OL810/410 LED Page Printer
TROUBLESHOOTING MANUAL
With
COMPONENT PARTS LIST

OL810 LED Page Printer
TROUBLESHOOTING MANUAL
With
COMPONENT PARTS LIST
SUPPLEMENT PACKAGE
M-521044 1A

This Supplement Package adds the OL410 LED Page Printer related information to the OL810 LED Page Printer TROUBLESHOOTING MANUAL with COMPONENT PARTS LIST (OKI-J Part No. M-520963-1A) to enable both page printers to share this MAINTENANCE MANUAL.

SUPPLEMENT FOR
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RECORDS OF CONTENTS

Item No.	Page affected		Discription of change
1	Outside front cover	(Replacement)	OL410 addition. (OL810→OL810/410)
2	PREFACE	(Replacement)	Additional remark of OL410, and additional explanation of PCB.
3	1-1	(Replacement)	OL410 addition.
4	1-2	(Replacement)	Additional comment of PCB.
5	1-3	(Replacement)	Change of font card explanation.
6	1-4	(Replacement)	OL410 addition.
7	1-17	(Replacement)	Or Additional description of μPD91367.
8	1-18	(Replacement)	Or Additional description of μPD91367.
9	1-40	(Replacement)	Addition of T.S. of 2. OLMA-2 PCB.
10	1-41	(Replacement)	Addition of T.S. of 2. OLMA-2 PCB.
11	1-43	(Replacement)	Addition of T.S. of 2. OLMA-2 PCB.
12	Drawing List	(Replacement)	Addition of OLMA-2 and LLAT-4 PCB.
13	2-3~2-6	(Replacement)	Correction.
14	2-7~2-12	(Replacement)	Replacement of blank page.
15	2-21~2-26	(Replacement)	Replacement of blank page.

PREFACE

This manual describes detailed troubleshooting of the component parts for the OL 810/410 and provides its parts list.

OL810 and OL410 are provided with different types of PCB's as shown below. For OL410, OLMA-PCB described in this manual employs OLMA-2 PCB, and LLAT-PCB employs LLAT-4 PCB.

PCB	OL810	OL410
Main controller PCB	OLMA-	OLMA-2
Engine controller PCB	LLAT-	LLAT-4
Second card board	OLCA-	-----

TROUBLESHOOTING MANUAL

CONTENTS

1. Outline

This manual has been written to provide guidance for troubleshooting of the OL810/410 Printer (primarily for its printed circuit boards), on an assumption that the reader is knowledgeable about the printer.

2. Tools

For troubleshooting the printer, the tools listed below may be needed in addition to general maintenance tools.

Tool	Remarks
Oscilloscope	Frequency response 100 MHz or higher
Soldering iron	A slender tip type, 15 - 20 watts

3. Operating Principles of Printer

For detailed operating principles of the printer, refer to Chapter 3 "Operation Description" of the OL810/410 Maintenance Manual (M-520917-2A).

3.1 Block Diagrams

The printer has an engine driver PCB (printed circuit board) and a controller PCB (printed cirucit board). The engine driver PCB drives the printer mechanism and controls the LED head. The controller PCB receives data from a host device, analyzes commands, and processes the data for printing. The controller PCB can be provided with optional provisions, such as an extension Memory PCB, Serial Interface-PCB.

To help the reader grasp an outline of the printer system structure, a block diagram of the printer is shown in Figure 1.

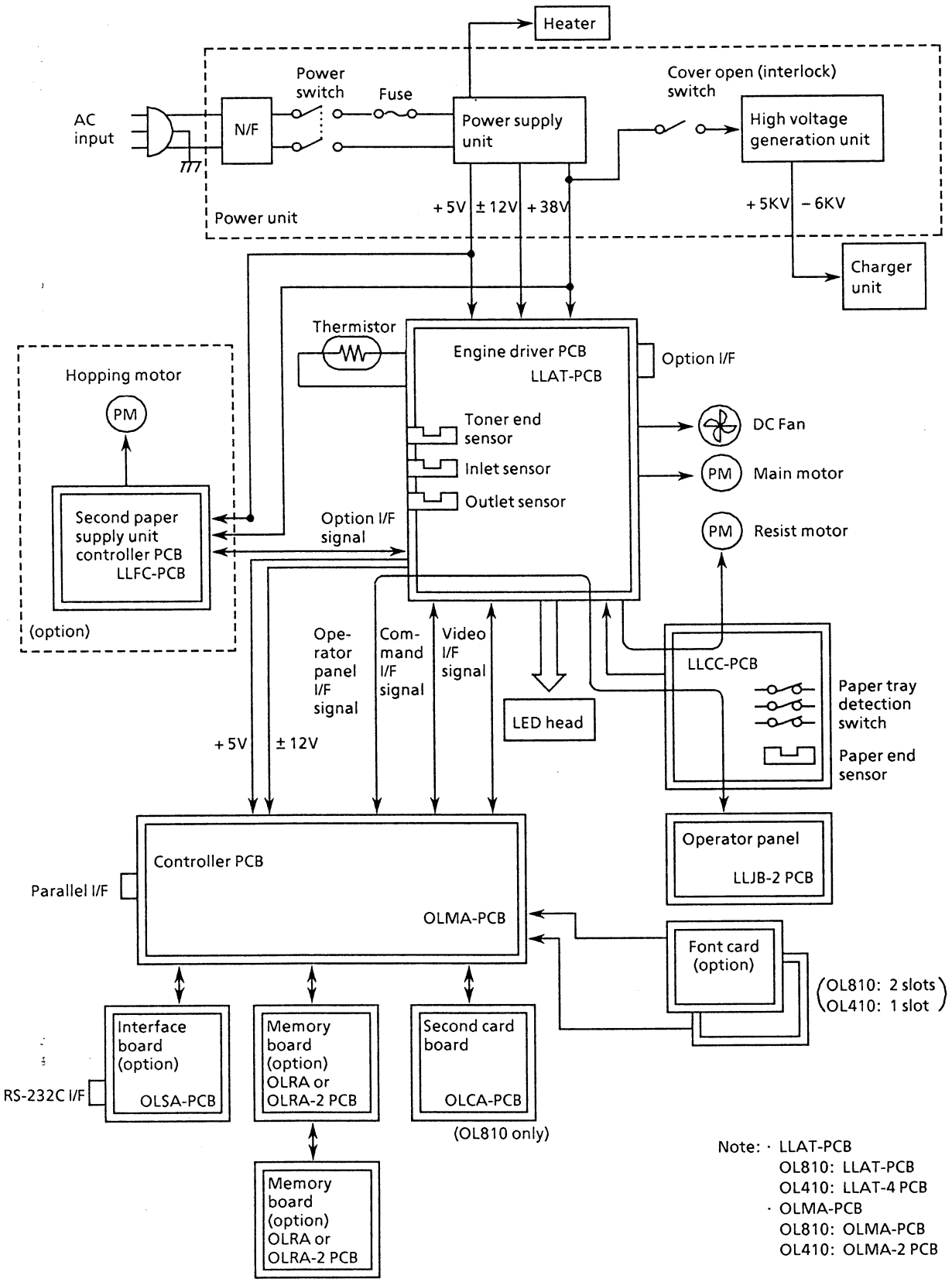


Figure 1 Block Diagram of the Printer

3.2 Outline of Printer Operation

The controller PCB is connected to a host system through a Centronics parallel I/F, or an optional RS-232C I/F. The controller PCB receives print data and a string of commands from the host system, and generates bit image data. The programs for these procedures are stored in the ROM installed on the controller PCB.

When data for one page of print data has become ready, the OLMA-PCB turns on the PRINT-N signal which is one of the video I/F signals. Upon receipt of the PRINT-N signal, the LLAT-PCB starts up the drum motor, resist motor, and heater in preparation for printing and, at the same time, sends to the OLMA-PCB the FSYNC-N and LSYNC-N signals which are component signals of the video I/F signal.

Upon receipt of the FSYNC-N and LSYNC-N signals, the OLMA-PCB sends the WDATA-N signal (image data signal) in synchronization with the WCLK-N signal. The LLAT-PCB drives the LED head in conformance with the WDATA-N signal so that the LED head illuminates leaving a latent image on the photosensitive drum.

In addition to the above, the LLAT-PCB controls the paper feed, paper transport, and EP processing actions so that the image is printed out by placing toner on the media paper.

The operator panel (LLJB-2 PCB) is connected to the OLMA-PCB via the LLCC-PCB and LLAT-PCB. The operator panel is controlled by the OLMA-PCB with its operator panel I/F signal.

The second paper supply unit (LLFC-PCB) [optional] is connected to the LLAT-PCB. The second paper supply unit is controlled by the LLAT-PCB with an optional I/F signal.

The OLMA-PCB can be incorporated with the expansion memory board (option), the Serial interface board (option).
The expansion memory board (OLRA or OLRA-2 board) provides an additional 1M to 4M bytes (in 1M byte) of dynamic RAM.

RS-232C I/F is mounted in the Serial interface board (OLSA board).

Two font cards on OL810, One font card on OL410 can be installed. Each font card has a ROM which provides optional fonts. The connector for the font card is provided on the OLMA-PCB and OLCA-PCB (OL810 only). The font data read out from the font card is fed to the OLMA-PCB.

3.3 Indicator Lamps and Error Message Display

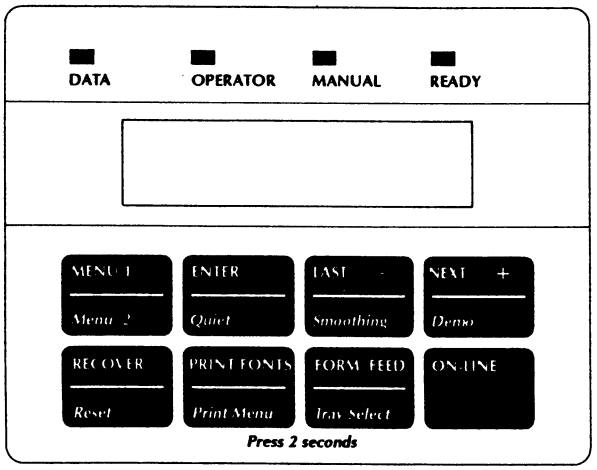


Figure 2 Operator Panel

The operating status and error messages of the OL810/410 are indicated by the indicator lamps and displayed in the form of error messages (LCD messages) on the LCD display of the operator panel. The messages provide valuable information for finding the causes of failures of the printer. The messages, however, cannot be relied upon when the operator panel itself has failed or the operator panel control circuits themselves have failed.

It should not be taken for granted that the error messages (LCD messages) appearing on LCD display of the operator panel cover all types of errors of the printer. Rather, the level of failure of the printer can be surmised by referring to the OPERATOR lamp (red lamp) on the operator panel. Flashing of the OPERATOR lamp indicates that a failure which may fall under either serious ones that require replacement of component parts or less serious ones that can be remedied by the user has occurred with the printer, and means that an action by the operator is required to be taken. The former level of error messages are shown in Table 1 and the latter level of error messages in Table 2. For the actions to be taken when error messages have appeared, refer to the maintenance manual.

Table 1 LCD display (1/6)

The LCD message display column is described below:

n 1 or 2 : tray number for a message

xx HP : LaserJet Series III mode
PP : IBM Proprinter III XL mode

Category	LCD message display	Trouble
PU errors	ERROR PU CONTROL	Overrun of the program on the PU side
	ERROR PU EEPROM WRITE	While writing the EEPROM on the PU side, an error has occurred.
	ERROR PU EEPROM ERROR	The EEPROM on the PU side cannot be identified
	ERROR PU ROM/RAM CHEACK	When checking the ROM/RAM on the PU side, an error has occurred.
	ERROR PU FAN MOTOR	The DC fan is halted, or power (+ 38 V) is not fed to the fan.
	ERROR PU FUSER UNIT	The fuser unit has not reached a prescribed temperature or it is above that temperature.
Interface errors	ERROR CU-PANEL I/F TIMEOUT	Communication error between the CU and the operator panel. No response is received from the operator panel even after a specified number of requests from the CU.
	ERROR CU-PU I/F TIMEOUT	Error between the CU and the PU. A timeout occurred without the PU receiving data transmitted from the CU.
	ERROR PU-OPTION TIMEOUT	After PU sends data, no response is received within a specific time interval.

Table 1 LCD display (2/6)

Category	LCD message display	Trouble
Interface errors	ERROR CU-OPTION I/F TIMEOUT	The I/F time out has occurred between the CU and Option.
	ERROR SERIAL COMMUNICATION	An error has occurred at the serial I/F.
Controller errors	ERROR OPTION RAM CHECK	A RAM write/read compare error occurred in the optional RAM board.
	ERROR CU RAM CHECK	A RAM write/read compare error occurred in the internal 2M byte RAM on the OLMA board.
	ERROR CU FONT ROM CHECK	There is an error in the internal font ROM on the OLMA board (checksum error).
	ERROR CU PROG. ROM CHECK	There is an error in the ROM on the OLMA board (checksum error).
	ERROR CONTROLLER nnaaaaaa nn = Vetor No. aaaaaa = Error Address	An error has occurred at the CU.
EEPROM error	ERROR EEPROM (The OPERATOR lamp is off.)	While EEPROM was being written, the power was turned off. So, EEPROM data format was destroyed.
Font card errors	ERROR CARD FORMAT CHECK	There is an error in the data on the font card (checksum error).
	ERROR CARD REMOVED ON-LINE	The font card was extracted during online operation.
	CARD NOT FOUND	The font card used by the CU was extracted.

