower floppy disk drive.

⑯ Floppy Disk Eject Button:
Press this button to eject the floppy disk.



❶ MIDI OUT:
The C1 can transmit MIDI messages from these terminals.

❷ MIDI THRU:
MIDI messages received at MIDI IN 1 are re-transmitted unchanged from this terminal.

❸ MIDI IN:
The C1 can receive MIDI messages at these terminals.

❹ AC Out:
This AC outlet is powered when the C1's power is on. When using an external display screen (IBM Monochrome Display), connect its AC cable to this outlet. Some displays may be damaged if powered on without an incoming video signal. Using this AC outlet for the display ensures that the display is not turned on unless the C1's power is on.

❺ AC IN:
Connect this terminal to an AC outlet using the included power cable.

❻ Expansion Slot:
Optional cards such as extended memory can be plugged into this slot.

❼ TIME CODE IN:
The C1 can receive time code from a tape recorder line output connected to this terminal. (Use a pin plug cable.)

❽ TIME CODE OUT:
The C1 can transmit time code from this terminal to a tape recorder line input connected to this terminal. (Use a pin plug cable.)

❾ RS232C:
These are standard connectors for attaching a serial mouse or a modem.

❿ PRINTER:
A Centronics-type printer can be connected to this terminal.

⓫ DIP Switches:
These six switches determine system settings and display modes.

⓬ CRT:
An IBM PC Color Graphic Display (CGA mode) or IBM PC Monochrome Display (Hercules graphics card compatible mode) can be connected to this terminal.

■ SYSTEM BLOCK DIAGRAM

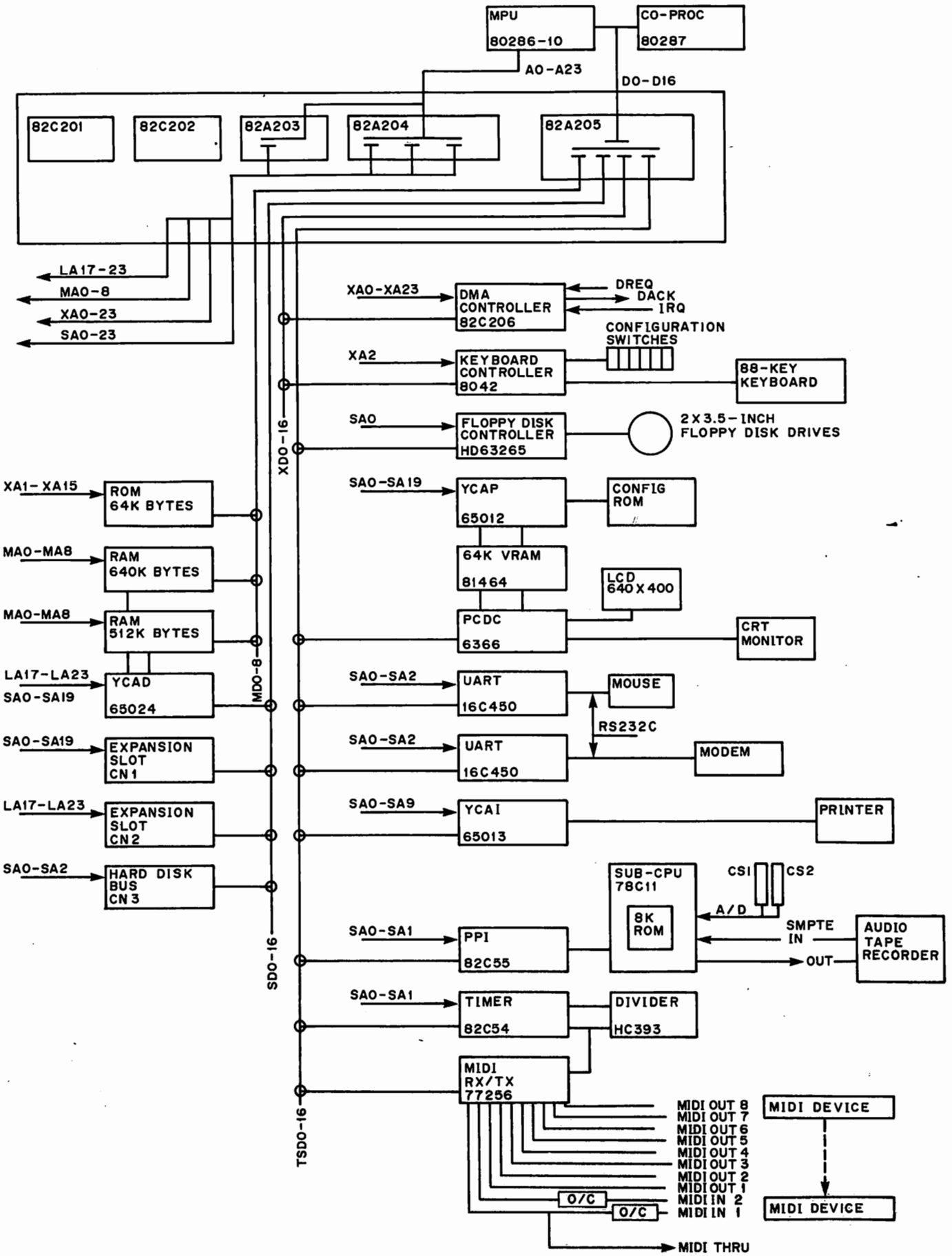


Fig. A — C1 Block Diagram

In Figure A it is apparent that all devices are isolated from the Main Processor Unit (MPU) 80286 by buffers in the LSI's 201, 202, 203, 204, and 205. The Co-Processor (80287) is optional for those applications which are math intensive.

While the MPU requires only one data bus for all I/O transfers, the C1 provides four Data Bus systems for the entire unit. The Address Bus is also expanded to four Address systems from a single MPU address bus. This arrangement allows Direct Memory Access (DMA) within the C1 computer. DMA transfer is only possible between memory systems, i.e., a floppy transfer to RAM would be an example of a DMA transfer. A more specific example of DMA transfer would be: the MPU would latch a source address, the MPU then latches a destination address, the data buffer 82A205 (data bus) would be configured to connect the data source to the data destination, and then the bus control signals would be asserted to cause the data to be latched into the RAM location. Notice, data does not pass through the MPU as it would in a normal MPU operation; hence, the time required for a DMA transfer is much less than a normal data transfer. This characteristic is very desirable where operations require many bytes of transfer from disk to system RAM memory. Another reason for multiple bus systems in the C1 is, the MPU is operating at 10 MHz high data rates; in this environment, the number of devices allowed on any bus (Address or Data) are limited by the speed requirements of the MPU.

DMA Controller 82A206

The accessory IC's which support the MPU will accumulate and identify or distribute the individual signals necessary to interface every device in the system. The DMA controller sums all processor interface signals and distributes the acknowledge signals (ACK) from the MPU. Direct Memory Access Request, (DREQ) is a request for a direct data connection from Disk to RAM. "DACK" is interpreted as permission from the MPU for a DMA transfer, or the OK for such a transfer from the Main Processor Unit. All other devices in C1 computer interface with the MPU through Interrupt (IRQ) signals, and the subsequent chip selects the MPU issues in response to the IRQ's.

Keyboard Controller 8042

The 8042 is an Universal Peripheral Interface Controller with 2K bytes of ROM and 64 bytes of RAM. The Keyboard controller provides two functions: at power-on the controller inputs the system configuration from 6 DIP switches on the rear panel of the unit, OR normally the controller is encoding the 88-key keyboard before that data is input to the MPU.

The configuration switches determine what the system configuration is to be. The switches indicate:

1. Liquid Crystal Display / Cathode Ray Tube
2. IBM Color Graphics Adapter / Hercules Graphic Card
3. C1 external I/O enable / disable
4. SIO Internal / External
5. 512K bytes expanded memory ENABLE / DISABLE
6. CPU clock 10 MHz / 8 MHz operation

There are a second set of switches on the Main board which are in addition to the previous mentioned switches. DIP switch 2 indicates:

1. FDD-Selects the floppy disk or the Hard disk model.
   on = Floppy Disk Model
   off = Hard Disk Model
2. HDD-Selects the floppy disk or the Hard disk model.
   on = Hard Disk Model
   off = Floppy Disk Model
3. Bit 6 of the system configuration information. For the C1, set to off (high level).
4. Bit 7 of the system configuration information. For the C1, set to off (high level).

In the scan mode, the 8042 develops a scanner output and a scanner input system. From the multiplexed scanner data, the 8042 encodes KEY-MAKE and KEY-BREAK data which is sent to the Main Processor Unit. Each key has a unique MAKE number and a unique BREAK number.

Examples:

key number	make code	break code
1	01	81
2	02	82
3	03	83
4	04	84
5	05	85
6	06	86
10	0A	8A

Floppy Disk Controller HD63265

The floppy disk controller interfaces with the Main Processor Unit with the conventional IRQ and the Direct Memory Access. Direct Memory Access is made through the DMA controller 82C206. The unit will usually be configured with two floppy disks: however, the Hard Disk is an optional memory device in the C1 computer.

YCAP-VRAM-PCDC

YCAP (IC24) is a helping processor controller for PCDC. Initially YCAP loads Video RAM (VRAM) with the initial LCD display messages and it places an operating program for PCDC in the video RAM. Beyond the power-up initialization, YCAP provides addressing control (A0-A15) over VRAM during data load operations from the MPU, while data (TSD0-TSD7) arrives via PCDC (IC25).

VRAM (IC's 60, 61) contains 64K bytes of control program and display data for PCDC. Control data is placed here by the YCAP chip, while display data is placed here by the MPU. In the initial power-up configuration mode, YCAP controls the Address and the Data bus; however, in the video output mode, PCDC controls the VRAM Address bus in order to read the display data. Immediately after power-on, PCDC (IC25) is configured to either provide an LCD or CRT display by the MPU. Configuration switch 1 should be in the "up" position for the LCD display. LCD control voltage is inhibited until approximately 100 control registers in the PCDC are loaded with control data, this precaution prevents DC voltage from being placed on the display before the video program is ready to run. If a DC condition is allowed to exist during this time, chemical alteration of the crystal display may occur, adversely affecting the panel display life.

USART 16C450

The UARTS provides a high speed Serial to Parallel or Parallel to Serial interface to/from the MPU. The external connections are configured to the RS232C serial interface. Transmission and Reception are asynchronous, which means the data transmitted and received must operate the receivers without benefit of strobes or clocks, there are no additional word measuring signals. RS232C Data format is usually 8 bits, while start and stop bits are added to operate the receivers. RS232C data format provides for transmission rates up to 20 KHz.

YCAI 65013

YCAI is a general purpose IC, but one of the main functions that it provides is the parallel printer interface. The printer interface is mainly an output port, the controller monitors the printer "BUSY" line to determine when to send more characters. The remaining functions in YCAI are chip select decode for the various peripheral devices.

Sub-CPU 78C11

The 78C11 provides: Society of Motion Pictures and Television Engineers (SMPTE) code Receiver and Transmitter functions, also A to D conversion function for the front panel continuous slider inputs. The 78C11 contains an 8K byte ROM operating program, therefore, it requires no instructions from the MPU to be able to perform this function. The Sub-CPU to MPU interface is performed using Interrupt and chip selects.