Table 1 LCD display (3/6)

Category	LCD message display	Trouble
Cover open	COVER OPEN	The upper cover was opened.
Jam errors	PAPER FEED JAM CHECK TRAY *n*	A jam occurred in the tray section. The top edge of paper failed to reach the inlet sensor within few seconds after the activation of the hopping roller. (Retry is attempted three times.) Or the inlet sensor was on when the power was turned on.
	PAPER INPUT JAM CHECK TRAY *n*	A paper jam occurred. The top of edge paper failed to reach the outlet sensor within 9.6 seconds after it passed the inlet sensor.
	PAPER EXIT JAM REMOVE THE PAPER	The outlet sensor was on when the length of paper passage at the outlet sensor was the specified paper length ± 45 mm or when the power was turned on.
	ERROR PAPER SIZE CHECK TRAY *n*	This error occurs when the difference between the print paper length and the paper length (tray size) identified by the printer is ± 45 mm or more. It is detected by the time of paper passage at the inlet sensor.
Connec-tion error	■ or No display	Displayed over 30 seconds. Connection error or Operator panel malfunction

Table 1 LCD display (4/6)

Category	LCD message display	Trouble
Tray requests	PAPER OUT TRAY *n*	The tray has run out of paper.
	EXECUTIVE TRAY *n* CASSETTE REQUEST	An executive tray is requested.
	LETTER TRAY *n* CASSETTE REQUEST	A letter tray is requested.
	A4 TRAY *n* CASSETTE REQUEST	A4 tray is requested.
	A5 TRAY *n* CASSETTE REQUEST	A5 tray is requested.
	LEGAL TRAY *n* CASSETTE REQUEST	LEGAL tray is requested.
	B5 TRAY *n* CASSETTE REQUEST	B5 tray is requested.
	UNIV (A6) TRAY 1 CASSETTE REQUEST	UNIVERSAL tray is requested.
	COM-10 TRAY 1 ENVELOPE REQUEST	ENVELOPE tray (COM-10) is requested.
	MONARCH TRAY 1 ENVELOPE REQUEST	ENVELOPE tray (MONARCH) is requested
	DL TRAY 1 ENVELOPE REQUEST	ENVELOPE tray (DL) is requested.
	C5 TRAY 1 ENVELOPE REQUEST	ENVELOPE tray (C5) is requested.
Buffer overflow	ERROR RECEIVE BUFFER OVERFLOW	The receiving buffer overflowed (receive busy control disabled).
	ERROR PAGE BUFFER OVERFLOW	The page buffer overflowed because it received too much data to be printed in a page.
	ERROR DLL BUFFER OVERFLOW	The DLL buffer overflowed.

Table 1 LCD display (5/6)

Category	LCD message display	Trouble
Buffer overflow	ERROR MACRO BUFFER OVERFLOW	The macro buffer overflowed.
	ERROR PRINT OVERRUN	Print data is too complicated to be printed.
Requests for manual paper loading	EXECUTIVE MANUAL PAPER REQUEST	Executive-size paper is requested.
	LETTER MANUAL PAPER REQUEST	Letter-size paper is requested.
	LEGAL 14" MANUAL PAPER REQUEST	Legal-size (14-inch) paper is requested.
	LEGAL 13" MANUAL PAPER REQUEST	Legal-size (13-inch) paper is requested.
	MONARCH MANUAL ENVELOPE REQUEST	An envelope (Monarch 7 3/4) is requested.
	COM-10 MANUAL ENVELOPE REQUEST	An envelope (Commercial 10) is requested.
	DL MANUAL ENVELOPE REQUEST	An envelope (International DL) is requested.
	C5 MANUAL ENVELOPE REQUEST	An envelope (International C5) is requested.
	A4 MANUAL PAPER REQUEST	A4-size paper is requested.
	A5 MANUAL PAPER REQUEST	A5-size paper is requested.
	A6 MANUAL PAPER REQUEST	A6-size paper is requested.
	B5 MANUAL PAPER REQUEST	B5-size paper is requested.
Reset operation error	RESET TO SAVE	When unprinted data remained in the buffer, the menu setting affecting the print result was to be changed.

Table 1 LCD display (6/6)

Category	LCD message display	Trouble
Daily status	ON-LINE. *xx*	The printer is in the online mode.
	OFF-LINE. *xx*	The printer is in the offline mode.
	DATA PRESENT. *xx*	Received data is present in the page buffer.
	PRINT FONTS	This message is displayed while a font is being printed during self test.
	DEMO PAGE PRINT	During demonstration page printing.
	TONER LOW	Toner is running out.
	PRINT MENU	This message is displayed while a menu is being printed during self test.
	RESET	The internal status of the printer has been reset.
	MENU RESET	The printer defaults to factory settings.
	WARMING UP	The printer is warming up.
	CHANGE DRUM	The image drum cartridge is aging.
	FUSER LIFE	Life of thermal fuser 180,000 pages

4. Troubleshooting Table

(A) LLAT-PCB

Failure	LCD Message	Flowchart No.
• Printer does not operate at all when its power is turned on.	——	A-1
• Paper from the 1st paper supply unit is jammed.	PAPER EXIT JAM REMOVE THE PAPER	A-2
• Failure of feeding of media paper from the 1st paper supply unit. (The resist motor does not run correctly.)	PAPER INPUT JAM CHECK TRAY1 PAPER FEED JAM CHECK TRAY1	A-3
• The paper size is not correctly recognized.	ERROR PAPER SIZE CHECK TRAY1	A-4
• Message as shown in the right appears in spite of that the paper tray corresponding to "XXXXX" has been correctly installed.	XXXXXXX TRAY1 CASSETE REQUEST XXXXXXX TRAY1 ENVELOPE REQUEST	A-4
• Engine error	ERROR PU EEPROM ERROR ERROR PU ROM/RAM CHECK	A-5
• Cooling fan error	ERROR PU FAN MOTOR	A-6
• Fuser error	ERROR PU FUSER UNIT	A-7
• PU-CU communication error	ERROR CU-PU I/F TIMEOUT	A-8
• Option I/F communication error	ERROR CU-OPTION I/F TIMEOUT	A-9
• "COVER OPEN" does not disappear.	COVER OPEN	A-10
• "PAPER OUT" does not disappear	PAPER OUT TRAY1	A-11
• "TONER LOW" does not disappear.	TONER LOW	A-12
• "CHANGE DRUM" does not disappear.	CHANGE DRUM	A-13

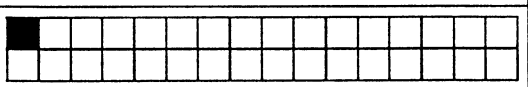
(A) LLAT-PCB (continued)

Failure	LCD Message	Flowchart No.
• "FUSER LIFE" does not disappear	FUSER LIFE	A-14
• Printing is too light. • Printing shade is white. • Printing is too dark.	——	A-15
• Nothing is displayed on the LCD display.	——	A-16

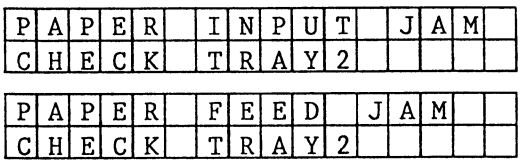
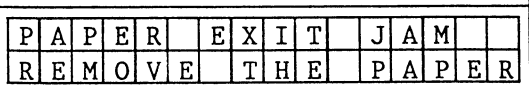
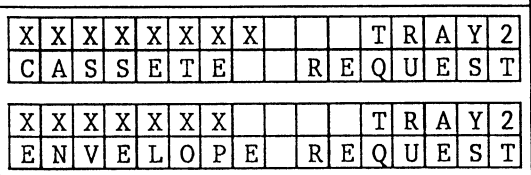
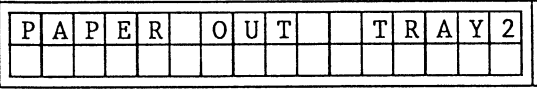
(B) LLCC-PCB

Failure	LCD Message	Flowchart No.
• Failure of feeding of media paper from the 1st paper supply unit (The resist motor does not rotate normally.)	PAPER INPUT JAM CHECK TRAY1 PAPER FEED JAM CHECK TRAY1	B-1
• Message as shown in the right appears in spite of that the paper tray corresponding to "XXXXX" has been correctly installed.	XXXXXXXX TRAY1 CASSETTE REQUEST XXXXXXX TRAY1 ENVELOPE REQUEST	B-2
• "PAPER OUT" does not disappear.	PAPER OUT TRAY1	B-3
• Nothing is displayed on the LCD display.	——	B-4

(C) LLJB-2 PCB

Failure	LCD Message	Flowchart No.
• Nothing is displayed on the LCD display.	——	C-1
• The LED does not light.	——	C-2
• The operator panel switches are ineffective.	——	C-3
• Certain dots of LCD are not displayed.	——	C-4
• Displayed dots of LCD are too light in shade.	——	C-5
• A block character "■" appears on the LCD display for more than 15 seconds.		C-6

(D) LLFC-PCB

Failure	LCD Message	Flowchart No.
• The second paper supply unit cannot be selected.	——	D-1
• Paper cannot be fed from the tray of the second paper supply unit. (The resist motor does not run correctly.)		D-2
• Paper from the second paper supply unit is jammed.		D-3
• Message as shown in the left appears in spite of that the paper tray corresponding to "XXXXX" has been correctly installed.		D-4
• "PAPER OUT" does not disappear.		D-5

(D) LLFC-PCB (continued)

Failure	LCD Message	Flowchart No.
• Engine error	ERROR PU CONTROL	D-6
	ERROR PU EEPROM ERROR	
	ERROR PU EEPROM WRITE	
	ERROR PU ROM/RAM CHECK	
• Option I/F communication error	ERROR CU-OPTION I/F TIMEOUT	D-7

(E) OLMA-PCB

Failure	LCD Message	Flowchart No.
• A block character "■" appears on the LCD display for more than 15 seconds.	■	E-1
• Resident RAM error	ERROR CU RAM CHECK	E-2
• Option RAM error	ERROR OPTION RAM CHECK	E-3
• EEPROM error (Cannot be recovered by pressing RESET switch.)	ERROR EEPROM	E-4
• Font ROM error	ERROR CU FONT ROM CHECK	E-5
• Program ROM error	ERROR CU PROG. ROM CHECK	E-5
• Command I/F communication error (between PU and CU)	ERROR CU-PU I/F TIMEOUT	E-6
• Operator panel I/F communication error	ERROR CU-PANEL I/F TIMEOUT	E-7
• Font card error	ERROR CARD FORMAT CHECK	E-8
• "COVER OPEN" does not disappear.	COVER OPEN	E-9

(E) OLMA-PCB (continued)

Failure	LCD Message	Flowchart No.
• "WARMING UP" does not disappear.	WARMING UP	E-10
• Printing start error (Data is normally received.)	DATA PRESENT	E-11
• Loop test error nnnnnn = Loop count No.	ERROR LOOP TEST nnnnnn	E-12
• PRINT OVERRUN error (The error message does not disappear even when the amount of overwriting data is reduced.)	ERROR PRINT OVERRUN	E-13
• Controller error nn = Vector No. aaaaaa = Error Address (When the controller will not reset with the power turned off and then on.)	ERROR CONTROLLER nnaaaaaa	E-14
• The printing is disturbed.	—	E-15
• The key switches on the operator panel are ineffective.	—	E-16
• No fonts print even when the font card is installed.	—	E-17
• The MENU PRINT memory capacity does not increase even when an expansion memory board is installed.	—	E-3
• Data sent through the Centronics I/F cannot be received. (ON-LINE lamp does not light.)	—	E-18
• Data sent through the RS-232C I/F cannot be received. (ON-LINE lamp does not light.)	—	E-12
• Data received through Centronics I/F is invalid.	—	E-19
• Data received through RS-232C I/F is invalid.	—	E-12

(F) OLSA-PCB

Failure	LCD Message	Flowchart No.
• Loop test error	ERROR LOOP TEST	F-1
• Receive buffer overflow	ERROR RECEVE BUFFER OVERFLOW	F-2
• Serial Communication error	ERROR SERIAL COMMUNICATION	F-1
• Data sent through the RS-232C I/F cannot be received. (ON-LINE lamp does not light)	——	F-1
• Data received through RS-232C I/F is invalid.	——	F-1

(G) OLRA or OLRA-2 PCB

Failure	LCD Message	Flowchart No.
• Option RAM error	ERROR OPTION RAM CHECK	H-1
• Discrepancy between MENU PRINT RAM memory capacity indication and actually installed memory capacity	——	H-1

5. Troubleshooting Flowchart

A-1 **LLAT-PCB**

Printer does not operate at all when its power is turned on.

- Is the + 5V supply normal?
  (Check the voltage between J7 pin 1 (+ 5 V) and J7 pin 3 (0 V) of LLAT-PCB.)
  - No — Is the + 5V line and 0V line shorted within the printed circuit board?
    - Yes — Eliminate the cause of the shorting.
  - No — Is the ALM-N signal generated? Check J6 pin 38. Turn on the printer power after the check is over (see Note below.)
    [Note] Once the printer power has been turned off due to occurrence of the ALM-N signal, allow a period of approximately 5 minutes or more before turning on the printer power again.
    - No — Replace the LLAT-PCB.
  - Yes — Is the + 38V output voltage normal?
    - No — Is the + 38V line shorted to the 0V or + 5V line within the printed circuit board?
      - Yes — Eliminate the cause of the shorting.
      - No — Failure of IC5, IC8 (M54646), or T4
    - Yes — Is the ALM-N signal generated even when the printer power is turned on with connector J5 disconnected?
      - No — Does the RM-ON-P remain high?
        - Yes — Failure of IC3 (μPD91336GD-5BB or μPD91367)
        - No — Failure of T517, T520, T502, T21, T22, T23, T24 or R87
      - Yes — Failure of IC5, IC8 (M54646), T501, T514, R4, R35, R36, R94 or R95
- Yes — Is the RST-P signal kept high? (IC1 pin 9)
  - Yes — Is the CVOPN-N signal generated? (J6 pin 39)
    - Yes — Replace J6 connector.
  - No — Replace IC7 (339).

- No — Is CPU operating normally? (Check the ALE signal of IC1 pin 30.)
  - Yes — Is the IC3 (μPD91336GD-5BB or μPD91367) output normal? Does the RM-ON-P (IC3 pin 102) change from high to low when printer power is turned on?
    - No — Failure of IC3 (μPD91336GD-5BB or μPD91367), IC4 (LS373), or Q1 (27128ROM)
    - Yes — Failure of IC3 (μPD91336GD-5BB or μPD91367) or OSC1 or L5, L6
- No — Failure of IC1 (83C154) or OSC2

A-2 LLAT-PCB

Paper jam occurs with the 1st paper supply unit.
Message "PAPER EXIT JAM REMOVE THE PAPER" appears on the LCD display of the operator panel.

- Does message "PAPER EXIT JAM REMOVE THE PAPER" appear on the LCD display of operator panel when the printer power is turned on?
  - No — Perform test printing. Does the resist roller rotate?
    - No — Is the input signal normal?
      - Yes — Check the connections (including J5) further than LLAT-PCB. Check the mechanism.
    - No — Failure of IC9, or IC3 (μPD91336GD-5BB or μPD91367)
  - Yes — Has the leading edge of paper reached the outlet sensor?
    - No — Does the main motor rotate?
      - No — Is the IC5, IC8 (M54646) input signal normal?
        - No — Failure of IC3 (μPD91336GD-5BB or μPD91367)
      - Yes — Failuer of IC5, IC8 or check the mechanism.
    - Yes — Does the motor rotate in the correct direction?
      - No — Failure of IC5 or IC8
    - Yes — Check the mechanism.
  - Yes — Move the outlet sensor up and down, check the signal of pin 37 of IC3 of LLAT-PCB. Has the signal level changed?
    - No — Replace the PS1 (outlet sensor) of LLAT-PCB.

- Yes — Is paper ejected normally?
  - No — Check the paper transport route.
  - Yes — Check the outlet sensor lever.

Yes — Is paper jammed at the inlet sensor position or at the outlet sensor position?

- No — Check the inlet sensor signal PS-IN (IC3 pin 107) of LLAT-PCB and outlet sensor signal PS-OUT (IC3 pin 37), moving the sensor lever. Are the signals normal?
  - Yes — Failure of positional relationship between the LLAT-PCB and the sensor lever. Eliminate the cause of the positional relationship failure.
- No — Replace the sensor PS1 or PS2.

Yes — Remove the jammed paper.

A-3 LLAT-PCB

Paper cannot be fed from the 1st paper supply unit.
Message "PAPER INPUT JAM CHECK TRAY1" or "PAPER FEED JAM CHECK TRAY1" appears on the LCD display of the operator panel.

Does the hopping roller normally rotate when starting the printing operation?

- No — Are the IC3 pin 102 (RM-ON-P), pin 101 (RM-PH0) and pin 100 (RM-PH1), pin 99 (RM-PH2), and pin 98 (RM-PH3) signals normal?
  - No — Replace IC3.
- Yes — Replace IC6 or IC9.

Yes — Check the operation of the inlet sensor (PS2) of LLAT-PCB. Does the inlet sensor (PS2) operate normally?

- No — Replace the inlet sensor (PS2).

Yes — Check the mechanism.

A-4 LLAT-PCB

The paper size is not correctly recognized.
Message "ERROR PAPER SIZE CHECK TRAY1" appears on the LCD display of the operator panel.
Message "XXXXXXXX TRAY1 CASSETTE REQUEST" or "XXXXXXXX TRAY1 ENVEROPE REQUEST" appears on the LCD display of the operator panel.

- Are the values of the signals of pin 96, pin 95 and pin 94 (CASSETTE- S0 to S2) of IC3 of LLAT-PCB correctly correspond to the size codes of the paper trays in the 1st paper supply unit?
  - No — Is the connection between the LLAT-PCB and the LLCC-PCB correct?
    - No — Correctly connect the LLAT-PCB and the LLCC-PCB.
    - Yes — Failure of J5 connector, IC3, or LLCC-PCB
  - Yes — Does the inlet sensor (PS2) of LLAT-PCB operate normally?
    - No — Replace the inlet sensor (PS2).
    - Yes — Replace the LLAT-PCB.

A-5 LLAT-PCB

Message "ERROR PU EEPROM ERROR" or "ERROR PU ROM/RAM CHECK" appears on the LCD display of the operator panel.

- Is IC2 (EEPROM: BR93CS46) installed on the LLAT-PCB?
  - No — Install an IC2 (EEPROM) on the LLAT-PCB.
    (Use an EEPROM which has been initialized for the LLAT-PCB.)
  - Yes — Is the level of IC3 pin 36 (OPIPT-N) signal of LLAT-PCB held at a low state?
    - No — Replace Q1 (EPROM) of LLAT-PCB.
    - Yes — If optional devices are connected, disconnect them temporarily. Turn on again the printer power. Has the printer recovered its normal operation?
      - No — Replace Q1 (EPROM) of LLAT-PCB. Has the printer recovered its normal operation?
        - Yes — End
        - No — Replace IC1 (83C154) of LLAT-PCB.
      - Yes — Failure of optional device, or J6 connector for optional device

[Note] *If you install an EEPROM which has not been initialized for the LLAT-PCB, message "ERROR ENGINE" will appear. A preprogrammed EEPROM is available from the RSPL.*

A-6 LLAT-PCB

Cooling fan error
Message "ERROR PU FAN MOTOR" appears on the LCD display of the oprator panel.

- Is the fan running?
  - No — Check that the fins of the fan are not hitting the chassis. Is the fan correctly connected to J1 connector of LLAT-PCB?
    - No — Correctly connect the fan to J1 connector.
    - Yes — Replace the fan or T4 of LLAT-PCB.
  - Yes — Replace LLAT-PCB.

A-7 LLAT-PCB

Fuser error
Message "ERROR PU FUSER UNIT" appears on the LCD display of the operator panel.

- If the top section of the fuser has become hot, turn off the printer power and wait until the printer cools off.
- Check that the electrical wiring from the power supply to the fuser heater is normal.
- Check the connection between the thermistor and the J2 connector of LLAT-PCB.
- Turn on the printer power. Does the fuser heater lump light?
  (The lamp is visible through the air ventilation opening of the side panel.)
  - No — Is the thermistor open- or short-circuited? (Check the resistance of the thermistor. The normal resistance is approximately 100kΩ at the normal room temperature.)
    - Yes — Replace the fuser assy.
  - No — Is the thermistor leadwire shorted to the fuser frame?
    - Yes — Replace the fuser assy.
  - No — Is the fuser lamp or the thermostat circuit open? (Open the stacker cover, raise the upper unit, and check the resistance between the AC contacts of the heater section. The normal resistance is approximately 2Ω. Check the electrical connection between the AC contact section of the fuser and the power supply unit.)

- No — Is the HEAT signal (pin 109 of IC3 of LLAT-PCB) turned on?
  - No — Replace the LLAT-PCB. (failure of IC3).
  - Yes — Replace the power supply unit.
- Yes — Replace the fuser unit. (when doing this, check the back up roller. Replace it if it has been damaged.)

Yes — Are pins 1 and 2 of the IC7 both at the low level?

- No — Replace IC7 and its peripheral devices.

Yes — Failure of IC3 (failure of TEMP0, TEMP1 or HEAT signal circuit)

A-8 LLAT-PCB

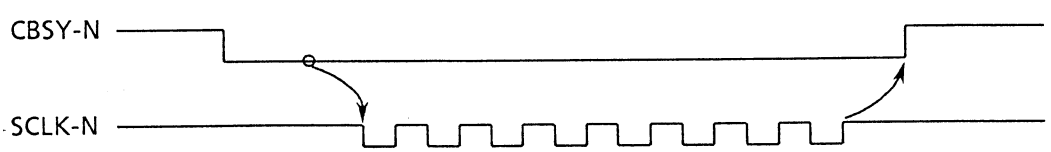
PU-CU communication error
Message "ERROR CU-PU I/F TIMEOUT" appears on the LCD display of the operator panel.

- Disconnect the optional devices, if any.
- Check that the connection between the printer section and the controller section is normal.
- Does the PPRDY signal (IC3 pin 27 of LLAT-PCB) go high when the printer power is turned on?
  - No — Failure of IC3, IC1, J6, or J7

Yes — Does the level of CBSY-N signal (IC1 pin 12 of LLAT-PCB) change when the printer power is turned on?

- No — Failure of controller section, J6, or J7

Yes — When this is done, is SCLK-N signal (IC3 pin 33 of LLAT-PCB) generated?



Period 3 μs, 8 clock pulses

- No — Replace IC3.

Yes When this is done, does the SC-N signal (IC3 pin 34) change in synchronization with the SCLK-N signal?

- No Failure of controller section. Or replace IC3.

Yes Does the level of SBSY-N signal (IC3 pin 32 of LLAT-PCB) change?

- No Replace IC3.

Yes Replace LLAT-PCB.

A-9 LLAT-PCB

Option I/F communication error
Message "ERROR CU-OPTION I/F TIMEOUT" appears on the LCD display of the operator panel.

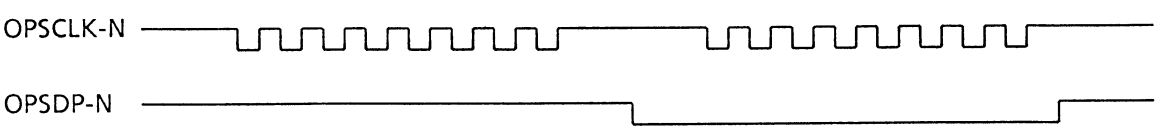
- Check the connection between the printer and the optional device.

Is the OPSCLK-N signal (IC3 pin 42 of LLAT-PCB) generated when the printer power is turned on again?

Period 3 μs, 8 clock pulses

- No Replace IC3.

Yes When this is done, is the OPSDP-N signal (IC1 pin 13 of LLAT-PCB) generated?



- No Failure of optional device

Yes Is the OPSCLK-N signal (IC3 pin 42) generated after the falling edge of OPSDP-N (IC1 pin 13 of LLAT-PCB)?

- No Replace IC1.

Yes Replace the LLAT-PCB. (Failure of IC1, IC3, IC4, Q1, J5, or J6)

A-10 LLAT-PCB

Message "COVER OPEN" remains displayed on the LCD display of the operator panel and does not disappear. (Assumes cover open switch is OK.)

- Close the COVER OPEN switch (microswitch) in the power supply unit. Is the level of the CVOPN-N signal (J6 pin 39 of LLAT-PCB) approximately + 5 V?
  - No — Replace the power supply unit.
- Yes — Is the level of the RST-P signal (IC1 pin 9 of LLAT-PCB) low?
  - No — Replace IC7 of LLAT-PCB.
- Yes — Is the level of the RST-N signal (IC3 pin 57 of LLAT-PCB) high?
  - No — Replace T108 of LLAB-2 PCB.
- Yes — Is the level of the PPRDY signal (IC3 pin 27 of LLAT-PCB) high?
  - No — Replace IC3.
- Yes — Is the warming up operation of the engine side normal?
  - Yes — Failure of connection of the engine side to the controller side (failure of J6 or J7)
- No — Failure of IC3, Q1 or IC4 of LLAT-PCB

A-11 LLAT-PCB

Message "PAPER OUT TRAY1" remains displayed on the LCD display of the oprator panel and does not disappear.

- Is the connection between LLAT-PCB and LLCC-PCB incorrect? (Check connector J5.)
  - No — Check the levels of the CASSETTE-S2 to S0 signals (IC3 pin 96, pin 95 and pin 94 of LLAT-PCB). Does the signal levels conform with the paper tray size codes?
    - No — Failure of IC3, or short-circuiting of signal wires in the printed circuit board
  - Yes — Does the level of the CASSETTE-PS signal (IC3 pin 93 of LLAT-PCB) changed to high or low in conformity with presence/absence of paper?
    - No — Failure of connection with the LLCC-PCB (failure of connector J5), or short-circuiting of the CASSETTE-PS signal wire in the printed circuit board.
  - Yes — Failure of IC3
- Yes — Correctly connect the printed circuit boards.

A-12 LLAT-PCB

Message "TONER LOW" remains displayed on the LCD display of the operator panel and does not disappear.

- Is the toner cartridge replaced with a new one?
  - No — Replace the toner cartridge with a new one.
  - Yes — Turn on the printer power again. Has the printer recovered its normal operation?
    - No — Move up and down the toner end sensor lever. Does the TONER-SNS-P signal (IC3 pin 108 of LLAT-PCB) change to high or low in correct response to the movement of the lever?
      - No — Replace PT1 of LLAT-PCB.
      - Yes — Replace the toner end sensor lever. Has the printer restored its normal operation?
        - No — Is the drum counter cleared when replacing the cartridge with a new one?
          - No — Clear the drum counter.
          - Yes — Replace IC3.
        - Yes — End
    - Yes — End

A-13 LLAT-PCB

Message "CHANGE DRUM" remains displayed on the LCD display of the operator panel and does not disappear.

- Set the printer to the maintenance mode and check the page counter value and the drum counter value.
- Is the drum counter value 15000 or greater? Is the page counter value normal?
  - No — Replace IC2 (EEPROM). Does the printer recovered its normal operation?
    [Note] when replacing the EEPROM, all parameters are reset to default. Service adjustments should be made to restore the previous settings. (Page count is set to zero and can not be restored)
    - No — IC1 has failed. Replace IC1.
    - Yes — End

- Yes — Keeping the RESET switch of the operator panel in the pressed state, turn on the printer power. Keep on pressing the RESET switch.
  Has the printer recovered its normal operation?
  - No — Replace IC2 (EEPROM) of LLAT-PCB.
- Yes — End

A-14 LLAT-PCB

Message "FUSER LIFE" remains displayed on the LCD display of the operator panel and does not disappear.

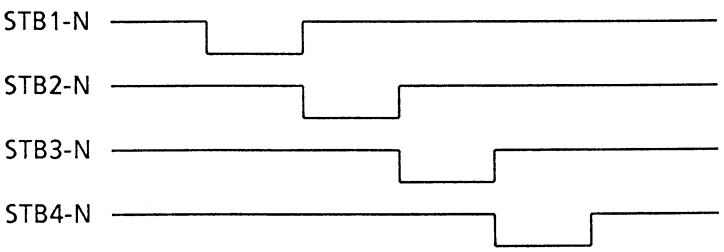
- Set the printer to the maintenance mode and check the page counter value and the fuser counter value.
- Is the fuser counter value 180000 or greater?
  Is the page counter value normal?
  - No — Replace IC2 (EEPROM) with a new one (one that has been initialized for the LLAT-PCB). Has the printer restored its normal operation?
    - No — Replace IC1.
  - Yes — End
- Yes — Replace the fuser unit with a new one.
- Clear the fuser counter as instructed in the maintenance manual.
- Turn on the printer power again.
- Has the printer restored its normal operation?
  - No — Set the printer to the maintenance mode and check the page counter value and the fuser counter value. Are they normal?
    - No — Clear the fuser counter again. Has the printer restored its normal operation?
      - No — Replace IC1.
    - Yes — End
  - Yes — Failure of IC1 or IC2. Replace the failed IC.
- Yes — End

[Note] *For the EEPROM to be installed on the LLAT-PCB, use an EEPROM which has been initialized for the LLAT-PCB.*

A-15 LLAT-PCB

Printing is too light.
Printing is too dark.
Printing shade is white.

Perform test printing and check the STB1-N to STB4-N signals (IC3 pin 11, pin 12, pin 13 and pin 14 of LLAT-PCB). Are the strobe signals for the LED head normally generated?



- No — Replace IC3 of LLAT-PCB.