SMPTE code format is 80 bits per frame, while the information contained in the 80 bits is: Hours, Minutes, Seconds, and Frame count. Hours, minutes, seconds, and frames are each encoded with two BCD bytes. SMPTE time code can be subsequently converted into MIDI TIME CODE (MTC) by the MPU. SMPTE code is electrically encoded using Manchester Bi-Phase Mark code. There are four frame rates used with SMPTE time code:

1. 24 frames per second
2. 25 frames per second
3. 29.97 frames per second or drop frame (color TV)
4. 30 frames per second (TV)

The multiple frame rates are provided for by the sub-CPU.

PPI 82C55
The 82C55 is a three port communication device through which the MPU can send or receive data via (TSD0-TSD7) the system data bus.

Timer 82C54
The Timer provides two programmable timer functions which are assigned by the operator. The MPU enters numbers to the timer registers via the data bus. The timer outputs cause Interrupts at the MPU via the YCAI chip.

MIDI 77256
The MIDI chip is a proprietary MIDI interface device which can provide 10 simultaneous serial communication ports. The MIDI chip provides 2 MIDI inputs and 8 MIDI outputs.

MIDI data format is 8 bits serial; however, each byte also includes a negative start pulse and a positive stop pulse. The start pulse causes the receiver to strobe the input data line for 10 data periods. The stop pulse signals the end of a complete data word. Data transmission and reception are asynchronous. "Asynchronous" means, there are no additional signals transmitted to aid the receiver in word measure. The receiver must trigger on the start bit and strobe the data line for 10 data periods to receive a data byte. The transmitter portion of the MIDI chip attaches the start and stop bits to the transmitted data byte.

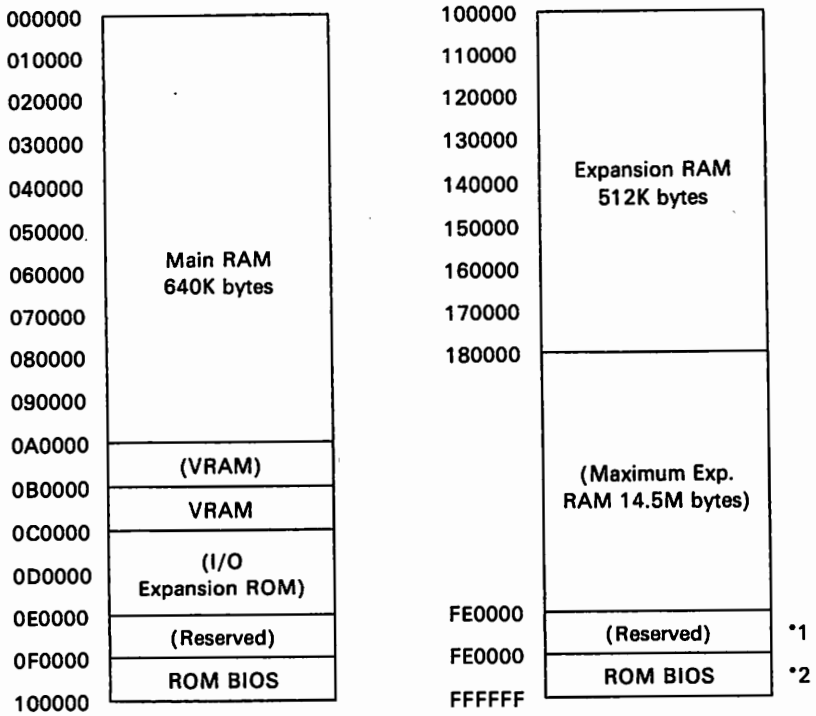
ROM 64K bytes
The system operating programs reside in ROM. The MPU retrieves system programs through the Address and Data buffers 82A204 and 82A205 respectively.

RAM 640K bytes
The system operating RAM is the location where all system variables are placed. Floppy and Hard disk operating programs are also placed here. This device is capable of DMA transfers to and from the disk drives.

RAM 512K bytes
Extended RAM memory for the operating system. Disk is used to save or load data to/from the main work area of memory.

YCAD 65024
YCAD is a general purpose IC, the most important function that it provides is the memory decode function.

Hard Disk Bus
The C1 computer provides for an optional 20M bytes hard disk drive unit.



NOTE:
*1 Duplicate of 0E0000 to 0EFFFF
*2 Duplicate of 0F0000 to 0FFFFF
( ) is not installed in the C1.

Fig. B — Memory Map

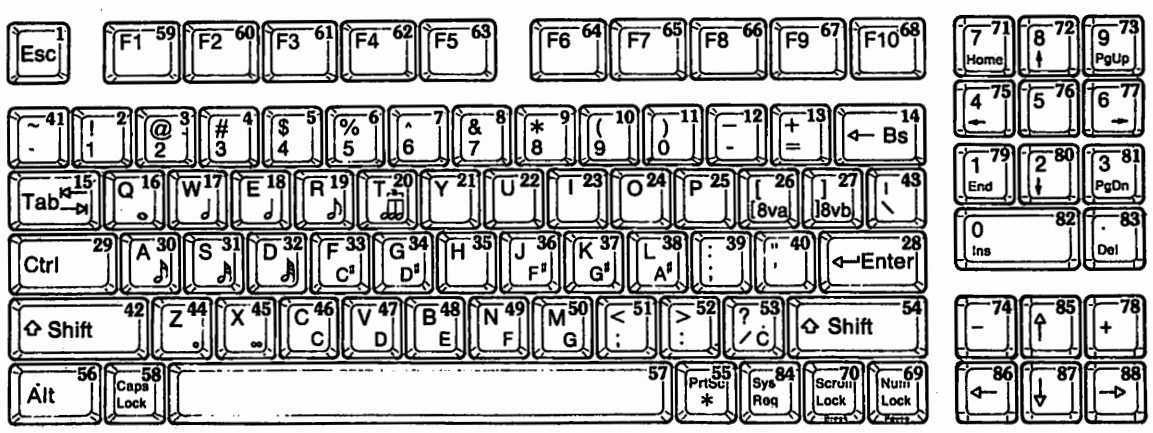


Fig. C — Keyboard Locator Numbers

C1

I/O Port (Hex)	Device/Function
000-01F	DMA Controller 1, 8237A-5 equivalent
020-03F	Interrupt Controller 1, 8259A equivalent
040-05F	Timer, 8254-2 equivalent
060-06F	Keyboard Controller
070-07F	Real Time Clock, NMI (Non-Maskable Interrupt) Mask
080-09F	DMA Page Register, 74LS612 equivalent
0A0-0BF	Interrupt Controller 2, 8237A-5 equivalent
0C0-0DF	DMA Controller 2, 8237A-5 equivalent
0E0-0EF	Reserved
0F0	(Clear Math Coprocessor Busy)
0F1	(Reset Math Coprocessor)
0F8-0FF	(Math Coprocessor)
100-1EF	Reserved
1F0-1F8	Fixed Disk Controller *1
200-207	(Game I/O)
278-27F	(Parallel Printer Port 2)
2F8-2FF	Serial Port 2
300-31F	C1 Expansion I/O
360-36F	Reserved
378-37F	Parallel Printer Port 1
380-38F	(SDLC, Bisynchronous 2)
3A0-34F	(Bisynchronous 1)
3B0-3BF	PCDC HGC Mode
3C0-3CF	Reserved
3D0-3DF	PCDC CGA Mode
3F0-3F7	Floppy Disk Controller
3F8-3FF	Serial Port 1

NOTE:
*1 Not installed in the FDD model.
*2 ( ) is not installed in the C1.

Fig. D — I/O Address Map

■ POST (POWER-ON SELF TEST)

The C1 BIOS ROM contains the program for self-diagnosis of the main components of the system. This test is executed automatically when power is turned on, and the results are displayed as a POST message on the LCD.

There are two types of POST messages as follows:

- Error messages indicate a failure with either the hardware, software, or firmware.
- Informational messages provide important information about the power-on and boot processes.

The error and informational messages for POST are listed separately below.

POST Error Messages

The table below gives possible causes and solutions for the POST error messages.

NOTE: Italicized items within the message text will be replaced by the appropriate value when the message is issued.

Table 1 — POST Error Messages

MESSAGE	POSSIBLE CAUSE	SOLUTION
Diskette drive 0 seek to track 0 failed	The A: drive has either failed or is missing.	Check the A: drive.
Diskette drive reset failed	The diskette adapter has failed.	Check the diskette adapter.
Diskette read failure — strike F1 to retry boot	The diskette is either not formatted or defective.	Replace the diskette with a bootable diskette and retry boot.
Display adapter failed; using alternate	• The color/monochrome switch is set wrong. • The primary video adapter failed.	• Change the switch to the correct setting. • Check the primary video adapter.
Gate A20 failure	Protected mode cannot be enabled.	Most likely, the problem is with the system board check the system board.
Hard disk controller failure	The controller card has failed.	Replace the controller card.
Hard disk failure	—	Retry boot. If that doesn't work, replace the hard disk.
Hard disk read failure — strike F1 to retry boot	The working diskette or the hard disk is defective.	Retry boot. If that doesn't work, replace the diskette.
Invalid configuration information — please run SETUP program	• Memory size is configured wrong. • Display adapter is configured wrong. • Wrong number of diskette drives.	Run the SETUP utility program.
Keyboard clock line failure	Either the keyboard or the keyboard cable connection is defective.	Make sure the keyboard cable is connected properly.
Keyboard data line failure		
Keyboard controller failure	The keyboard controller firmware has failed.	Check the keyboard controller.
Keyboard is locked — please unlock	The keyboard lock located at the front of the computer is activated.	—
Keyboard stuck key failure	A key(s) is jammed.	Try pressing the key(s) again.
Memory address line failure at *hex-value*, read *hex-value* expecting *hex-value*	Circuitry associated with the memory chips has failed.	Check the circuitry.

Table 1 — POST Error Messages (Continued)

MESSAGE	POSSIBLE CAUSE	SOLUTION
Memory data line failure at *hex-value*, read *hex-value-hex-value*	One of the memory chips or associated circuitry has failed.	Try replacing the memory chips.
Memory high address line failure at *hex-value-hex-value*	Circuitry associated with the memory chips has failed.	Check the circuitry.
Memory odd/even logic failure at *hex-value*, read *hex-value* expecting *hex-value*	Circuitry associated with the memory chips has failed.	Check the circuitry.
Memory parity failure at *hex-value-hex-value*	One of the parity memory chips has failed.	Try replacing the memory chips.
Memory wirte/read failure at *hex-value*, read *hex-value* expecting *hex-value*	One of the memory chips has failed.	Try replacing the memory chips.
No boot device available — strike F1 to retry boot	Either diskette drive A:, the hard disk, or the diskette itself is defective.	Retry boot. If that doesn't work, replace the floppy diskette or the hard disk.
No boot sector on hard disk — strike F1 to retry boot	The C: drive is not formatted.	Format the C: drive.
No timer tick	The timer chip has failed.	Check the timer chip on the system board.
Not a boot diskette-strike F1 to retry boot	The diskette in drive A: is not formatted as a bootable diskette.	Replace the diskette with a bootable diskette and retry boot.
Hex-value Optional ROM bad Checksum = *hex-value*	The peripheral card contains a defective ROM.	Replace the peripheral card.
Shutdown failure	The keyboard controller or its associated logic has failed.	Check the keyboard controller.
Time-of-day clock stopped	The CMOS Time-of-day clock chip has failed.	Run the SETUP utility.
Timer chip counter 2 failed	—	Check the timer chip system board.
Timer or Interrupt Controller bad	Either the timer chip or the Interrupt Controller is defective.	Check the timer chip or the Interrupt Controller on the system board.
Unexpected interrupt in protected mode	The non-maskable interrupt (NMI) port can't be disabled.	Check the system board, particularly the logic associated with the non-maskable interrupt.

POST Informational Messages

The table below describes the POST informational messages.

NOTE: Italicized items within the text will be replaced by the appropriate value when the message is issued.

Table 2 — POST Informational Messages

MESSAGE	MEANING
Hex-value Base Memory, *hex-value* Expansion	This message indicates the amount of memory that has tested successfully.
Decreasing available memory	This message immediately follows any memory error message, and informs you that the memory chips are failing.
Memory tests terminated by keystroke	This message indicates that you have pressed the Spacebar while the memory tests were running. This stops the memory tests.
Phoenix 80286 ROM BIOS PLUS Version 3.10 02 Copyright (C) 1985-1988 Phoenix Technologies Ltd. All Rights Reserved	This copyright message is displayed on the initial boot screen and indicates that POST has started.
Strike the F1 key to continue	This message indicates that an error was found during POST. Pressing the F1 key allows the system to attempt to boot.

Run-Time Messages

Run-time messages are displayed if an error occurs after the boot procedure is complete.

The table below gives possible causes and solutions for the run-time messages.

NOTE: Italicized items within the message text will be replaced with the appropriate value when the message is issued.

Table 3 — Run-Time Messages

MESSAGE	POSSIBLE CAUSE	SOLUTION
I/O card parity interrupt at *address*. Type (S)hut off NMI, (R)eboot, other keys to continue	The peripheral card has failed.	Type (S)hut off NMI. Note: This will only temporarily allow you to continue. You must replace the peripheral card.
Memory parity interrupt at *address*. Type (S)hut off NMI, (R)eboot, other keys to continue	A memory chip(s) has failed.	Type (S)hut off NMI. Note: This will only temporarily allow you to continue. You must replace the memory chip(s).
Unexpected HW interrupt *interrupt* at *address*. Type (R)eboot, other keys to continue	This could be any hardware-related problem. Note: This message will not be displayed if INTENHD is false.	Check the hardware.
Unexpected HW interrupt *interrupt* at *address*. Type (R)eboot, other keys to continue	There is an error(s) in the software program. Note: This message will not be displayed if INTENHD is false.	Try turning the machine off and then on again. If that doesn't work, check the program.
Unexpected type 02 interrupt at *address*. Type (S)hut off NMI, (R)eboot, other keys to continue	There is an error(s) in the software program. Note: This message will not be displayed if INTENHD is false.	Try turning the machine off and then on again. If that doesn't work, check the program.

■ DISASSEMBLY PROCEDURES

Upper Case Assembly Removal

1. Place the unit upside down.
2. Remove the twelve screws from the lower case. (See Fig. 1.)

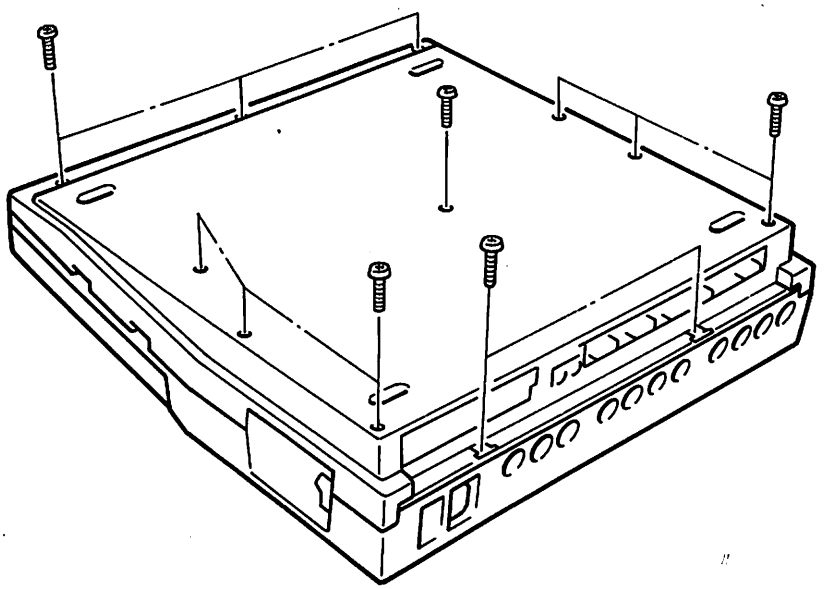


Fig. 1

3. Replace the unit in its normal position.
4. Gently lift up the upper case assembly, then disconnect the cable that is attached to the upper case assembly.

Keyboard Assembly Removal

1. Remove the upper case assembly. (See Upper Case Assembly Removal.)
2. Remove the seventeen screws for the shield cover to be removed. (See Fig. 2.)

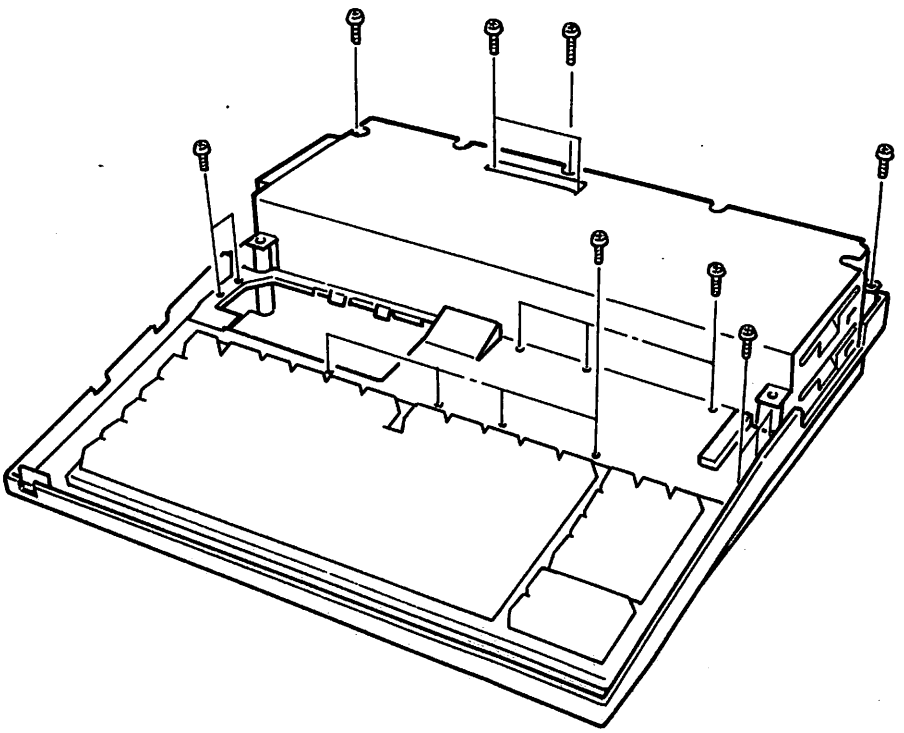


Fig. 2

3. Remove the three screws of the shield cover on the left side of the keyboard.
4. Gently lift up the keyboard assembly and disconnect the two flexible connector sheets that are attached to the Main circuit board.

Main Circuit Board Removal

1. Remove the upper case assembly and the keyboard unit.
2. Remove the two screws from the slot cover on the left rear panel.
3. Remove the screw as shown in the Fig. 3 and lift out the power supply/FDD/fan assembly, then disconnect four connectors that are attached to the Main circuit board.

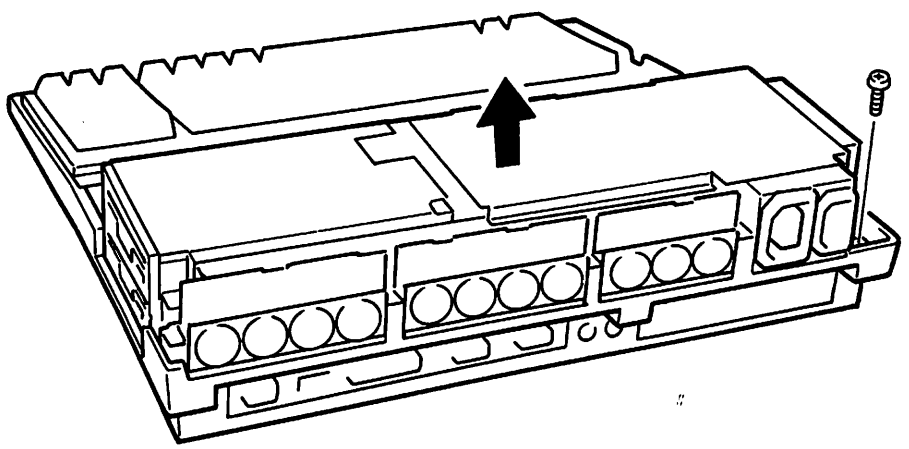


Fig. 3

4. Disconnect CN10, CN11 and CN12 connectors from the Main circuit board and remove these three MIDI Connector boards completely.
5. Remove the eleven screws for the Main circuit board to be removed.

FDD (Floppy Disk Drive) Unit Removal

1. Remove the upper case assembly and the shield cover mounted over the Main circuit board, then remove the power supply/FDD/fan assembly.
2. Remove the eight screws on the two sides of FDD (four for each FDD), then slide upward and lift out the FDD unit very carefully.
3. Disconnect the cables which are attached to the FDD unit.

Power Supply Unit Removal

1. Remove the upper case assembly and the shield cover mounted over the Main circuit board, then remove the power supply/FDD/fan assembly from the unit.
2. Remove the screw (between FDD and Power Supply) to remove the shield cover mounted over the power supply unit.
3. Remove the two screws for the cooling fan vent to be removed.
4. Remove the two screws for the power switch/AC socket assembly to be removed, then disconnect the cable attached to the power supply unit.
5. Remove the five screws for the power supply unit to be removed.

Key Top and Key Actuator Removal

1. Remove the keyboard assembly from the unit.
2. Each key top can be removed by pulling out. For the key tops with the key guide wire such as the Shift, Ctrl, Space bar and Ins, first remove the wire from its groove then pull out the key top.
3. The switch contact plate can be removed from the keyboard assembly by removing the 13 screws.
4. Each key actuator can be removed from the keyboard frame by pushing its stopper claws inward. (See Fig. 4.)

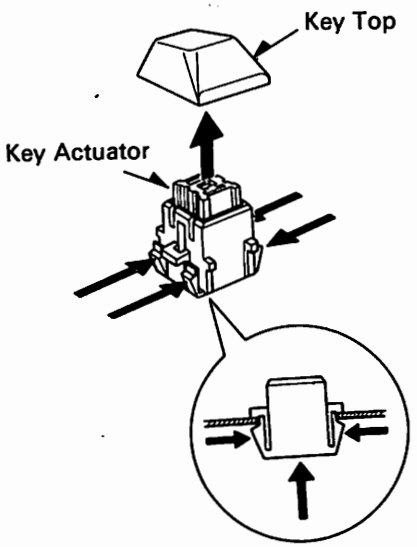


Fig. 4

LCD Unit and EL Panel Removal

1. Open the display panel fully.
2. Using a blade-type screwdriver, open the upper part of the display panel. Then pull out the panel toward you until it is completely released. (See Fig. 5.)