Yes — Are the time intervals of the strobe signals correct?

- No — Set the LED head drive time as instructed in the maintenance manual.

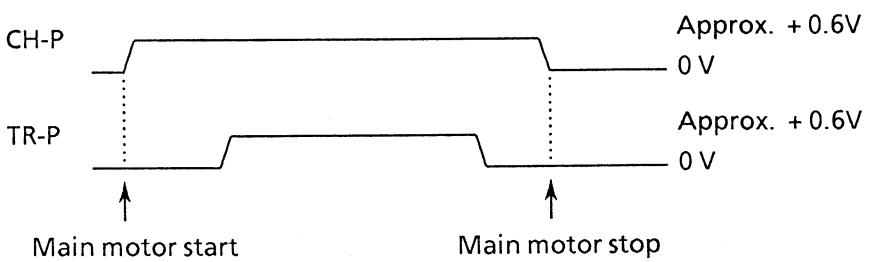
Yes — Are the HD-DATA, HD-CLK and HD-LD signals (J3 pin 10, pin 9 and pin 8 of LLAT-PCB) normally generated when printing?

- No — Replace IC3 of LLAT-PCB.

Yes — Replace the LED head.

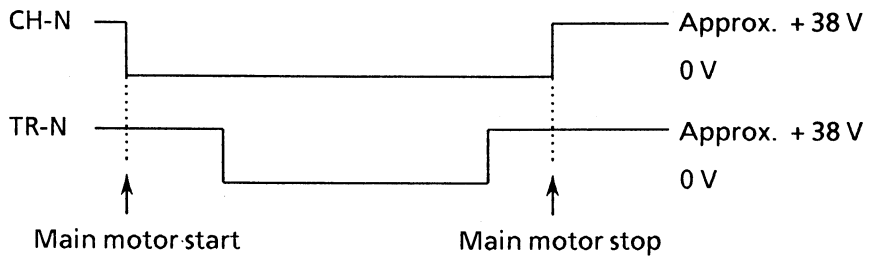
Has the printer restored its normal operation?

- No — Is the high supply voltage generated when printing?
  - No — Do the levels of the CH-P and TR-P signals (IC3 pin 110 and pin 111 of LLAT-PCB) change when in operation?



  - No — Replace IC3.

- Yes — Do the levels of the CH-N and TR-N signals (J6 pin 35 and pin 36 of LLAT-PCB) change when in operation?



  - No — Replace transistor T511, T513.
- Yes — Failure of J6 connection or high voltage supply.

- Yes — Check the connection and mechanism related to the image cartridge.

- Yes — End

A-16 LLAT-PCB

Nothing is displayed on the LCD display of the operator panel.

- Disconnect the main control PCB (OLMA-) from the LLAT-PCB and turn on the printer power again (or, temporarily connect the pin 24 (VIDEO-EN-N) of LLAT-PCB to pin 3 (0 V) and turn on the printer power again.)
- Wait for about 16 seconds.
- Has a block character "■" appeared at the left hand end of the LCD display of the operator panel?
  - No — Is the + 5 V voltage generated on the LLJB-2 PCB? (Check between IC1 pin 2 (+ 5 V) and IC1 pin 18 (0 V).)
    - No — Check the connection of J5 of LLAT-PCB, connection of LLCC-PCB, and connection of LLJB-2 PCB.
  - Yes — Replace LLJB-2 PCB.
- Yes — Check the connections of P-IPT-N, P-SDP-N, P-SCLK-N and P-SD-N signals (connectors of J6 and J7 with J5 of LLAT-PCB).

B-1 LLCC-PCB

Paper cannot be fed from the paper tray of 1st paper supply unit.
Message "PAPER INPUT JAM CHECK TRAY1" or "PAPER FEED JAM CHECK TRAY1" appears on the LCD display of the operator panel.

- Does the hopping roller correctly rotate when printing starts?
  - No — Check that the wiring from the LLAT-PCB to the resist motor is normal. Are the RM-ON-P, RM-PH0, RM-PH1 RM-PH2 and RM-PH3 signals (IC3 pin 102, pin 101, pin 100, pin 99, and pin 98 of LLAT-PCB) normal?
    - No — Replace IC3.
  - Yes — Failure of IC6, IC9, T102 or D3
- Yes — By moving the lever, check the operation of the inlet sensor (PS2) of LLAT-PCB. Is the inlet sensor operation normal?
  - No — Replace the inlet sensor (PS2).
- Yes — Correctly set the paper tray. Repeat the printing test. Does message "PAPER FEED JAM1" appear again on the LCD display of the operator panel?
  - No — Normal
- Yes — Replace the paper supply unit or LLAT-PCB.
  (Check the resist motor. Check the connection between the LLCC-PCB and the resist motor.)

B-2 LLCC-PCB

Message "XXXXXXXX TRAY1 CASSETTE REQUEST" or "XXXXXXX TRAY1 ENVELOPE REQUEST" appears on the LCD display of the operator panel.

- Is the paper tray correctly set?
  - No — Correctly set the paper tray.
- Yes — Is the connection between the LLAT-PCB and LLCC-PCB normal?
  - No — Correctly connect the printed circuit boards.
- Yes — Check the levels of the CASSETTE-S0 to S2 signals (IC3 pin 96, pin 95 and pin 94 of LLAT-PCB). Does the signal levels conform with the paper tray size codes?
  - No — Replace the LLCC-PCB. (Replace switch SW1, SW2 or SW3 of LLCC-PCB, which is corresponding to the failed signal.)
- Yes — Failure of LLAT-PCB or Main control PCB (OLMA-)

B-3 LLCC-PCB

Message "PAPER OUT TRAY1" appears on the LCD display of the operator panel.

- Is paper correctly set in a paper tray?
  - No — Correctly set paper in the paper tray.
- Yes — Is the paper tray correctly set in the printer?
  - No — Correctly set the paper tray in the printer.
- Yes — Are the LLAT-PCB and LLCC-PCB correctly connected?
  - Yes — Check the levels of the CASSETTE-S0 to S2 signals (IC3 pin 96, pin 95 and pin 94 of LLAT-PCB). Does the signal levels conform with the paper tray size codes?
    - No — Replace switch SW1, SW2 or SW3 of LLCC-PCB, which is corresponding to the failed signal.
  - Yes — Is the level of the CASSETTE-PS signal (IC3 pin 93 of LLAT-PCB) high?
    - No — Replace the sensor (SEN1) of LLCC-PCB.
  - Yes — Failure of LLAT-PCB
- No — Correctly connect the printed circuit boards.

B-4 LLCC-PCB

Nothing is displayed on the LCD display of the operator panel.

- Disconnect the main control PCB (OLMA-) from the LLAT-PCB and turn on the printer power.
- Wait for approximately 16 seconds.
- Does a block character "■" appear at the left hand end on the LCD display of the operator panel?
  - No — Is the + 5V voltage generated on the LLCC-PCB? (Check between CN1 pin 1 (+ 5V) and CN1 pin 6 (0V).)
    - No — Failure of CN1 or CN2 flexible cable of LLCC-PCB or failure of LLAT-PCB
  - Yes — Are the P-IPT-N, P-SDP-N, P-SCLK-N and P-SD-N signals correctly connected from CN1 flexible cable to CN2 flexible cable?
    - No — Replace the failed parts.
  - Yes — Failure of LLJB-2 PCB.
- Yes — Failure of the controller section

C-1 LLJB-2 PCB

Nothing is displayed on the LCD display of the oprator panel.

- Disconnect the main control PCB (OLMA-) from the LLAT-PCB and then turn on the printer power.
- Wait for approximately 16 seconds.
- Does a block character "■" appear at the left hand end on the LCD display of the operator panel?
  - No — Is the + 5V supply voltage fed to the LLJB-2 PCB? (Check between IC1 pin 2 (+ 5V) and IC1 pin 18 (0V).)
    - No — Failure of LLCC-PCB or J1 connector
    - Yes — Check the level of the RESET signal (IC 1 pin 19 of LLJB-2 PCB). Is the signal level high?
      - No — Replace T1, D6 or D5 of LLJB-2 PCB.
      - Yes — Replace IC1 or IC2 of LLJB-2 PCB.
  - Yes — Check that no foreign matter is entrapped in the connecting section (electrically conductive rubber section) of the LCD display, clean the press-connected pattern section of the LLJB-2 PCB display, and then assemble it. Has the printer restored its normal operation?
    - No — Failure of LCD driver or controller section
  - Yes — End

C-2 LLJB-2 PCB

The LED of the operator panel does not light.

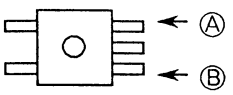
- Does the signal levels of IC1 pin 7, pin 8, pin 9 and pin 10 of LLJB-2 PCB become low in conformity with lighting conditions of respective LED's?
  - No — Replace IC1.
  - Yes — Replace the LED (D1 to D4) which does not light.

C-3 LLJB-2 PCB

No actions take place in response to pressing of the key switch of the operator panel.

- Press the key switch of LLJB-2 PCB. Does the level on the P-IPT-N signal (IC1 pin 1 of LLJB-2 PCB) change from high to low?
  - No — Replace IC1.
- Yes — Failure of the controller section

- Press the key switch (SW1 to SW8) of the LLJB-2 PCB. Is the circuit between Ⓐ and Ⓑ made?



  - No — Replace the switch.
- Yes — Press the key switch (SW1 to SW8) of LLJB-2 PCB. Does the level of the P-IPT-N signal (IC1 pin 1 of LLJB-2 PCB) change from high to low?
  - No — Replace IC1.
- Yes — Failure of J1 connector or controller section

C-4 LLJB-2 PCB

Certain dots of the LCD display of the operator panel are undisplayed.

- Check that no foreign matter is entrapped in the connecting section (electrically conductive rubber section) of the LCD display, clean the press-connected pattern section of the LLJB-2 PCB, and then assemble it. Has the printer restored its normal operation?
  - No — Do the undisplayed dots belong to the left hand region of the LCD display?
    - No — Replace IC3 (M5259) of LLJB-2 PCB. Has the printer restored its normal operation?
      - No — Replace the LCD display panel.
    - Yes — End
  - Yes — Replace IC2 (HD44780 or M6222B) of LLJB-2 PCB. Has the printer restored its normal operation?
    - No — Replace the LCD display panel.
  - Yes — End
- Yes — End

C-5 LLJB-2 PCB

The dot color shade of the LCD display of the operator panel is too light.

- Check that the + 5V supply of LLJB-2 PCB is not low.
- Are R8, R9, R10, R11, R12 and R13 of LLJB-2 PCB correctly connected?
  - No Correctly connect the resistors.
- Yes Replace IC2 of LLJB-2 PCB.

C-6 LLJB-2 PCB

A block character "■" appears on the LCD display of the operator panel for more than 15 seconds.

- Check the P-SCLK-N and P-SD-N signals (IC1 pin 5 and pin 3 of LLJB-2 PCB).
- Are the signals generated as the printer power is turned on again?
  - No Failure of the controller section
- Yes Failure of IC1 or connector J1

D-1 LLFC-PCB

The second paper supply unit cannot be selected.

- Is the + 5V supply voltage for the LLFC-PCB present?
  - No — Check the power connector for good contact.
- Yes — Is the level of the RESET signal (IC1 pin 19 of LLFC-PCB) high?
  - No — Replace TR2, D2 or D1 of LLFC-PCB.
- Yes — Are the OP-SD-N and OP-SCLK-N signals (IC1 pin 3 and pin 5 of LLFC-PCB) correctly input?
  - No — Failure of LLAT-PCB (IC3) or LLFC-PCB (IC1)
- Yes — Replace IC1 of LLFC-PCB.

D-2 LLFC-PCB

Paper cannot be fed from the second paper supply unit.
Message "PAPER INPUT JAM CHECK TRAY2" or "PAPER FEED JAM CHECK TRAY2" appears on the LCD display of the operator panel.

- Can paper be normally fed from the 1st paper supply unit?
  - No — Failure of LLAT-PCB (Replace IC3.)
- Yes — Does the hopping roller of the second paper supply unit normally rotate when printing starts?
  - No — Check that the second paper supply unit motor is correctly connected to the LLFC-PCB. Are the signals of pin 20 and pin 21 of IC1 of LLFC-PCB normally output?
    - No — Replace IC1.
  - Yes — Has fuse F1 on the LLFC (resistor type) opened?
    - Yes — Replace the fuse (F1).
  - No — Replace IC2.
- Yes — Check that paper dust or other foreign matter is not collected on the hopping roller of the second paper supply unit. If any, clean the hopping roller. Has the printer restored its normal operation?
  - No — Is the shorting plug J1 of the LLFC-PCB correctly set?
    (Pins 1 and 2 shorted for 8 ppm, 2 and 3 shorted for 4 ppm)
    - No — Correctly set the shorting plug.
  - Yes — Failure of the mechanism
- Yes — End

D-3 LLFC-PCB

Paper jam occurs when paper is fed from the second paper supply unit.
Message "PAPER EXIT JAM REMOVE THE PAPER" appears on the LCD display of the operator panel.

- Is paper feeding and printing normal when paper is fed from the 1st paper supply unit?
  - No — Replace the LLAT-PCB (Replace IC3).
- Yes — Check the paper transport route of the printer.
- Is the hopping roller of the second paper supply unit locked after hopping paper?
  - Yes — Failure of TR1 or IC2 OF LLFC-PCB
- No — Failure of mechanism

D-4 LLFC-PCB

Message "XXXXXXXX TRAY2 CASSETTE REQUEST" or "XXXXXXX TRAY2 ENVELOPE REQUEST" appears on the LCD display of the operator panel in spite of that a correct paper tray is installed.

- Is the paper tray correctly installed?
  - No — Correctly install the paper tray.
- Yes — Does the signal level of the IC1 pin 11, pin 12 or pin 13 of LLFC-PCB conform with the paper tray size?
  - No — Failure of switch (SW1 - SW3) or IC1
- Yes — Failure of LLAT-PCB (IC3)

D-5 LLFC-PCB

Message "PAPER OUT TRAY2" appears on the LCD display of the operator panel.

- Is the paper tray in the second paper supply unit correctly loaded with paper?
  - No — Correctly load the paper tray with paper.
- Yes — Is the level of the signal of pin 14 of IC1 of LLFC-PCB high?
  - No — Replace SEN1 of LLFC-PCB.
- Yes — Replace IC1 of LLFC-PCB.