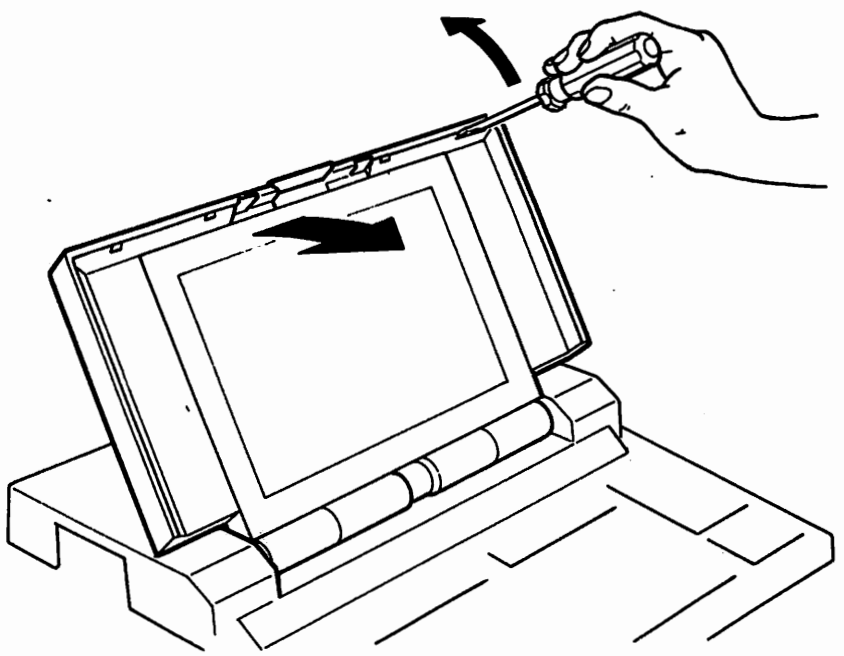


Fig. 5

3. Disconnect the cable attached to the upper right side of the LCD unit.
4. Remove the four screws securing the LCD unit.
5. Remove and hold the LCD unit, then disconnect the flat cable.
6. The EL panel can be removed by pulling the connector at the upper right side of the LCD unit.

Latch Removal

1. Remove the LCD unit. (See LCD Unit Removal.)
2. Remove the screw for the shield plate to be removed.
3. Bend the latch toward you fully, then slide it for removal.

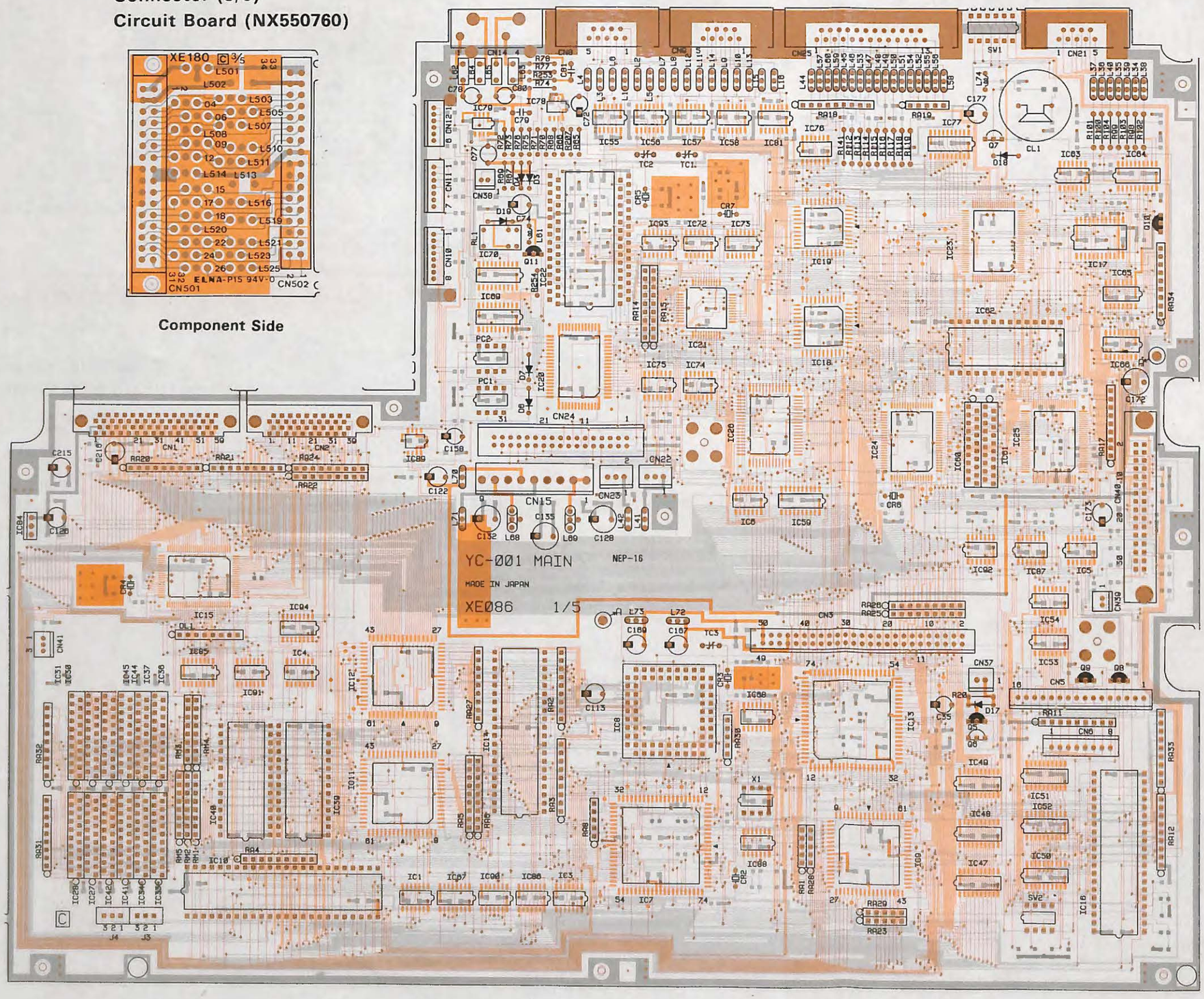
MEMO

■ PRINTED CIRCUIT BOARDS

Connector (3/5) Circuit Board (NX550760)

Component Side

Main Circuit Board (NX550690)

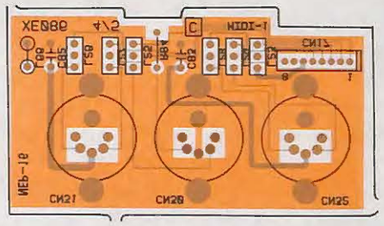


Component Side

Power LED (5/5) Circuit Board (NX550780)

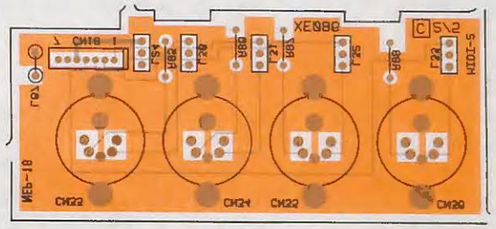
Component Side

MIDI-1 Circuit Board (NX550700)



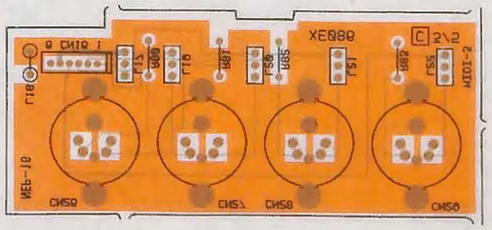
Pattern Side

MIDI-2 Circuit Board (NX550710)



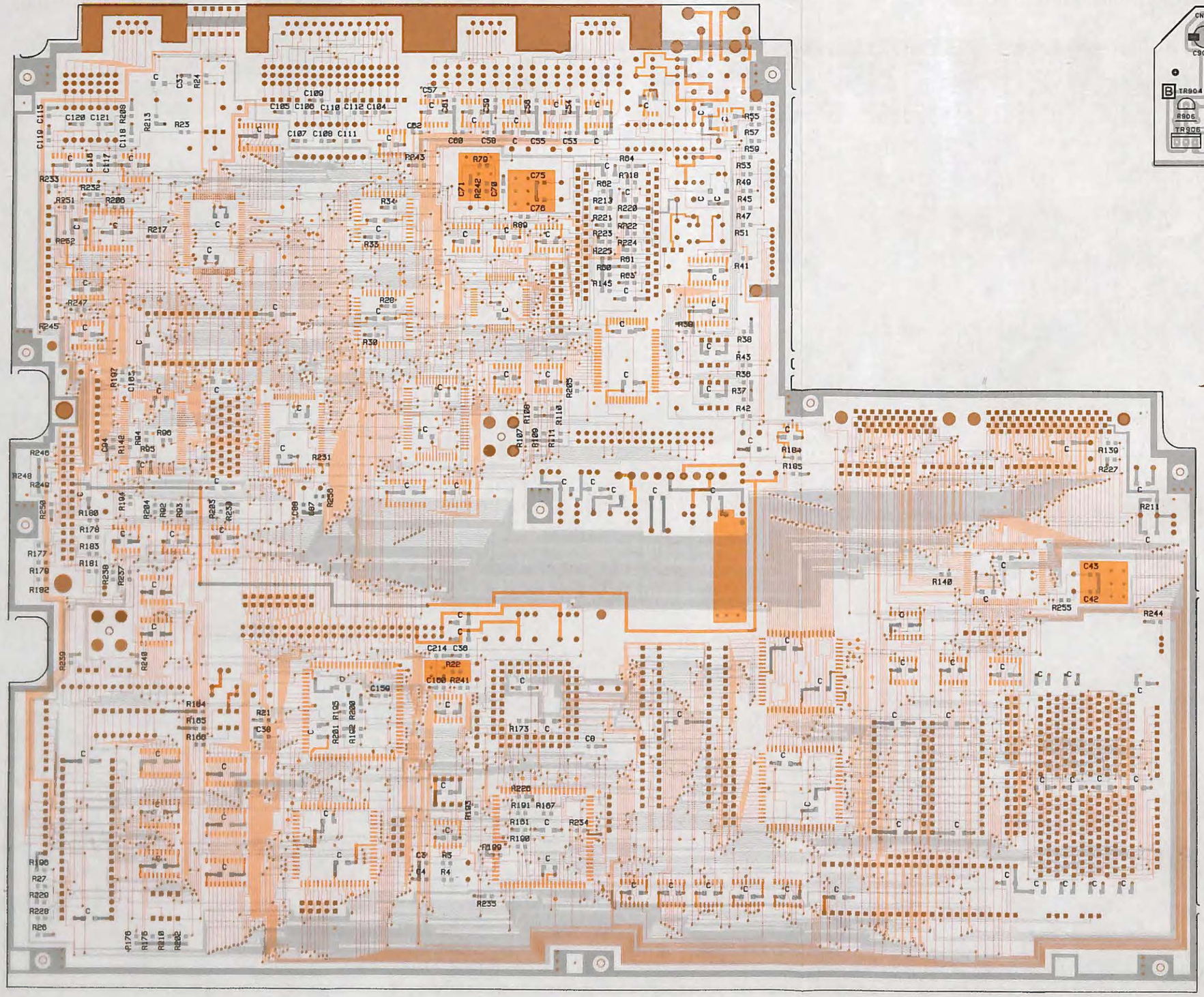
Pattern Side

MIDI-3 Circuit Board (NX550720)



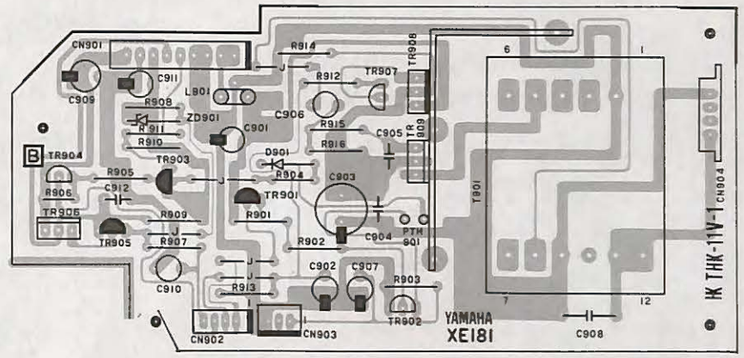
Pattern Side

Main Circuit Board (NX550690)



Pattern Side

Inverter Circuit Board (NX550790)

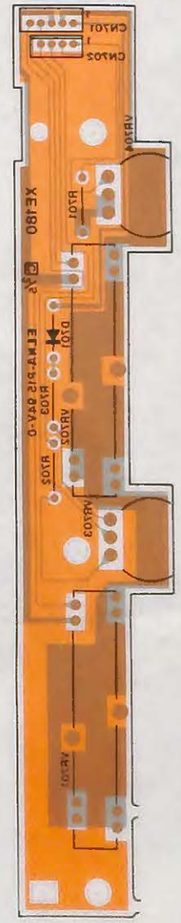


Component Side

LED (1/5) Circuit Board (NX550740)

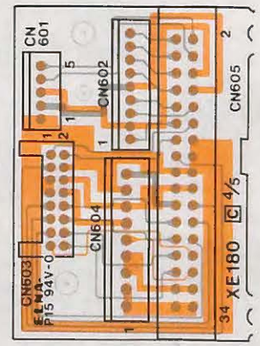
Pattern Side

Slider (2/5) Circuit Board (NX550750)



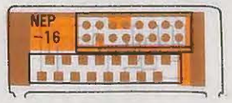
Pattern Side

Connector (4/5) Circuit Board (NX550770)



Component Side

LCD Circuit Board (NX550730)



Component Side

MUSIC COMPUTER

C1

PARTS LIST

■ELECTRICAL PARTS

Ref	Part No.	Description		部品名	Remarks	ランク
	NX550690	Circuit Board	MAIN	メインシート		91
	NX550700	Circuit Board	MIDI-1	ＭＩＤＩ－１シート		16
	NX550710	Circuit Board	MIDI-2	ＭＩＤＩ－２シート		16
	NX550720	Circuit Board	MIDI-3	ＭＩＤＩ－３シート		16
	NX550730	Circuit Board	LCD	ＬＣＤシート		07
	NX550740	Circuit Board	LED(1/5)	ＬＥＤシート		12
	NX550750	Circuit Board	SLIDER(2/5)	スライダーシート		16
	NX550760	Circuit Board	CONNECTOR(3/5)	中継シート		13
	NX550770	Circuit Board	CONNECTOR(4/5)	変換シート		13
	NX550780	Circuit Board	POWER LED(5/5)	POWER LEDシート		09
	NX550790	Circuit Board	INVERTER	インバータシート		16
	IG103520	IC	NJM4558MT-1	ＩＣ	OP AMP.	03
*	XD667A00	IC	TL7705CPS-B-R	ＩＣ	SOP	
*	XE068A00	IC	AN79N09	ＩＣ	REGULATOR -9V	
*	XE444A00	IC	UPC311G-TP1	ＩＣ	COMPARATOR	
	XD238001	IC	TC74HC244F-TP1	ＩＣ		04
*	XD355A00	IC	HD74LS125AFPTL	ＩＣ	BUF	
	XD600A00	IC	TC74HC02F-T1	ＩＣ	NOR	02
*	XD657A00	IC	TC74HC14F-T1	ＩＣ	SOP	
	XD661A00	IC	SN74LS541NS	ＩＣ	SOP	04
	XD830A00	IC	SN74HC04NSR	ＩＣ	INV	01
*	XE052A00	IC	TC74HC393F-T1	ＩＣ	SOP	
*	XE054A00	IC	TC4069UBF-T1	ＩＣ	INV	
*	XE055A00	IC	TC50H001F-T1	ＩＣ	BUFF	
*	XE057A00	IC	SN74ALS245ANSR	ＩＣ	BUF	
*	XE058A00	IC	SN74ALS273NSR	ＩＣ	F-F	
*	XE060A00	IC	SN74ALS573NSR	ＩＣ	LAT	
*	XE061A00	IC	SN74ALS1005NSR	ＩＣ	INV	
*	XE064A00	IC	HD74LS145FP-TL	ＩＣ	DEC	
*	XE066A00	IC	74F00SJ-TP	ＩＣ	NAND	
*	XE067A00	IC	74F112SJ-TP	ＩＣ	JK-FF	
*	XE452A00	IC	HD74LS02FP-TL	ＩＣ	NOR	
*	XE533A00	IC	SN74ALS153NSR	ＩＣ	SELECTOR	
*	XE537A00	IC	SN74HC540NSR	ＩＣ	BUFF	
*	XE538A00	IC	SN74LS30NSR	ＩＣ		
*	XE539A00	IC	SN75188NSR	ＩＣ	DRIVER	
*	XE540A00	IC	SN75189ANSR	ＩＣ	RECEIVER	
*	XF001A00	IC	TC40H000F-TP1	ＩＣ	NAND	
*	XF025A00	IC	SN74LS08NSR	ＩＣ	AND	
*	XF034A00	IC	SN74ALS139NSR	ＩＣ	DEC	
*	XD264A00	IC	TMP82C55AF-10	ＩＣ	PPI	06
*	XD747A00	IC	CF77258FT	ＩＣ	MIDI CONTROL	
*	XD790A00	IC	UPD65013GF-394-	ＩＣ	YCA	
*	XD791A00	IC	UPD65024GF-064-	ＩＣ	YCAD	
*	XD792A00	IC	UPD65012GF-288-	ＩＣ	YCAP	
*	XD900A00	IC	V6366B-F YM6102	ＩＣ	PCDC	
*	XE081A00	IC	HD63265P	ＩＣ	FDC	
*	XE083A00	IC	MB8042	ＩＣ	KBC	
*	XE087B00	IC	UPD78C11G-158-	ＩＣ	SUB CPU	
*	XE451A00	IC	TMP82C54M-2	ＩＣ	TIMER GENERATOR	
*	XE707A00	IC	WD16C450JM-00	ＩＣ	I/O POART	
*	XE790A00	IC	P82C201-10	ＩＣ	SYS CONTROLLER	
*	XE791A00	IC	P82C202	ＩＣ	I/O CONTROLLER	
*	XE792A00	IC	P82A203	ＩＣ	ADDRESS BUS	
*	XE793A00	IC	P82A204	ＩＣ	ADDRESS BUS	
*	XE794A00	IC	P82A205	ＩＣ	PARITY GEN	
*	XE795A00	IC	P82C206	ＩＣ	PERIPHERAL CONT	
*	XE070A00	IC	M5M4464AL-10	ＩＣ	DRAM 256K	
*	XF002A00	IC	M5M4464AL-12	ＩＣ	DRAM 256K	
*	XD366A00	IC	MB81C425612PSZ	ＩＣ	1M	
*	XE071A00	IC	MB81C425610PSZ	ＩＣ	1M	
	VA928600	Photo Coupler	PC910	フォトカプラ		06
*	IA093360	Transistor	2SA933S R	トランジスタ		
*	VE746800	Transistor	2SB1068 K,U	トランジスタ		
	IC174070	Transistor	2SC1740S R,S	トランジスタ		01
	IC181580	Transistor	2SC1815 Y,GR	トランジスタ		03
	IF003450	Diode	1SS133	ダイオード		01
	HJ354270	Carbon Resistor	27.0Ω 1/4W J	カーボン抵抗		01
	HF854470	Carbon Resistor	47.0Ω 1/6W J	カーボン抵抗		01
	HF855150	Carbon Resistor	150.0Ω 1/6W J	カーボン抵抗		01
	HF855180	Carbon Resistor	180.0Ω 1/6W J	カーボン抵抗		01
	HF855220	Carbon Resistor	220.0Ω 1/6W J	カーボン抵抗		01
	HF855470	Carbon Resistor	470.0Ω 1/6W J	カーボン抵抗		01
	HF856220	Carbon Resistor	2.2KΩ 1/6W J	カーボン抵抗		01
	HF856270	Carbon Resistor	2.7KΩ 1/6W J	カーボン抵抗		01
	HF856330	Carbon Resistor	3.3KΩ 1/6W J	カーボン抵抗		01
	HF856470	Carbon Resistor	4.7KΩ 1/6W J	カーボン抵抗		01
	HF857100	Carbon Resistor	10.0KΩ 1/6W J	カーボン抵抗		01