D-6 LLFC-PCB

Message "ERROR PU CONTROL" "ERROR PU EEPROM ERROR" "ERROR PU EEPROM WRITE" "ERROR PU ROM/RAM CHECK" appears on the LCD display of the operator panel.

- Is the level of the OP-IPT-P signal (IC1 pin 8 of LLFC-PCB) fixed at high?
  - No Failure of LLAT-PCB (IC3)
- Yes Is the level of the RESET signal (IC1 pin 19 of LLFC-PCB) high?
  - No Replace TR2, D2 or D1 of LLFC-PCB.
- Yes Replace IC1.

D-7 LLFC-PCB

A communication error of option I/F occurs.
Message "ERROR CU-OPTION I/F TIMEOUT" appears on the LCD display of the operator panel.

- Is the level of the RESET signal (IC1 pin 19 of LLFC-PCB) high?
  - No Replace TR2, D2 or D1 of LLFC-PCB.
- Yes Does the OP-SDP-N signal (IC1 pin 9 of LLFC-PCB) change when the printer power is turned on?
  - No Replace IC1.
- Yes Failure of LLAT-PCB (IC3)

E-1 OLMA-PCB

A block character "■ " appeares on the LCD display for more than 15 seconds

- Replace IC04A, IC05A (4M-bit EPROM)
- OK?
- No — Is the clock signal of pin 15 of IC10B (MC68000) 12.5 MHz?
  - Yes — Replace IC10B (MC68000).
  - No — Is the clock signal of 160 pin of IC08D (HG62F101R11FN) 25 MHz?
    - Yes — Replace IC08D (HG62F101R11FN).
    - No — Replace OSC 1 (X'tal oscillator).
- Yes — Are the signals of pins 19, 20 of IC10B (MC68000) and pin 50 of IC08D (HG62F101R11FN) high level?
  - No — Replace IC10D (7705).
- OK?
- No — Does the signal of pin 22 of IC08D (HG62F101R11FN) change by 8 clocks within 20 seconds as the printer power is turned on again?
  - No — Replace IC08D (HG62F101R11FN).
  - Yes — Does the signal of pin 23 of IC08D (HG62F101R11FN) change? (100 to 200 μs negative pulse)
    - No — Does the signal of pin 20 of IC08D (HG62F101R11FN) change when the PSCLK-N signal generates 8 clock pulses?
      - No — Replace IC08D (HG62F101R11FN)
    - Yes — Check the connection of connector CN7.
  - Yes — Replace IC08D (HG62F101R11FN)
- Yes — Check the connection of connector CN7.

E-2 **OLMA-PCB**

Resident RAM error

- Is a negative pulse output from pin 98 of IC08D?
  - No Replace IC08D (HG62F101R11FN)
- Yes Do the signals of pins 2, 3, 4, 5, 24, 25, 26, and 27 of IC08B and IC09B change?
  - No Replace IC06A, IC07A (74LS245)
- Yes Replace IC08B, IC09B (DRAM)

E-3 **OLMA-PCB**

Option RAM error

- Are negative pulses output from pins 109, 118, 123 and 126 of IC08D?
  - No Replace IC08D (HG62F101R11FN)
- Yes The OLRA-PCB is defective. Go to flowchart H-1.

E-4 **OLMA-PCB**

EEPROM error

- Replace IC10E (16811)
- OK?
- No Replace IC08D (HG62F101R11FN)

E-5 **OLMA-PCB**

Program ROM error

- Replace IC04A, IC05A (4M-bit EPROM)

Font ROM error

- Replace IC02A, IC03A (8M-bit EPROM)

E-6 OLMA-PCB

Command I/F communication error

- Check the connection of connector CN7.
- OK?
- No Replace IC08D (HG62F101R11FN).

E-7 OLMA-PCB

Operator panel I/F communication error

- Check the connection of connector CN7.
- OK?
- No Replace IC08D (HG62F101R11FN).

E-8

1. OLMA-PCB (OL810 only)

Font card error

- Does the error disappear after the card is pulled out from the upper slot?
  - Yes — Are the OLCA-PCB and the CN3 connector connected securely?
    - No — Connect them securely.
  - Yes — Is the signal of pin 16 of IC08D (HG62F101R11FN) high level?
    - Yes — Replace IC08D (HG62F101R11FN).
  - No — Check the connection of resister R566.
- No — Does an error occur even after the both font cards are pulled out?
  - Yes — Is the signal of pin 15 of IC08D (HG62F101R11FN) high level?
    - Yes — Replace IC08D (HG62F101R11FN).
  - No — Check the connection of resister R565.
- Yes — Does the signal of pin 17 of IC08D (HG62F101R11FN) change before error display?
  - No — Replace IC08D (HG62F101R11FN).
- Yes — Replace IC13C, IC14C (74LS244).
- OK?
- No — The font card is defective.

2. OLMA-2 board (OL410 only)

Font card error

- Does an error occur even after the font cards are pulled out?
  - Yes — Is the signal of pin 15 of IC08D (HG62F101R11FN) high level?
    - Yes — Replace IC08D (HG62F101R11FN).
  - No — Check the connection of resister R565.
- Yes — Does the signal of pin 17 IC08D (HG62F101R11FN) change before error display?
  - No — Replace IC08D (HG62F101R11FN).
- Yes — Replace IC13C, IC14C (74LS244).
- OK?
- No — The font card is defective.

E-9 **OLMA-PCB**

"COVER OPEN" does not disappear.

- Check the connection of connector CN7.
- OK?
- No Replace IC08D (HG62F101R11FN).

E-10 **OLMA-PCB**

"WARMING UP" does not disappear.

- Check the connection of connector CN7.
- OK?
- No Replace IC08D (HG62F101R11FN).

E-11 **OLMA-PCB**

Printing action does not start.

- Check the connection of connector CN7.
- OK?
- No Replace IC08D (HG62F101R11FN).

E-12 **OLMA-PCB**

Loop test error

- Are the OLSA-PCB and the CN6 connector connected securely?
  - No Connect the OLSA-PCB and the CN6 connector securely.
- Yes Does the signal of pin 83 of IC08D (HG62F101R11FN) get to low level when receiving data?
  - No Go to the OLSA-PCB check of flowchart F-1
- Yes Replace IC08D (HG62F101R11FN).

E-13 **OLMA-PCB**

Print overrun error.

- Replace IC08D (HG62F101R11FN).

E-14 OLMA-PCB

Controller error

- Replace IC13C, IC14C (74LS244).
- OK?
- No — Replace IC06A, IC07A (74LS245).
- OK?
- No — Replace IC08D (HG62F101R11FN).
- OK?
- No — Replace IC10B (MC68000).
- OK?
- No — The wiring of the board is defective. Replace the board.

E-15 OLMA-PCB

The printing is disturbed.

- Check the connection of connector CN7.
- OK?
- No — Replace IC08D (HG62F101R11FN).

E-16 OLMA-PCB

The key switches on the operator panel are ineffective.

- Does the signal of pin 21 of IC08D (HG62F101R11FN) change by pressing and releasing the key switch?
  - Yes — Replace IC08D (HG62F101R11FN).
- No — Does the signal of pin 21 of IC08D (HG62F101R11FN) remain low level?
  - Yes — Replace IC08D (HG62F101R11FN).
- No — Check the connection of connector CN7.

E-17 **1. OLMA-PCB (OL810 only)**

No fonts print even when font cards are installed.

- Are the OLCA-PCB and the CN3 connector securely connected?
  - No — Connect the OLCA-PCB board and the CN3 connector securely.
  - OK?
    - No
- Yes — Does the signal of pin 15 (CD1-N) or pin 16 (CD2-N) of IC08D (HG62F101R11FN) get to low level?
  - No — Failure of connection from connecotr CN2 or CN3 to IC08D (HG62F101R11FN) pin 15 or pin 16.
- Yes — Replace IC08D (HG62F101R11FN).

2. OLMA-2 PCB (OL410 only)

No fonts print even when font cards are installed.

- Does the signal of pin 15 (CD1-N) of IC08D (HG62F101R11FN) get to low level?
  - No — Failure of connection from connector CN2 to IC08D (HG62F101R11FN) pin 15.
- Yes — Replcae IC08D (HG62F101R11FN).

E-18 **OLMA-PCB**

The printer cannot receive the data from centronics I/F.

- Does the signal of pin 4 of IC01D (74LS19) change when receiving data?
  - No — Replace IC01D (74LS19).
- Yes — During on-line waiting time is the each signal level of IC08D (HG62F101R11FN) high for pin 40, pin 45 and low for pin 44?
  - No — Does any half level above signal exist?
    - Yes — Replace IC08D (HG62F101R11FN).
    - No — Replace IC01C (74LS06).
- No — Is a negative pulse input to pin 1 of IC01B (74LS374) when receiving data?
  - No — Replace IC08D (HG62F101R11FN).
- Yes — Replace IC01B (74LS374).

E-19 OLMA-PCB

Data received through centronics I/F is invalid.

- Does the signal level of pin 11 of connector CENT alternately change from low to high by the reception of 1 byte?
  - Yes — Replace IC01B (74LS374).
  - OK?
  - No — Replace IC08D (HG62F101R11FN).
- No — Does the signal level of pin 40 of IC08D (HG62F101R11FN) alternately change from low to high by the reception of 1 byte?
  - Yes — Replace IC01C (7407).
- No — Is the signal level of pin 2 of IC01D (74LS19) normal?
  - No — Replace IC01B (74LS374) and IC08D (HG62F101R11FN).
- Yes — Does the signal level of pin 3 of IC01D (74LS19) alternately change from low to high by the reception of 1 byte?
  - Yes — Replace IC01D (74LS19).
- No — Does the signal level of pin 1 of connector CN1 alternately change from high to low by the reception of 1 byte?
  - Yes — Replace resistor 501 and 544, capacitor C514.
- No — Replace I/F cable.

F-1 **OLSA-PCB**

Loop test error

- Does the signal of pin 16 of ICQ6 (Z8530) change?
  - No — Is a clock signal of 36,846MHz input to pin 23 of ICQ6 (Z8530)?
    - No — Replace OSC1 (X'tall oscillator).
    - Yes — Replace ICQ6 (Z8530).
  - Yes — Is the level of the signals of pins 3, 6, 8 and 11 of ICQ3 (75188) normal? (+ 5V or – 5V)
    - No — Replace ICQ3 (75188).
    - Yes — Do the signals of pins 1, 4, 10 and 13 of ICQ4 (75189) change?
      - No — Check the connection of the loop test connector or I/F cable.
      - Yes — Do the signals of pins 3, 6, 8 and 11 of ICQ4 (75189) change?
        - No — Replace ICQ4 (75189).
        - Yes — Check the connection of connector CN3.

F-2 **OLSA-PCB**

Receive buffer overflow

- Replace ICQ3 (75188).
- OK?
- No — Replace ICQ6 (Z8530).
- OK?
- No — Check the host computer, the protocol and the flow control of the OL810 again.

H-1 **OLRA or OLRA-2**

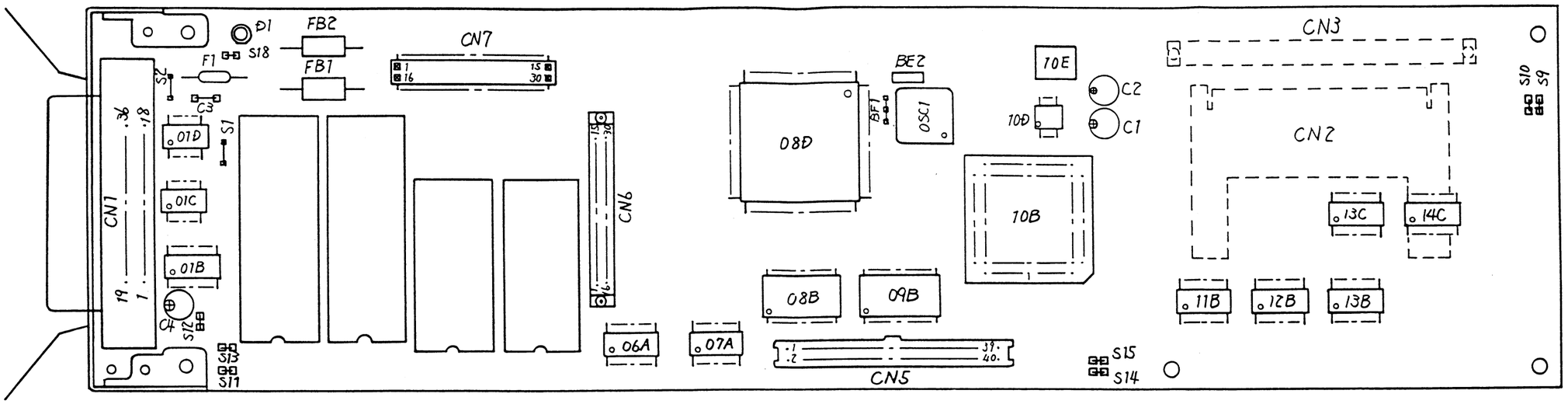
Option RAM error

- Replace IC1 to IC4 (514800JP)

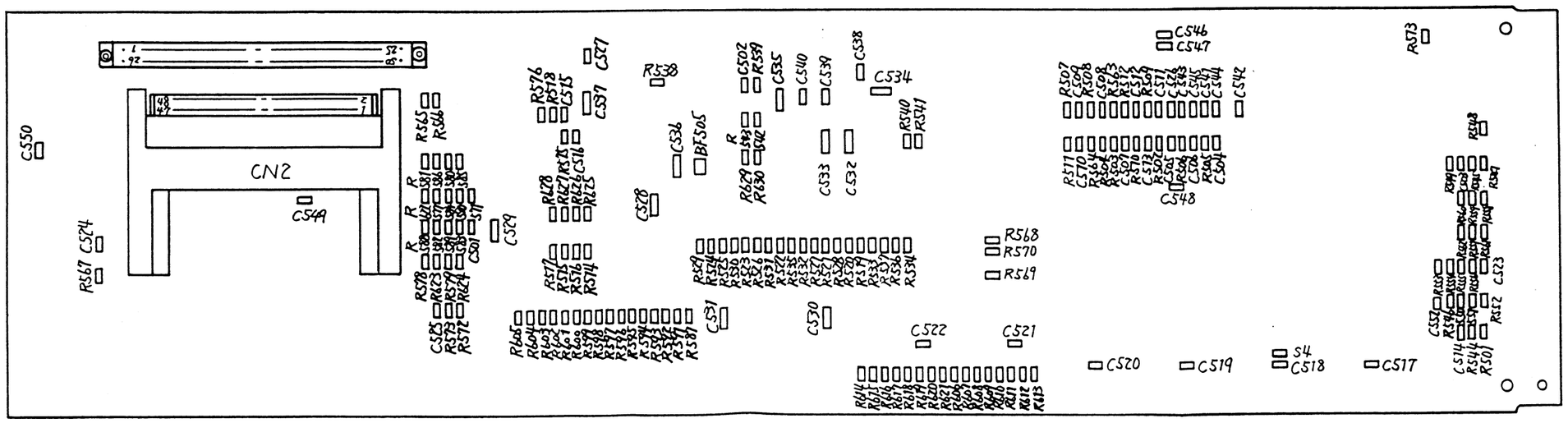
COMPONENT PARTS LIST

Drawing List

Components side



Solder side



OLMA-PCB (Main Controller) REV. 4
4YA4046-1516G1-1/2

OLMA-Printed Circuit Board (Main Controller) REV. 4
(4YA4046-1516G1-2/2-1/4)