*:New Parts 〔新規部品〕

ランク:Japan Only

	Ref	Part No	Description		部品名	Remarks	ランク
		HF857220	Carbon Resistor	22.0KΩ 1/6W J	カーボン抵抗		01
		HF857470	Carbon Resistor	47.0KΩ 1/6W J	カーボン抵抗		01
*		VD307000	Chip Resistor	10.0Ω 1/10W J	チップ抵抗		
*		VD308500	Chip Resistor	33.0Ω 1/10W J	チップ抵抗		
*		VD309000	Chip Resistor	51.0Ω 1/10W J	チップ抵抗		
*		VD309700	Chip Resistor	100.0Ω 1/10W J	チップ抵抗		
*		VD309900	Chip Resistor	120.0Ω 1/10W J	チップ抵抗		
*		VD310300	Chip Resistor	180.0Ω 1/10W J	チップ抵抗		
*		VD310600	Chip Resistor	220.0Ω 1/10W J	チップ抵抗		
*		VD311000	Chip Resistor	330.0Ω 1/10W J	チップ抵抗		
*		VD311500	Chip Resistor	470.0Ω 0.1W J	チップ抵抗		
*		VD312300	Chip Resistor	1KΩ 1/10W J	チップ抵抗		
*		VD313100	Chip Resistor	2.2KΩ 1/10W J	チップ抵抗		
*		VD313900	Chip Resistor	4.7KΩ 1/10W J	チップ抵抗		
*		VD314700	Chip Resistor	10.0KΩ 1/10W J	チップ抵抗		
*		VD315500	Chip Resistor	22.0KΩ 1/10W J	チップ抵抗		
*		VD316300	Chip Resistor	47.0KΩ 1/10W J	チップ抵抗		
*		VD316400	Chip Resistor	51.0KΩ 1/10W J	チップ抵抗		
*		VD317200	Chip Resistor	100.0KΩ 1/10W	チップ抵抗		
*		VD319100	Chip Resistor	470.0KΩ 1/10W	チップ抵抗		
*		VD319900	Chip Resistor	1MΩ 1/10W J	チップ抵抗		
*		VF502000	Chip Resistor	10MΩ 1/10W J	チップ抵抗		
		HZ004730	Resistor Array	RMLS8-103J	抵抗アレイ		02
		VA092200	Resistor Array	RMLS8-223J	抵抗アレイ		01
		VA822600	Resistor Array	RMLS4-103J	抵抗アレイ		01
		VB350600	Resistor Array	RMLS8-102J	抵抗アレイ		01
		VB594000	Resistor Array	RMLS8-472J	抵抗アレイ		01
*		VE742900	Resistor Array	RMLA4-330J	抵抗アレイ		
		FA154100	Mylar Cap.	0.01μF 50V J	マイラーコン		02
		FG213100	Ceramic Cap.	1000PF 50V K	セラコン		01
*		VD455600	Chip Monolithic Cera. Cap.	1000PF 50V K	チップ積層セラコン		
*		VD499100	Chip Monolithic Cera. Cap.	22PF 50V J	チップ積層セラコン		
*		VD499200	Chip Monolithic Cera. Cap.	47PF 50V J	チップ積層セラコン		
*		VD914300	Chip Monolithic Cera. Cap.	2200PF 50V K	チップ積層セラコン		
		VD914700	Chip Monolithic Cera. Cap.	4700PF 50V K	チップ積層セラコン		01
*		VE345200	Chip Monolithic Cera. Cap.	100PF 50V J	チップ積層セラコン		
*		VE788700	Chip Monolithic Cera. Cap.	10PF 50V D	チップ積層セラコン		
*		VD458800	Chip Monolithic Cera. Cap.	0.1μF 25V R K	チップ積層セラコン		
		VD915100	Chip Monolithic Cera. Cap.	0.01μF 50V K	チップ積層セラコン		01
		VD915300	Chip Monolithic Cera. Cap.	0.015μF 50V K	チップ積層セラコン		01
*		VE790000	Chip Monolithic Cera. Cap.	0.047μF 50 Z	チップ積層セラコン		
		FZ006470	Electrolytic Cap.	220.0μF 25.0V	ケミコン		01
		UJ148100	Electrolytic Cap.	100.0μF 25.0V	ケミコン		01
		UJ137100	Electrolytic Cap.	10.0μF 16.0V	ケミコン		01
		UJ157470	Electrolytic Cap.	47.0μF 35.0V M	ケミコン		01
		UJ166470	Electrolytic Cap.	4.7μF 50.0V M	ケミコン		01
		UJ137100	Electrolytic Cap.	10.0μF 16.0V M	ケミコン		01
		UJ147470	Electrolytic Cap.	47.0μF 25.0V M	ケミコン		01
		UJ146470	Electrolytic Cap.	4.7μF 25.0V M	BPケミコン		01
		VC541900	EMI Coil	HFN-0031	EMIコイル		02
		VC543200	EMI Coil	HFN-0071	EMIコイル		02
*		VF228000	Coil	EL0909RR-473K	コイル	47m	
*		VF606600	Coil	LHL06TB101K	コイル	100μH	
*		VD057200	LC Filter	ZJS5101-223TA	LCフィルター		
*		VF485900	EMI Filter	ZJSC-R47-391TA	EMIフィルター		
		QU002100	Quartz Crystal Unit	32.768KHZ	水晶振動子		04
*		VC048500	Quartz Crystal Unit	20M EXO-3C	水晶振動子		
		VD567000	Quartz Crystal Unit	3.83616M NR-18	水晶振動子		04
*		VE804600	Quartz Crystal Unit	16M AT-51	水晶振動子		
*		VE804700	Quartz Crystal Unit	14.7456M NR-18	水晶振動子		
*		VE804800	Quartz Crystal Unit	14.31818M AT-51	水晶振動子		
*		VE804900	Quartz Crystal Unit	11.52M NR-18	水晶振動子		
		VD017000	Slide Switch	51D-0401	スライドSW		03
*		VF179100	Dip Switch	DISP6B-1	ディップSW		
*		VF307000	Pin Jack	YKC21-0339	ピンジャック	WH/BL	
*		VC699700	IC Socket	DIP628A11S1	ICソケット		
*		VC699900	IC Socket	DIP640A11S1	ICソケット		
*		VF371100	IC Socket	268-7234-00-38	ICソケット		
*		VF823900	Relay	DC AG40199	リレー		
		GE300670	Ferrite Bead	BL02RN2 R62T2	フェライトビーズ		02
*		VE439400	Ferrite Bead	DSS310-55D223S	フェライトビーズ		
*		VE748300	Pin Header	34P 7634-6002FL	ピンヘッダー		
*		VF215700	Pin Header	LX-16P-DT1-P1	ピンヘッダー	16P	
*		VF200600	Connector	9150-4500SC	コネクタ	50P	
		VE474600	Connector	50MIL 1.27 SE	コネクタ	40P	08
		VE474700	Connector	50MIL 1.27 SE	コネクタ	60P	08
*		VE749700	Connector	HBLB16S-5J	コネクタ	16P	
*		VE750000	Connector	HBLB8S-5J	コネクタ	8P	
*		VE864500	Connector	SLEM16S-2 TE	コネクタ	16P	

*New Parts (新規部品)

ランク:Japan Only

	Ref	Part No	Description		部品名	Remarks	ランク
*		VF200800	Connector	PCN10H-	コネクタ	32P2.54DSA	
*		VE753000	D-SUB Connector	17LE-13090-	D－SUBコネクタ	28D4CK	
*		VE753100	D-SUB Connector	17LE-23090-	D－SUBコネクタ	28D4CK	
*		VF551300	D-SUB Connector	17LE-13250-	D－SUBコネクタ	28D4CK	
*		VE744400	DIN Connector	TCS0845-01-2051	DINコネクタ	5P	
		LB918020	Connector Base	XH 2P TE	ベーススツキポスト		01
		LB918030	Connector Base	XH 3P TE	ベーススツキポスト		01
		LB932090	Connector Base	VH 9P TE	ベーススポスト		01
*		VB389900	KR Connector	KR,PH 3P TE	KRコネクタ		
*		VB390200	KR Connector	KR,PH 6P TE	KRコネクタ		
*		VB390300	KR Connector	KR,PH 7P TE	KRコネクタ		
*		VB390400	KR Connector	KR,PH 8P TE	KRコネクタ		
*		VC811700	Mini Clamp	UAMS-07-0	ミニクランプ		
		XE143001	Speaker	PKM22EPP-4001	スピーカー		04
*		VF812600	Delay Line	500C62ES	ディレーライン		
*		VE743700	MIDI Cable	8P	MIDI束線		
*		VE743800	MIDI Cable	7P	MIDI束線		
*		VE743900	MIDI Cable	6P	MIDI束線		
*		VE744200	Cable		ジャンパー束線		
*		VF516000	Cable	12V	ジャンパー束線		
*		VF443100	Holder	×3 MIDI Board	DIN金具		
*		VF443200	Holder	×4 MIDI Board	DIN金具		
*		VF583300	Angle Bracket		スペーサー金具		

* :New Parts (新規部品)