No.	Symbol	Type/Name	Part No.	Q'ty	Remarks
1	DI	SEL4114R LED or Not Installed	650A0129M0009	1	
2	S4	2125JPW Chip jumper (CP)	323A5003P0001	1	
3	R515,R516	RM73B2A101J RN resistor (CP)	323A5003J0101	2	
4	R501, R629-R630	RM73B2A102J RN resistor (CP)	323A5003J0102	3	
5	R502-R512	RM73B2A103J RN resistor (CP)	323A5003J0103	11	
6	R513	RM73B2A201J RN resistor (CP) or Not Installed	323A5003J0201	1	
7	R518	RM73B2A220J RN resistor (CP)	323A5003J0220	1	
8	R538,R539, R544-R545	RM73B2A330J RN resistor (CP)	323A5003J0330	4	
9	R546-R562	RM73B2A332J RN resistor (CP)	323A5003J0332	17	
10	R563,R564	RM73B2A392J RN resistor (CP)	323A5003J0392	2	
11	R565-R573, R575	RM73B2A472J RN resistor (CP)	323A5003J0472	10	
12	R576	RM73B2A511J RN resistor (CP)	323A5003J0511	1	
13	R577-R628	RM73B2A512J RN resistor (CP)	323A5003J0512	52	
14	R514,R517, R519-R528, R540,R541	RM73B2A560J RN resistor (CP)	323A5003J0560	14	
15	R534-R537	RM73B2A680J RN resistor (CP)	323A5003J0680	4	
16	R529-R533, R542-R543	RM73B2A750J RN resistor (CP)	323A5003J0750	7	
17	C504, C507-C513, C538-C548	CC2012CH1H101J 50V CC capacitor (CP)	303A3007C0101	19	

OLMA-Printed Circuit Board (Main Controller) REV. 4
(4YA4046-1516G1-2/2-2/4)

No.	Symbol	Type/Name	Part No.	Q'ty	Remarks
18	C505-C506	CC2012SL1H471J 50V CC capacitor (CP)	303A3007K0471	2	
19	C514	CC2012SL1H561J 50V CC capacitor (CP)	303A3007K0561	1	
20	C501-C503	CC2012SL1H102J 50V CC capacitor (CP)	303A3007K0102	3	
21	C515-C527, C549,C550, C552	CK2012F1E104Z 25V CK capacitor (CP)	303A6008Z2104	16	
22	C528-C536	CK3216F1C105Z 16V CK capacitor (CP) 1μF	303A6009Z1105	9	
23	C537	CK3216F1C155Z 16V CK capacitor (CP)	303A6009Z1155	1	
24	C2,C4	10MS5-68M 10V CE capacitor 68μF	304A1046A1680	2	
25	C1	10MS5-47M 10V CE capacitor 47μF	304A1046A1470	1	
26	10E	MSM16811RS-NW MOS-EEPROM	816A0322F0000	1	
27	02A	MB838200AP-G-616 MOS-MROM	817A3622M0616	1	
28	03A	MB838200AP-G-617 MOS-MROM	817A3622M0617	1	
29	08B,09B	HM514800JP-8 MOS-D-RAM (SO)	802A0021N2605	2	
30	10B	MC68000FN12 MOS-CPU (CC)	851A2356N0011	1	
31	08D	HG62F101R11FN MOS digital IC (FP)	702A4921N0080	1	
32	01C	74LS06FP BIP digital IC (SO)	700A0503N0006	1	
33	01D	SN74LS19ANS BIP digital IC (SO)	700A0550N0019	1	
34	11B,12B,13B, 13C,14C	74LS244FP BIP digital IC (SO)	700A0503N0244	5	

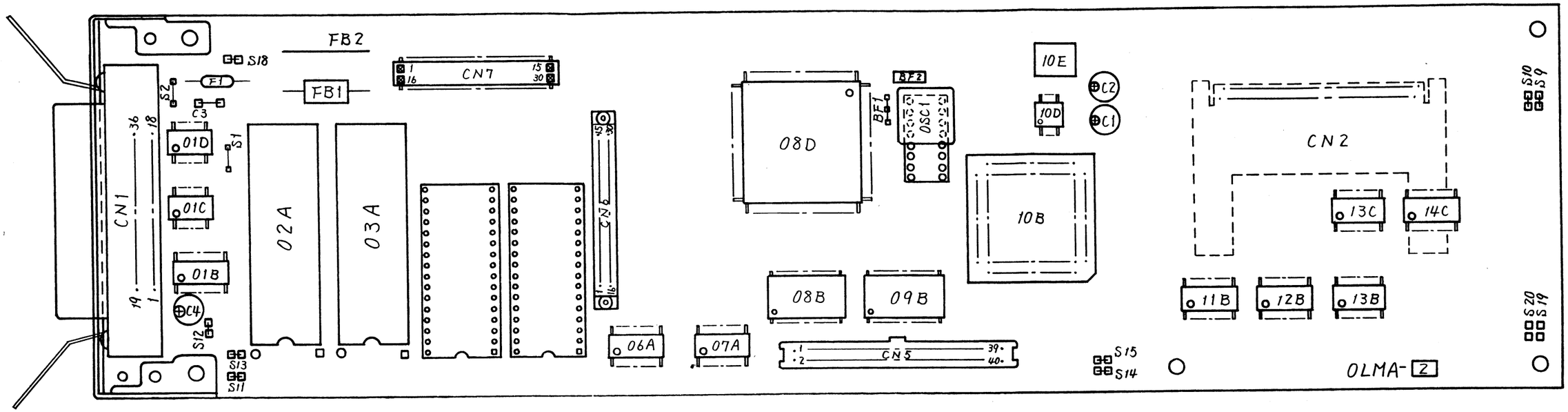
OLMA-Printed Circuit Board (Main Controller) REV. 4
(4YA4046-1516G1-2/2-3/4)

No.	Symbol	Type/Name	Part No.	Q'ty	Remarks
35	06A,07A	74LS245FP BIP digital IC (SO)	700A0503N0245	2	
36	01B	HD74LS374FP BIP digital IC (SO)	700A0521N0374	1	
37	10D	TL7705CPS-B BIP linear IC (SO)	720A0550N0002B	1	
38	BF505	CB30-322513 Beading core (CP)	105A5001C1001	1	
39	FB1,FB2	ZBF116T-01A Beading inductor	353A3005P0001	2	
40	BF2	ZJSC-2R2-101 EMI filter	342A1012P2101	1	
41	F1	251-001 Fuse	540A2208S1102	1	
42	2	DICF-32CS-E IC socket	245A1221P0320	2	
43	3	821574-1 IC socket	245A1230P0680	1	
44	7	ICS-42-C IC socket or Not Installed	245A0120P0420	2	
45	CN2	2PJ48D2A PC connector	224A1281P0482	1	
46	CN1	57RE-40360-730B-D29 Rectangular connector	220A1783P0362	1	
47	CN5	8540-4500SC PC connector	224A3671P0400	1	
48	CN7	00-9072-230-901-883 PC connector	224A3377P0300	1	
49	CN6	00-9072-230-101-883 PC connector	224A3376P0300	1	
50	CN3	00-9072-250-301-883 PC connector	224A3373P0500	1	
51	OSC1	CXO-824C-25.0000MHZ Crystal oscillator	384A2088B0014	1	
52	4	BP53MBN2126010AG or HF70MH2.5X7.6X16A Multi hole flight core	105A1059C1001 105A1042C1001	1 1	

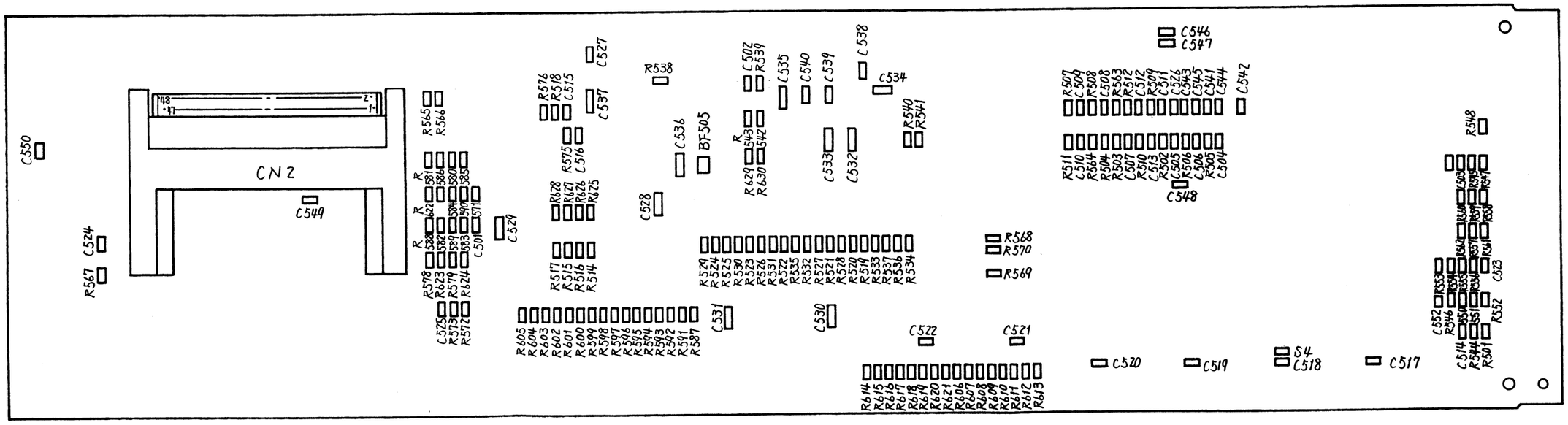
OLMA-Printed Circuit Board (Main Controller) REV. 4
(4YA4046-1516G1-2/2-4/4)

No.	Symbol	Type/Name	Part No.	Q'ty	Remarks
53	S9-15,S18	Shorting wire (U type) 0.65 P=2.5	5KH-31036-25	8	
54	S1,S2,BF1,C3	Shorting wire (U type) 0.65 P=5.0	5KH-31036-50	4	
55	6	Sield board (Centronics)	4PP4083-3229P001	1	
56	8	Rivet	HR2-5-AL	2	

Components side



Solder side



OLMA-2 PCB (Main Controller) REV. 4
4YA4046-1516G2-1/2

OLMA-2 Printed Circuit Board (Main Controller) REV. 4
(4YA4046-1516G2-2/2-1/4)

No.	Symbol	Type/Name	Part No.	Q'ty	Remarks
1	S4	2125JPW Chip jumper (CP)	323A5003P0001	1	
2	R515,R516	RM73B2A101J RN resistor (CP)	323A5003J0101	2	
3	R501, R629-R630	RM73B2A102J RN resistor (CP)	323A5003J0102	3	
4	R502-R512	RM73B2A103J RN resistor (CP)	323A5003J0103	11	
5	R518	RM73B2A220J RN resistor (CP)	323A5003J0220	1	
6	R538,R539, R544-R545	RM73B2A330J RN resistor (CP)	323A5003J0330	4	
7	R546-R562	RM73B2A332J RN resistor (CP)	323A5003J0332	17	
8	R563,R564	RM73B2A392J RN resistor (CP)	323A5003J0392	2	
9	R565-R573, R575	RM73B2A472J RN resistor (CP)	323A5003J0472	10	
10	R576	RM73B2A511J RN resistor (CP)	323A5003J0511	1	
11	R577-R628	RM73B2A512J RN resistor (CP)	323A5003J0512	52	
12	R514,R517, R519-R528, R540,R541	RM73B2A560J RN resistor (CP)	323A5003J0560	14	
13	R534-R537	RM73B2A680J RN resistor (CP)	323A5003J0680	4	
14	R529-R533, R542-R543	RM73B2A750J RN resistor (CP)	323A5003J0750	7	
15	C504, C507-C513, C538-C548	CC2012CH1H101J 50V CC capacitor (CP)	303A3007C0101	19	
16	C505-C506	CC2012SL1H471J 50V CC capacitor (CP)	303A3007K0471	2	
17	C514	CC2012SL1H561J 50V CC capacitor (CP)	303A3007K0561	1	

OLMA-2 Printed Circuit Board (Main Controller) REV. 4
(4YA4046-1516G2-2/2-2/4)

No.	Symbol	Type/Name	Part No.	Q'ty	Remarks
18	C501-C503	CC2012SL1H102J 50V CC capacitor (CP)	303A3007K0102	3	
19	C515-C527, C549,C550, C552	CK2012F1E104Z 25V CK capacitor (CP)	303A6008Z2104	16	
20	C528-C536	CK3216F1C105Z 16V CK capacitor (CP) 1μF	303A6009Z1105	9	
21	C537	CK3216F1C155Z 16V CK capacitor (CP)	303A6009Z1155	1	
22	C2,C4	10MS5-68M 10V CE capacitor 68μF	304A1046A1680	2	
23	C1	10MS5-47M 10V CE capacitor 47μF	304A1046A1470	1	
24	10E	MSM16811RS-NW MOS-EEPROM	816A0322F0000	1	
25	02A	MB838200AP-G-616 MOS-MROM	817A3622M0616	1	
26	03A	MB838200AP-G-617 MOS-MROM	817A3622M0617	1	
27	08B,09B	HM514800JP-8 MOS-D-RAM (SO)	802A0021N2605	2	
28	10B	MC68000FN12 MOS-CPU (CC)	851A2356N0011	1	
29	08D	HG62F101R11FN MOS digital IC (FP)	702A4921N0080	1	
30	01C	74LS06FP BIP digital IC (SO)	700A0503N0006	1	
31	01D	SN74LS19ANS BIP digital IC (SO)	700A0550N0019	1	
32	11B,12B,13B, 13C,14C	74LS244FP BIP digital IC (SO)	700A0503N0244	5	
33	06A,07A	74LS245FP BIP digital IC (SO)	700A0503N0245	2	
34	01B	HD74LS374FP BIP digital IC (SO)	700A0521N0374	1	