ランク :Japan only

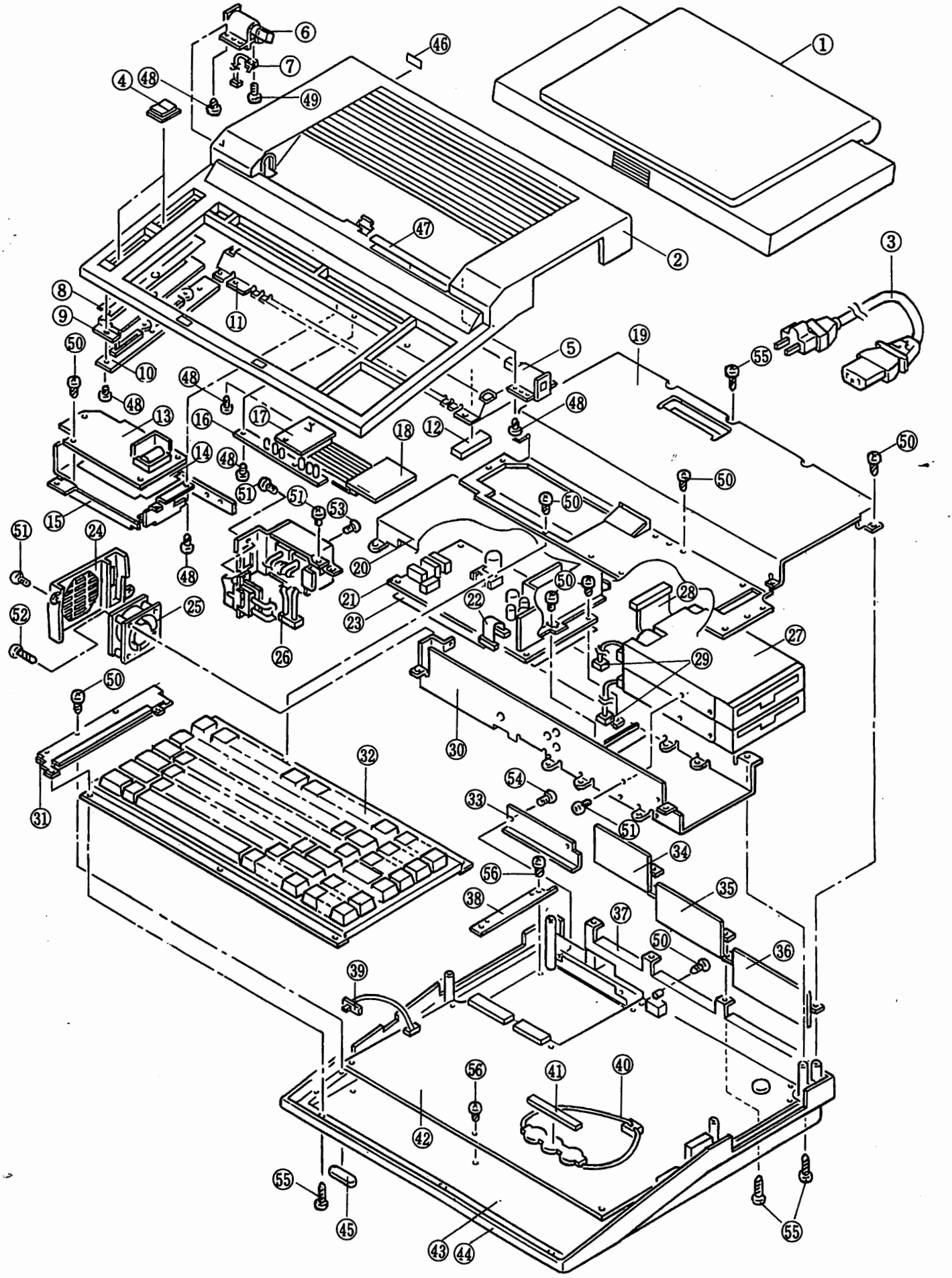
■POWER SUPPLY UNIT

	Ref	Part No	Description		部品名	Remarks	ランク
		VF671200	Power Supply Unit		電源ユニット		30
*		IX803640	IC	MB3759	IC		
		IX000910	IC	TL431CLPB	IC		03
		XD342001	IC	AN79M12F	IC		03
*		IX803650	IC	AN79M24F	IC		
		IK000480	Photo Coupler	PC817 5KV	フォトカプラ		03
*		IX803660	Transistor	2SA1451	トランジスター		
		IC181520	Transistor	2SC1815 Y	トランジスター		03
		IC195920	Transistor	2SC1959 Y	トランジスター		03
*		IX803670	MOS FET	2SK724	MOS FET		
*		IX803680	Diode	D10SC6M	ダイオード		
*		IX803690	Diode	ESAB92M-02	ダイオード		
*		IX803700	Diode	ESAB82M-004	ダイオード		
*		IX803710	Diode	ERB38-06	ダイオード		
		IX001230	Diode	ERB44-04	ダイオード		03
		IX802720	Diode	1SS178 0.1A 80V	ダイオード		01
		IF001470	Zener Diode	RD6.2EB2	ツェナーダイオード		01
		IF002170	Zener Diode	RD13EB3	ツェナーダイオード		01
		IF001850	Zener Diode	RD10EB2	ツェナーダイオード		01
		IF005700	Zener Diode	RD5.1EB2	ツェナーダイオード		01
*		IX803720	Zener Diode	RD3.3E	ツェナーダイオード		
		IF003350	Zener Diode	RD39EB1	ツェナーダイオード		01
*		IX803730	Diode Stack	D3SB40	ダイオードスタック		
		HF855100	Carbon Film Resistor	100Ω 1/6W	カーボン抵抗		01
		HF855220	Carbon Film Resistor	220Ω 1/6W	カーボン抵抗		01
		HF856100	Carbon Film Resistor	1KΩ 1/6W	カーボン抵抗		01
		HF856220	Carbon Film Resistor	2.2KΩ 1/6W	カーボン抵抗		01
		HF856270	Carbon Film Resistor	2.7KΩ 1/6W	カーボン抵抗		01
		HF857100	Carbon Film Resistor	10KΩ 1/6W	カーボン抵抗		01
		HF857220	Carbon Film Resistor	22KΩ 1/6W	カーボン抵抗		01
		HF855470	Carbon Film Resistor	470Ω 1/6W	カーボン抵抗		01
		HF856470	Carbon Film Resistor	4.7KΩ 1/6W	カーボン抵抗		01
		HF857270	Carbon Film Resistor	27KΩ 1/6W	カーボン抵抗		01
		HF858100	Carbon Film Resistor	100KΩ 1/6W	カーボン抵抗		01
		HF857680	Carbon Film Resistor	68KΩ 1/6W	カーボン抵抗		01
		HW052330	Wire Wound Resistor	0.33Ω 5W	セメント抵抗		02
*		HX804060	Wire Wound Resistor	0.02Ω 5W	セメント抵抗		
		HL314220	Metal Oxide Film Resistor	22Ω 1W	酸化金属皮膜抵抗		01
		HL314470	Metal Oxide Film Resistor	47Ω 1W	酸化金属皮膜抵抗		01
		HL324100	Metal Oxide Film Resistor	10Ω 2W	酸化金属皮膜抵抗		01
		HL324470	Metal Oxide Film Resistor	47Ω 2W	酸化金属皮膜抵抗		01
		HL326100	Metal Oxide Film Resistor	1KΩ 2W	酸化金属皮膜抵抗		01
		HL327270	Metal Oxide Film Resistor	27KΩ 2W	酸化金属皮膜抵抗		01
		HL327470	Metal Oxide Film Resistor	47KΩ 2W	酸化金属皮膜抵抗		01
		HL334470	Metal Oxide Film Resistor	47KΩ 3W	酸化金属皮膜抵抗		01
*		HX804070	Fuse Resistor	10Ω 2W	ヒューズ抵抗		
*		HX804080	Fuse Resistor	100Ω 1/6W	ヒューズ抵抗		
*		HX804090	Trimmer Pot.	B1KΩ	半固定ボリューム		
*		FX800310	Electrolytic Cap.	560μF 200V	ケミコン		
		FZ004280	Electrolytic Cap.	4700μF 16V	ケミコン		05
		FZ006370	Electrolytic Cap.	1000μF 16V	ケミコン		02
		FX550640	Electrolytic Cap.	330μF 50V	ケミコン		03
		FJ157220	Electrolytic Cap.	22μF 35V	ケミコン		01
		UW929330	Electrolytic Cap.	3300μF 10V M	ケミコン		03
		FJ265470	Electrolytic Cap.	0.47μF 50V	ケミコン		01
		FJ266330	Electrolytic Cap.	3.3μF 50V	ケミコン		01
		FJ166100	Electrolytic Cap.	1μF 50V	ケミコン		01
		FD153100	Polystyrene Cap.	1000PF 50V J	スチコン		02
		FD154220	Polystyrene Cap.	22000PF 50V J	スチコン		02
		FD154470	Polystyrene Cap.	47000PF 50V J	スチコン		02
		FD154150	Polystyrene Cap.	15000PF 50V J	スチコン		02
*		FX800320	Polystyrene Cap.	0.18μF 250V	スチコン		
*		FX800330	Polystyrene Cap.	0.22μF 250V	スチコン		
*		FX800340	Ceramic Cap.	100PF 2KV	セラコン		
*		FX800350	Ceramic Cap.	330PF 2KV	セラコン		
		FI383220	Ceramic Cap.	0.0022μF 125V	セラコン		01
		FI384100	Ceramic Cap.	0.01μF 125V	セラコン		01
*		GX801410	Coil	SU16V-12035	コイル		
*		GX801420	Coil	C-L00-174-11	コイル		
*		GX801430	Coil	L-10001-11	コイル		
*		KX801210	Fuse	TSC 5A 125V	ヒューズ		
		VC310300	Connector	5096-02C	コネクタ		01
*		LX801510	Connector	B9P-VH	コネクタ		
*		LX801520	Connector	B3B-XH-A	コネクタ		
*		IX803740	Thyristor	CR02AM	サイリスタ		
*		IX803750	Thermistor	8D-18	サーミスター		
*		GX801440	Transformer	N-T00-305-11	電源トランス		

*New Parts (新規部品)