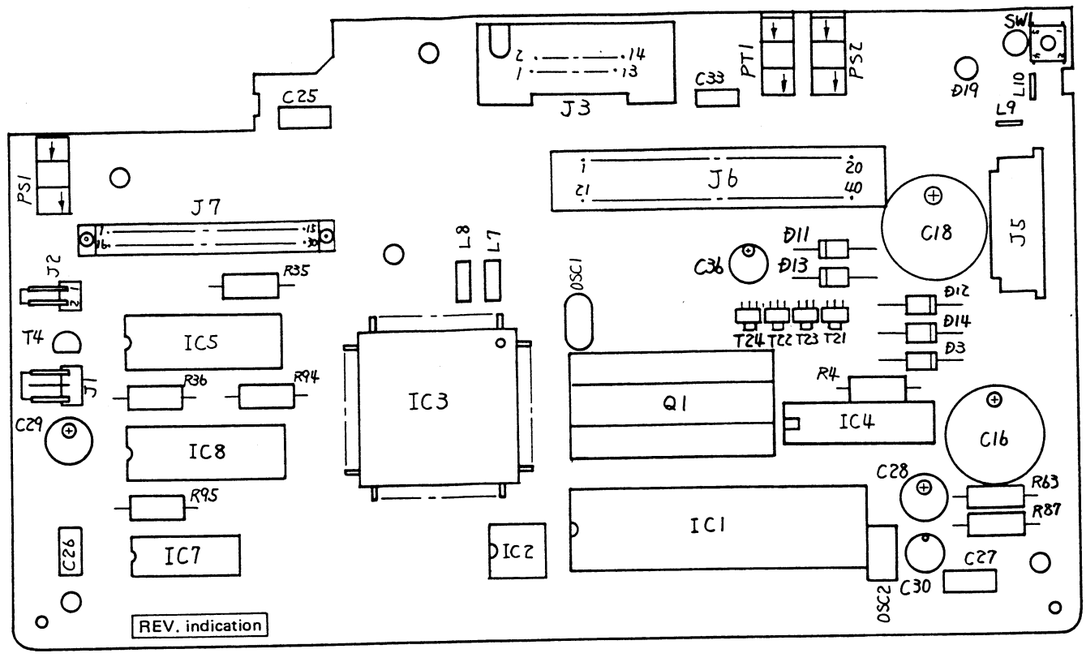
OLMA-2 Printed Circuit Board (Main Controller) REV. 4
(4YA4046-1516G2-2/2-3/4)

No.	Symbol	Type/Name	Part No.	Q'ty	Remarks
35	10D	TL7705CPS-B BIP linear IC (SO)	720A0550N0002B	1	
36	BF505	CB30-322513 Beading core (CP)	105A5001C1001	1	
37	FB1	ZBF116T-01A Beading inductor	353A3005P0001	1	
38	BF2	ZJSC-2R2-101 EMI filter	342A1012P2101	1	
39	F1	251-001 Fuse	540A2208S1102	1	
40		DICF-32CS-E IC socket	245A1221P0320	2	
41		821574-1 IC socket	245A1230P0680	1	
42	CN2	2PJ48D2A PC connector	224A1281P0482	1	
43	CN1	57RE-40360-730B-D29 Rectangular connector	220A1783P0362	1	
44	CN5	8540-4500SC PC connector	224A3671P0400	1	
45	CN7	00-9072-230-901-883 PC connector	224A3377P0300	1	
46	CN6	00-9072-230-101-883 PC connector	224A3376P0300	1	
47	OSC1	CXO-824C-25.0000MHZ Crystal oscillator	384A2088B0014	1	
48		HF70MH2.5X7.6X16A Multi hole flight core	105A1042C1001	1	
49	S9-15,S18	Shorting wire (U type) 0.65 P=2.5	5KH-31036-25	8	
50	S1,S2,BF1,C3	Shorting wire (U type) 0.65 P=5.0	5KH-31036-50	4	
51	FB2	Shorting wire (U type) 0.65 P=20	5KH-31036-200	1	

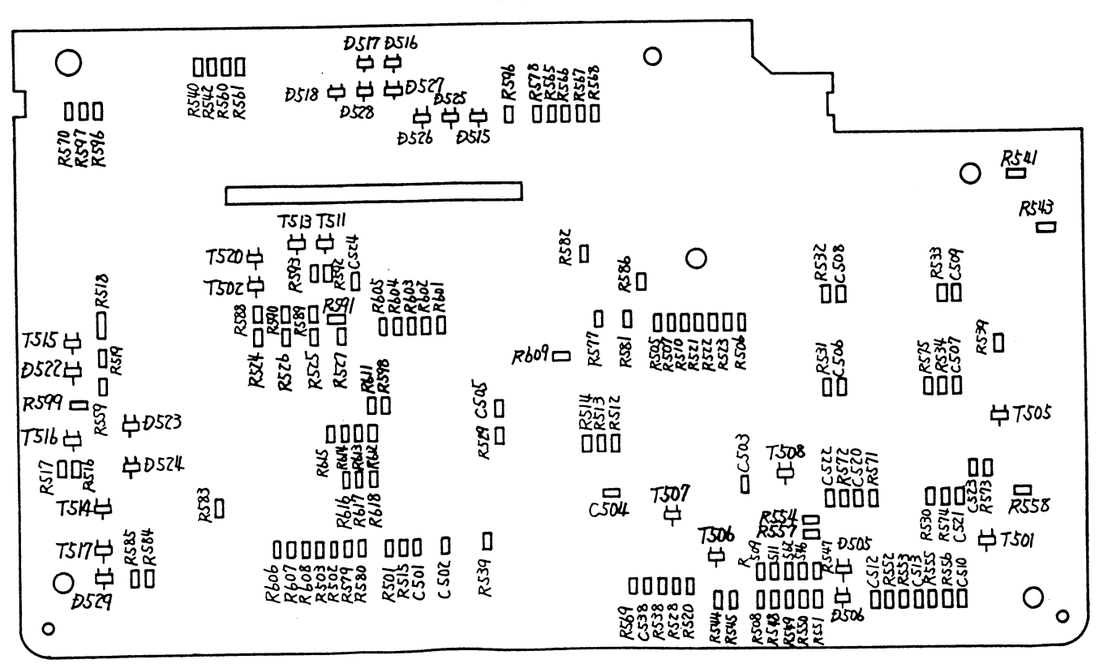
OLMA-2 Printed Circuit Board (Main Controller) REV. 4
(4YA4046-1516G2-2/2-4/4)

No.	Symbol	Type/Name	Part No.	Q'ty	Remarks
52		Sield board (Centronics)	4PP4083-3229P001	1	
53		Rivet	HR2-5-AL	2	

Components side



Solder side



LLAT-PCB (Engine Controller) REV. 1

4YA4087-1022G2-1/2

LLAT-Printed Circuit Board (Engine Controller) REV. 1
(4YA4087-1022G2-2/2-1/5)

No.	Symbol	Type/Name	Part No.	Q'ty	Remarks
1	D11-D14	EM01Z/SM1XN02/DSM1D2 Rectifier diode	610A0003M0001	4	
2	D506	DAP202K Diode array (CP)	761A2027N0201	1	
3	D505	RD3.6M-B2 Zener diode (CP)	613A0233M0072B	1	
4	D3	RD36F-B Zener diode	613A2232L0312	1	
5	D515-D518	MA152WA Signal diode (CP)	611A0029M0002	4	
6	D19	SEL4114R LED	650A0129M0009	1	
7	D522	RD3.9M-B2 Zener diode (CP)	613A0233M0082B	1	
8	D523	MA151WK/N202K/2838 Signal diode (CP)	611A0003N0003	1	
9	D524	RD10M-B2 Zener diode (CP)	613A0233M0182B	1	
10	D525-D529	MA152WK or SS100MA80VKCP Signal diode (CP)	611A0029M0003 611A0000N0002	5 5	
11	R501	2125JPW or Not Installed Chip jumper (CP)	323A5003P0001	1	
12	R581,R577, R582,R586, R609	RM73B2A680J RN resistor (CP)	323A5003J0680	5	
13	R522,R523, R598,R521, R611-R618	RM73B2A101J RN resistor (CP)	323A5003J0101	12	
14	R560	RM73B2A151J RN resistor (CP)	323A5003J0151	1	
15	R579,R580	RM73B2A201J RN resistor (CP)	323A5003J0201	2	
16	R576,R578	RM73B2A241J RN resistor (CP)	323A5003J0241	2	
17	R549	RM73B2A241F RN resistor (CP)	323A5003F0241	1	

LLAT-Printed Circuit Board (Engine Controller) REV. 1
(4YA4087-1022G2-2/2-2/5)

No.	Symbol	Type/Name	Part No.	Q'ty	Remarks
18	R540,R541	RM73B2A271J RN resistor (CP)	323A5003J0271	2	
19	R516	RM73B2A301J RN resistor (CP)	323A5003J0301	1	
20	R550	RM73B2A431F RN resistor (CP)	323A5003F0431	1	
21	R552	RM73B2A471J RN resistor (CP)	323A5003J0471	1	
22	R596	RM73B2A621J RN resistor (CP)	323A5003J0621	1	
23	R584,R530	RM73B2A821J RN resistor (CP)	323A5003J0821	2	
24	R551,R558	RM73B2A911F RN resistor (CP)	323A5003F0911	2	
25	R508,R511, R533,R534, R565-R568, R573,R574, R519,R559, R524-R527, R515	RM73B2A102J RN resistor (CP)	323A5003J0102	17	
26	R588-R591, R575	RM73B2A122J RN resistor (CP)	323A5003J0122	5	
27	R545,R548	RM73B2A152F RN resistor (CP)	323A5003F0152	2	
28	R555,R557, R569	RM73B2A202J RN resistor (CP)	323A5003J0202	3	
29	R502,R503, R505,R506, R507,R509, R510, R601-R608	RM73B2A392J RN resistor (CP)	323A5003J0392	15	
30	R520,R529, R538,R597, R592,R593, R528,*R564	RM73B2A562J RN resistor (CP)	323A5003J0562	8	
31	R554	RM73B2A682J RN resistor (CP)	323A5003J0682	1	

*: This part is added from the Rev. 1.

LLAT-Printed Circuit Board(Engine Controller)REV. 1
(4YA4087-1022G2-2/2-3/5)

No.	Symbol	Type/Name	Part No.	Q'ty	Remarks
32	R512-R514, R537,R539, R542,R543, R546,R547, R561,R570, R599	RM73B2A103J RN resistor (CP)	323A5003J0103	12	
33	R518	RM73B2B183J RN resistor (CP)	323A5015J0183	1	
34	R531,R532, R571,R572	RM73B2A473J RN resistor (CP)	323A5003J0473	4	
35	R583	RM73B2A563J RN resistor (CP)	323A5003J0563	1	
36	R556	RM73B2A753J RN resistor (CP)	323A5003J0753	1	
37	R562,R517, R585	RM73B2A104J RN resistor (CP)	323A5003J0104	3	
38	R553	RM73B2A274J RN resistor (CP)	323A5003J0274	1	
39	R544	RM73B2A105J RN resistor (CP)	323A5003J0105	1	
40	R35,R36,R4,R 94,R95,R87	MSF1/2B0.51ΩJ RS resistor	324A1001J0518	6	
41	R63	RD1/2Y2KΩJ RD resistor	321A1431J0202	1	
42	C506-C509, C520-C523, C538	CC2012SL1H102J 50V CC capacitor (CP)	303A3007K0102	9	
43	C510	CK2012B1H472K 50V CK capacitor (CP)	303A6008K3472	1	
44	C501-C505, C512,C513, C524	CK2012F1E104Z 25V CK capacitor (CP)	303A6008Z2104	8	
45	C30	CEUSM1A101 10V CE capacitor 100μF	304A1041A1101	1	
46	C16	SRC50VB-680(M) 50V CE capacitor 680μF	304A1035H1681	1	

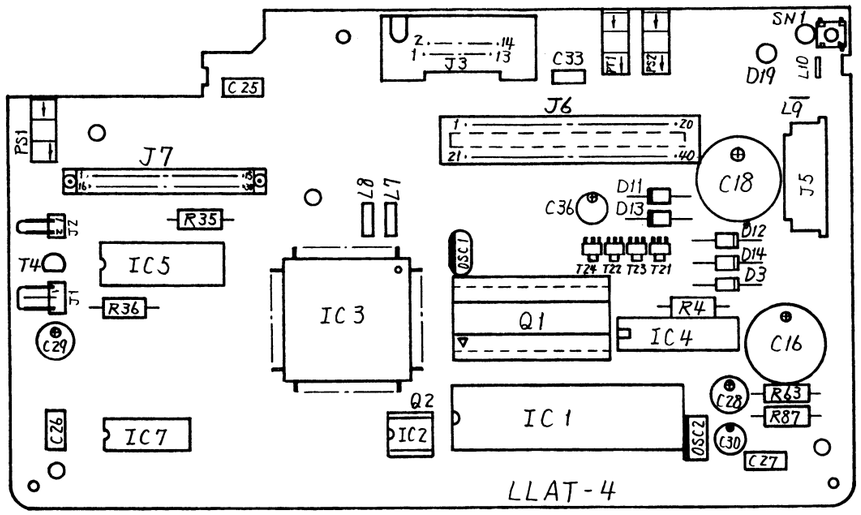
LLAT-Printed Circuit Board(Engine Controller)REV. 1
(4YA4087-1022G2-2/2-4/5)