ランク :Japan only

■ OVERALL ASSEMBLY

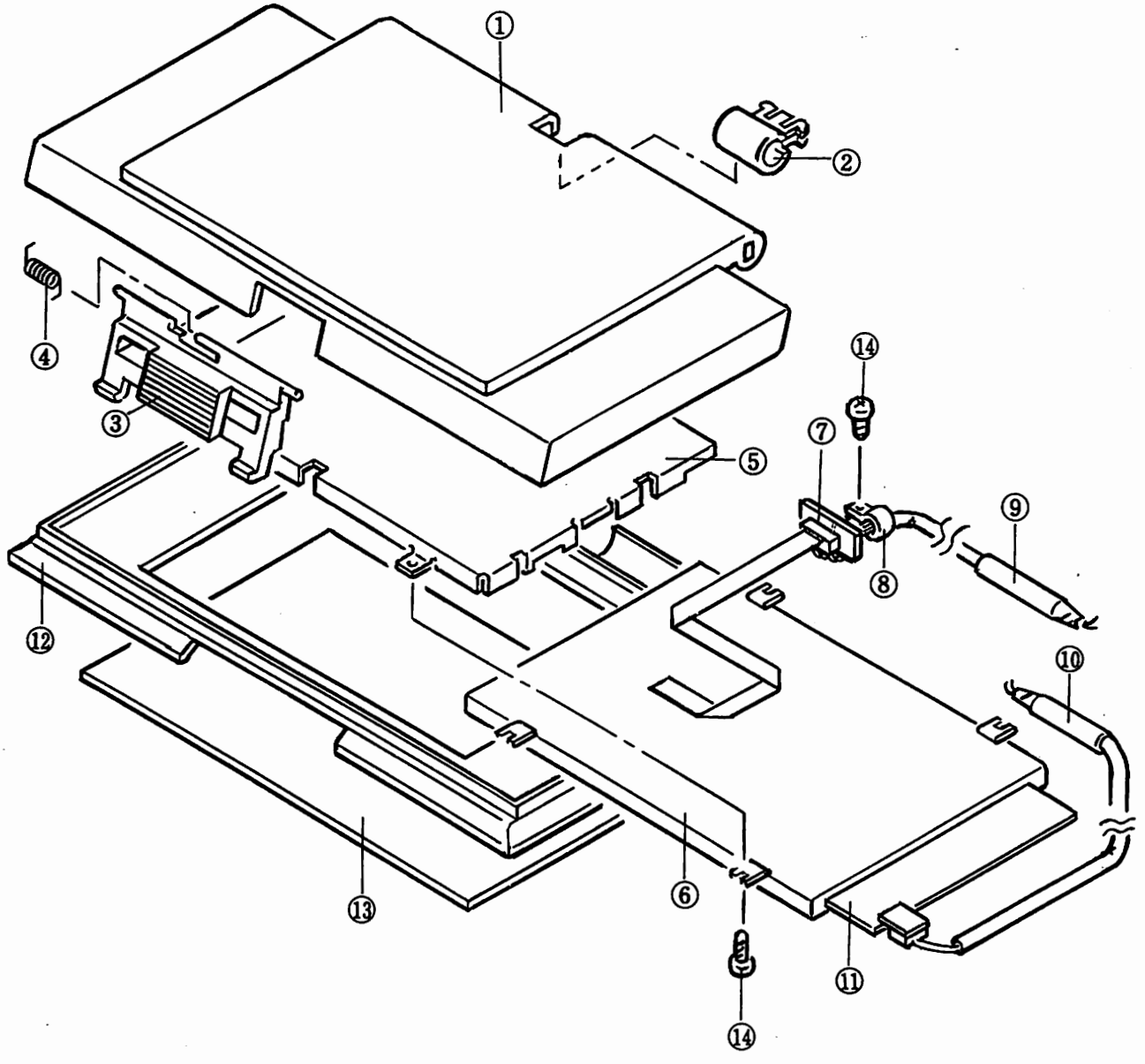


	Ref	Part No	Description		部品名	Remarks	ランク
*	1	VF670400	Panel Assembly		パネルＡＳＳ'Ｙ		
	2	VF301400	Upper Case		上ケース		16
*	3	VF670000	Power Cord		電源ケーブル		
	4	VB774000	Knob		ツマミ		01
*	5	VF670800	Hinge Unit	Right	ヒンジユニット(右)		
*	6	VF670700	Hinge Unit	Left	ヒンジユニット(左)		
*	7	VF638000	Micro Switch Assembly		ﾏｲｸﾛｽｲｯﾁAss'y		
*	8	VF630400	Dust Proof Cloth		防塵クロス		
*	9	VF444300	Slider Upper Shield		スライダ上シールド		
	10	NX550750	Circuit Board	SLIDER(2/5)	スライダシート		16
*	11	VF443400	Upper Shield		上シールド		
*	12	VC920900	ACT Pad	C440 BL	ＡＣＴパッド		
	13	NX550790	Circuit Board	INVERTER	インバータシート		16
*	14	VF574300	Insulation Sheet		ＩＮＶ絶縁シート		
*	15	VF522000	Angle Bracket		インバータ金具		
	16	NX550740	Circuit Board	LED(1/5)	ＬＥＤシート		12
	17	NX550770	Circuit Board	CONNECTOR(4/5)	変換シート		13
	18	NX550760	Circuit Board	CONNECTOR(3/5)	中継シート		13
*	19	VF443500	Internal Shield		中シールド		
*	20	VF444100	Power Supply Cover		電源カバー		
	21	VF671200	Power Supply Unit	100-120V	電源ユニット		30
*	22	VF596500	Power Cable		電源束線		
*	23	VF495200	Insulation Sheet		絶縁シート		
*	24	VF495500	Vent		ファンカバー		
*	25	VF438200	Cooling Fan Assembly		ファンＡｓｓ'ｙ		
*	26	VF571900	AC Socket Assembly		ＡＣインレットAss'y		
	27	VG192800	3.5" Floppy Disk Drive	ND-352S-A 02	３．５インチＦＤＤ		31
*	27	VG315200	3.5" Hard Disk Drive		３．５インチＨＤＤ	C1/20	
*	27-1	VG315300	Circuit Board	HDD CONTROLLER	コントローラーシート	C1/20 →	
*	27-2	VG315000	HDD Cable		ＨＤケーブル	C1/20	
*	27-3	VG175000	HDD Cover		ＨＤＤカバー	C1/20	
*	28	VF598100	FDD Signal Cable		ＦＤＤ信号束線		
*	29	VF596400	FDD Power Cable		ＦＤＤ電源束線		
*	30	VF444000	Mid Frame		ミッドフレーム		
*	31	VF443900	Slider Lower Shield		スライダ下シールド		
	32	VF296700	Keyboard Unit		キーボードユニット		17
*	33	VF495300	Slot Cover		スロットカバー		
	34	NX550700	Circuit Board	MIDI-1	ＭＩＤＩ－１シート		16
	35	NX550710	Circuit Board	MIDI-2	ＭＩＤＩ－２シート		16
	36	NX550720	Circuit Board	MIDI-3	ＭＩＤＩ－３シート		16
*	37	VF443700	Angle Bracket		コネクタ金具		
*	38	VF443800	Guide Plate		ガイドプレート		
	39	NX550780	Circuit Board	POWER LED(5/5)	POWER LEDシート		09
*	40	VF404000	Ni-Cd Battery Assembly		Ｎｉ－Ｃｄ電池Ass'y		
*	41	VF438000	Battery Pad	C440 10X50 T=4	電池パッド		
	42	NX550690	Circuit Board	MAIN	メインシート		91
*	43	VF443600	Lower Sheild		下シールド		
	44	VF495400	Lower Case		下ケース	C1	17
*	44	VG315600	Lower Case		下ケース	C1/20	
	45	CB055690	Foot	BL	ゴム足		01
*	46	VF647000	Label	120V	１２０Ｖラベル		
*	47	VF671100	Label	LED	ＬＥＤラベル		
	48	EI030106	Bind Head Tapping Screw	3.0X10 ZMC2Y	ﾊﾞｲﾝﾄﾞﾀｯﾋﾟﾝｸﾞﾈｼﾞ		01
	49	EI020106	Bind Head Tapping Screw	2.0X10 ZMC2Y	ﾊﾞｲﾝﾄﾞﾀｯﾋﾟﾝｸﾞﾈｼﾞ		01
	50	EI130086	Bind Head Tapping Screw	3.0X8 FNM33G	ﾊﾞｲﾝﾄﾞﾀｯﾋﾟﾝｸﾞﾈｼﾞ		01
	51	ED330066	Bind Head Screw	3.0X6 FCM3BL	バインド小ネジ		01
	52	EI330206	Bind Head Tapping Screw	3.0X20 FCM3BL	ﾊﾞｲﾝﾄﾞﾀｯﾋﾟﾝｸﾞﾈｼﾞ		01
	53	ED340086	Bind Head Screw	4.0X8 FCM3BL	バインド小ネジ		01
	54	ED130066	Bind Head Screw	3.0X6 FNM33G	バインド小ネジ		01
	55	EI330146	Bind Head Tapping Screw	3.0X14 ZMC2BL	ﾊﾞｲﾝﾄﾞﾀｯﾋﾟﾝｸﾞﾈｼﾞ		01
	56	EK093020	Bind Head Tapping Screw	3.0X8 ZMC2Y	ﾊﾞｲﾝﾄﾞﾀｯﾋﾟﾝｸﾞﾈｼﾞ		01

＊ :New Parts (新規部品)

ランク:Japan Only

■PANEL ASSEMBLY

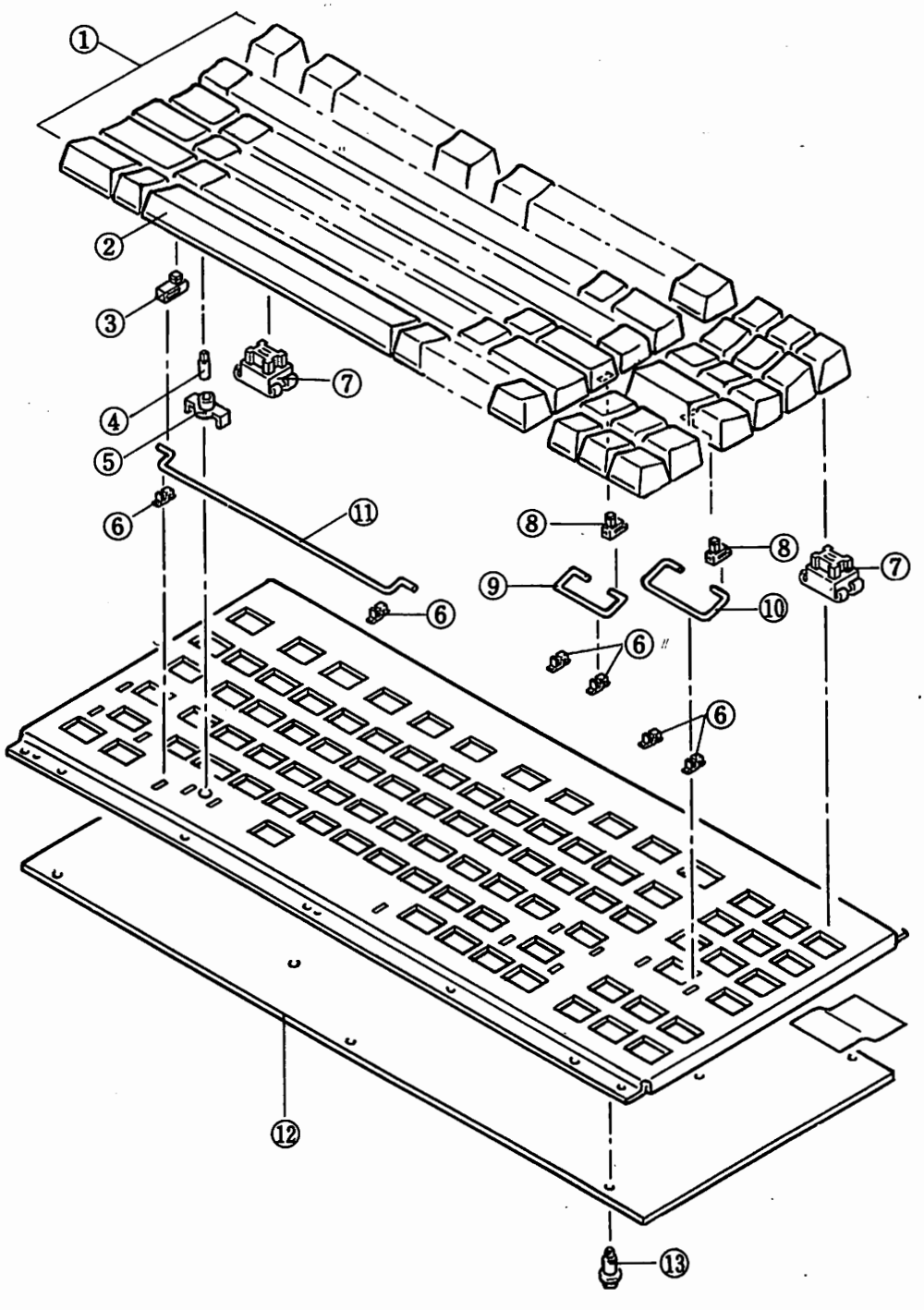


	Ref	Part No	Description		部品名	Remarks	ﾗﾝｸ
*		VF670400	Panel Assembly		パネルＡＳＳ'Ｙ		
	1	VF572700	Panel Case		パネル外ケース		14
*	2	VF574400	Cable Guide		ケーブルガイド		
*	3	VF572900	Panel Hook		パネルフック		
*	4	VF574000	Lock Spring		ロックスプリング		
*	5	VF443300	Panel Shield		パネルシールド		
	6	VF475700	LCD Unit	LN64035U	ＬＣＤユニット	640×400	64
	7	NX550730	Circuit Board	LCD	ＬＣＤシート		07
*	8	VF573800	Cable Clamp		ケーブルクランプ		
*	9	VF375800	LCD Cable	16P	ＬＣＤケーブル		
*	10	VF375900	EL Cable	2P	ＥＬケーブル		
	11	VF475800	EL Lamp	NEL-5LL-333-W	ＥＬランプ		23
	12	VF572800	Panel Case		パネル内ケース		09
	13	VF573400	Display Panel		ディスプレイパネル		15
	14	EI030086	Bind Head Tapping Screw	3.0X8 ZNC2Y	ﾊﾞｲﾝﾄﾞﾀｯﾋﾟﾝｸﾞﾈｼﾞ		01

＊New Parts （新規部品）

ランク:Japan Only

■KEYBOARD UNIT



Ref	Part No	Description		部品名	Remarks	ﾗﾝｸ
	VF296700	Keyboard Unit		キーボードユニット	KFNBBA010D	17
1	YX303520	Key Top Set		キートップセット	J1AAA0931	
2	YX303530	Key Top	for Spase Bar	ｽﾍﾟｰｽﾊﾞｰｷｰﾄｯﾌﾟ		
3	YX303570	Bracket,B	for Spase	ｽﾍﾟｰｽｷｰﾌﾞﾗｹｯﾄ	69AAA0018	
4	AX550250	Key Top Guide Pin	for Spase	キートップガイドピン	16KF006	02
＊ 5	AX557000	Key Guide	for Spase	スペースバーガイド		
6	YX303610	Mounting Plate	for Torsion Bar	ﾏｳﾝﾃｨﾝｸﾞﾌﾟﾚｰﾄ	68AAA0001	
7	YX303660	Swich Actuator		ｽｲｯﾁﾄﾞﾗｲﾌﾞASS'Y	L7AAA0002	
8	YX303560	Bracket A		キートッププラケット	69AAA0003	
9	YX303630	Torsion Bar A	Short	トーションバー（A）	74AAA0004	
10	YX303640	Torsion Bar B	Long	トーションバー（B）	74AAA0005	
11	YX303650	Torsion Bar C	for Spase Bar	トーションバー（C）	74AAA0012	
12	YX303580	A Point Of Contact		接点ＡＳＳ'Ｙ	54AAA0008	
13	EX550020	Screw		特殊ネジ	2D00AA005	02

＊：New Parts（新規部品）　　ランク:Japan Only