No.	Symbol	Type/Name	Part No.	Q'ty	Remarks
47	C18	UVS1A332MRA 10V CE capacitor 3300μF	304A1137A1332	1	
48	C25,C26, C27	TCK45F2E103ZYA 250V CK capacitor 10000PF	302A4027Z5103	3	
49	C28,C29	CEUSM1H470 50V CE capacitor 47μF	304A1041H1470	2	
50	C33	CK92F1E155ZS 25V CK capacitor 1.5μF	303A4117Z2155	1	
51	C36	16MS5-47M 16V CE capacitor 47μF	304A1046C1470	1	
52	IC1	MSM80C154RS-1 or MSM83C154-891RS MOS-CPU(ROM)	853A0134F0049 853A0137F0891	1 1	
53	IC2	BR93CS46-Z-NW MOS-EEPROM	816A0326M0000	1	
54	IC3	μPD91336GD-5BB or μPD91367GD-5BB MOS digital IC (FP)	702A4723N0003 702A4723N0004	1 1	
55	IC4	74LS373P BIP digital IC	700A0503M0373	1	
56	IC5,IC8	M54646AP BIP linear IC	720A1822M0002	2	
57	IC7	UPC339C BIP linear IC	720A0523M0006	1	
58	Q1	DICF-28CS-E IC socket	245A1221P0280	1	
59	Q2	DICF-8CS-E IC socket	245A1221P0080	1	
60	T501,T502, T506,T507	A1344/UN2111/DTA114K PNP-HF-TR (CP)	600A1003N0003	4	
61	T505,T516, T520	2SC3361/2SC2412K NPN-HF-TR (CP)	602A1003N0002	3	
62	T508,T515	DTC114EK NPN-HF-TR (CP)	602A1035N0005	2	
63	T511,T513	2SC3361-S6 NPN-HF-TR (CP)	602A1032N0002C	2	
64	T514,T517	2SA1331/2SA1037K PNP-HF-TR (CP)	600A1003N0002	2	

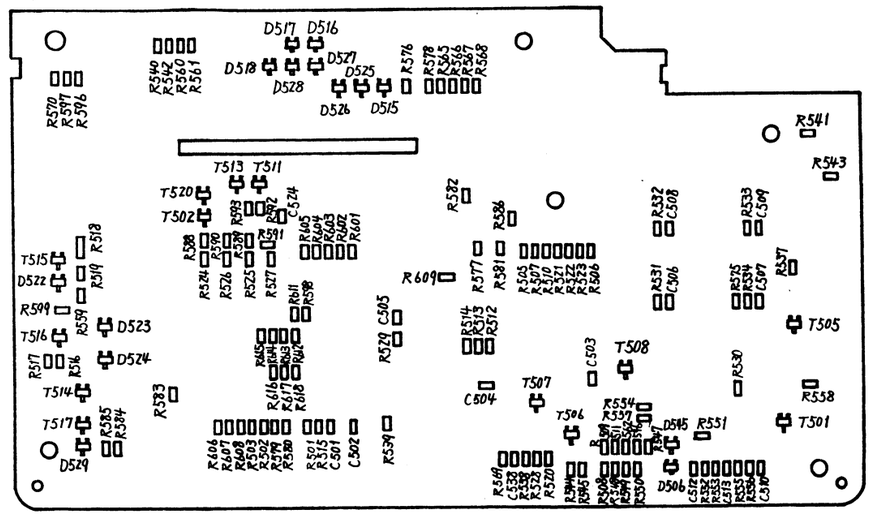
LLAT-Printed Circuit Board(Engine Controller)REV. 1
(4YA4087-1022G2-2/2-5/5)

No.	Symbol	Type/Name	Part No.	Q'ty	Remarks
65	T4	2SB740 PNP-LF-TR	601A1121M0004	1	
66	T21-T24	2SD1472 NPN-LF-TR (CP)	603A1121N0007	4	
67	PS1,PS2,PT1	EE-SJ5-B Photocoupler	652A0127M0009	3	
68	J1	00-8263-0311-00-000 PC connector	224A3358P0030	1	
69	J2	00-8263-0211-00-000 PC connector	224A3358P0020	1	
70	J3	PL13A0T PC connector	224A3512P0130	1	
71	J5	ZC-116 PC connector	224A3591P0160	1	
72	J6	MCR72-40DA-2.54DS PC connector	224A1053P0401	1	
73	J7	00-9072-230-101-883 PC connector	224A3376P0300	1	
74	OSC1	CST20.00MXW040 Ceramic oscillator	381A1047B0001	1	
75	OSC2	CST11.059MTW107 Ceramic oscillator	381A1045B0015	1	
76	SW1	B3F-1000 Push-button switch	205A1179P1000	1	
77	L9,L10	Shorting wire (U type) 0.65 P=2.5	5KH-31036-25	2	
78	L7,L8	ZJSC-R47-181 EMI filter	342A1012P1181	2	

Components side



Solder side



LLAT-4 PCB (Engine Controller) REV. 1
4YA4087-1022G5-1/2

LLAT-4 Printed Circuit Board (Engine Controller) REV. 1
(4YA4087-1022G5-2/2-1/5)

No.	Symbol	Type/Name	Part No.	Q'ty	Remarks
1	D11-D14	EM01Z/SM1XN02/DSM1D2 Rectifier diode	610A0003M0001	4	
2	D506	DAP202K Diode array (CP)	761A2027N0201	1	
3	D505	RD3.6M-B2 Zener diode (CP)	613A0233M0072B	1	
4	D3	RD36F-B Zener diode	613A2232L0312	1	
5	D515-D518	MA152WA Signal diode (CP)	611A0029M0002	4	
6	D19	SEL4114R LED	650A0129M0009	1	
7	D522	RD3.9M-B2 Zener diode (CP)	613A0233M0082B	1	
8	D523	MA151WK/N202K/2838 Signal diode (CP)	611A0003N0003	1	
9	D524	RD10M-B2 Zener diode (CP)	613A0233M0182B	1	
10	D525-D529	MA152WK Signal diode (CP)	611A0029M0003	5	
11	R501	2125JPW Chip jumper (CP)	323A5003P0001	1	
12	R581,R577, R582,R586, R609	RM73B2A680J RN resistor (CP)	323A5003J0680	5	
	*R609	RM73B2A221J RN resistor (CP)	323A5003J0221	1	
13	R522,R523, R598,R521, R611-R618	RM73B2A101J RN resistor (CP)	323A5003J0101	12	
14	R560	RM73B2A151J RN resistor (CP)	323A5003J0151	1	
15	R579,R580	RM73B2A201J RN resistor (CP)	323A5003J0201	2	
16	R576,R578	RM73B2A241J RN resistor (CP)	323A5003J0241	2	
17	R549	RM73B2A241F RN resistor (CP)	323A5003F0241	1	

*: This part is added from the Rev. 1.

LLAT-4 Printed Circuit Board (Engine Controller) REV. 1
(4YA4087-1022G5-2/2-2/5)

No.	Symbol	Type/Name	Part No.	Q'ty	Remarks
18	R540,R541	RM73B2A271J RN resistor (CP)	323A5003J0271	2	
19	R516	RM73B2A301J RN resistor (CP)	323A5003J0301	1	
20	R550	RM73B2A681F RN resistor (CP)	323A5003F0681	1	
21	R552	RM73B2A471J RN resistor (CP)	323A5003J0471	1	
22	R596	RM73B2A621J RN resistor (CP)	323A5003J0621	1	
23	R584	RM73B2A821J RN resistor (CP)	323A5003J0821	2	
24	R551,R558, R548	RM73B2A911F RN resistor (CP)	323A5003F0911	3	
25	R508,R511, R533,R534, R565-R568, R515,R530, R519,R559, R524-R527,	RM73B2A102J RN resistor (CP)	323A5003J0102	16	
26	R588-R591	RM73B2A122J RN resistor (CP)	323A5003J0122	4	
27	R545	RM73B2A152F RN resistor (CP)	323A5003F0152	1	
28	R555,R557, R569	RM73B2A202J RN resistor (CP)	323A5003J0202	3	
29	R502,R503, R505,R506, R507,R509, R510, R601-R608	RM73B2A392J RN resistor (CP)	323A5003J0392	15	
30	R520,R529, R538,R597, R592,R593, R528	RM73B2A562J RN resistor (CP)	323A5003J0562	7	
31	R554	RM73B2A682J RN resistor (CP)	323A5003J0682	1	

LLAT-4 Printed Circuit Board(Engine Controller)REV. 1
(4YA4087-1022G5-2/2-3/5)

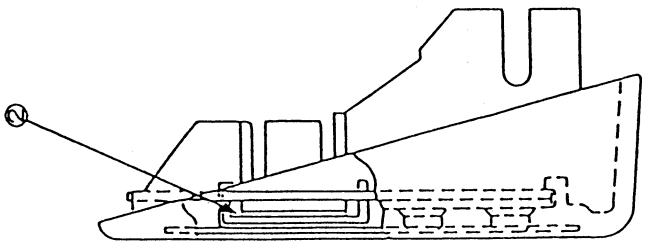
No.	Symbol	Type/Name	Part No.	Q'ty	Remarks
32	R512-R514, R537,R539, R542,R543, R546,R547, R561,R570, R599	RM73B2A103J RN resistor (CP)	323A5003J0103	12	
33	R518	RM73B2B183J RN resistor (CP)	323A5015J0183	1	
34	R531,R532	RM73B2A473J RN resistor (CP)	323A5003J0473	2	
35	R583	RM73B2A563J RN resistor (CP)	323A5003J0563	1	
36	R556	RM73B2A753J RN resistor (CP)	323A5003J0753	1	
37	R562,R517, R585	RM73B2A104J RN resistor (CP)	323A5003J0104	3	
38	R553	RM73B2A274J RN resistor (CP)	323A5003J0274	1	
39	R544	RM73B2A105J RN resistor (CP)	323A5003J0105	1	
40	R575	RM73B2A272J RN resistor (CP)	323A5003J0272	1	
41	R35,R36,R4, R87	MSF1/2B0.51ΩJ RS resistor	324A1001J0518	4	
42	R63	RD1/2Y2KΩJ RD resistor	321A1431J0202	1	
43	C506-C509, C538	CC2012SL1H102J 50V CC capacitor (CP)	303A3007K0102	5	
44	C510	CK2012B1H472K 50V CK capacitor (CP)	303A6008K3472	1	
45	C501-C505, C512,C513, C524	CK2012F1E104Z 25V CK capacitor (CP)	303A6008Z2104	8	
46	C30	CEUSM1A101 10V CE capacitor 100μF	304A1041A1101	1	
47	C16	SRC50VB-680(M) 50V CE capacitor 680μF	304A1035H1681	1	

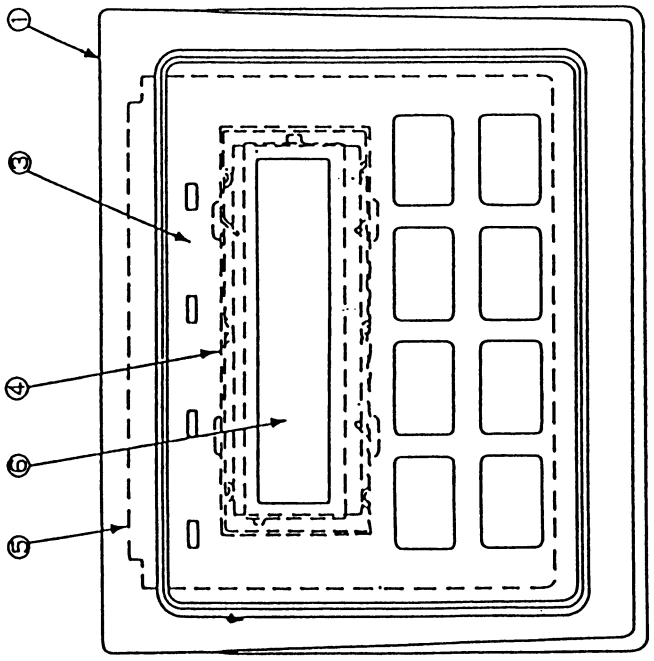
LLAT-4 Printed Circuit Board(Engine Controller)REV. 1
(4YA4087-1022G5-2/2-4/5)

No.	Symbol	Type/Name	Part No.	Q'ty	Remarks
48	C18	UVS1A332MRA 10V CE capacitor 3300μF	304A1137A1332	1	
49	C25,C26, C27	TCK45F2E103ZYA 250V CK capacitor 10000PF	302A4027Z5103	3	
50	C28,C29	CEUSM1H470 50V CE capacitor 47μF	304A1041H1470	2	
51	C33	CK92F1E155ZS 25V CK capacitor 1.5μF	303A4117Z2155	1	
52	C36	16MS5-47M 16V CE capacitor 47μF	304A1046C1470	1	
53	IC1	MSM80C154RS-1 MOS-CPU(ROM)	853A0134F0049	1	
54	IC2	BR93CS46-Z-NW MOS-EEPROM	816A0326M0000	1	
55	IC3	μPD91336GD-5BB MOS digital IC (FP)	702A4723N0003	1	
56	IC4	74LS373P BIP digital IC	700A0503M0373	1	
57	IC5	M54646AP BIP linear IC	720A1822M0002	1	
58	IC7	UPC339C BIP linear IC	720A0523M0006	1	
59	Q1	DICF-28CS-E IC socket	245A1221P0280	1	
60	Q2	DICF-8CS-E IC socket	245A1221P0080	1	
61	T501,T502, T506,T507	A1344/UN2111/DTA114K PNP-HF-TR (CP)	600A1003N0003	4	
62	T505,T516, T520	2SC3361/2SC2412K NPN-HF-TR (CP)	602A1003N0002	3	
63	T508,T515	DTC114EK NPN-HF-TR (CP)	602A1035N0005	2	
64	T511,T513	2SC3361-S6 NPN-HF-TR (CP)	602A1032N0002C	2	
65	T514,T517	2SA1331/2SA1037K PNP-HF-TR (CP)	600A1003N0002	2	

LLAT-4 Printed Circuit Board(Engine Controller)REV. 1
(4YA4087-1022G5-2/2-5/5)

No.	Symbol	Type/Name	Part No.	Q'ty	Remarks
66	T4	2SB740 PNP-LF-TR	601A1121M0004	1	
67	T21-T24	2SD1472 NPN-LF-TR (CP)	603A1121N0007	4	
68	PS1,PS2,PT1	EE-SJ5-B Photo-coupler	652A0127M0009	3	
69	J1	00-8263-0311-00-000 PC connector	224A3358P0030	1	
70	J2	00-8263-0211-00-000 PC connector	224A3358P0020	1	
71	J3	PL13AOT PC connector	224A3512P0130	1	
72	J5	ZC-116 PC connector	224A3591P0160	1	
73	J6	MCR72-40DA-2.54DS PC connector	224A1053P0401	1	
74	J7	00-9072-230-101-883 PC connector	224A3376P0300	1	
75	OSC1	CST10.0MTW040Y2 Ceramic oscillator	381A1045B0019	1	
76	OSC2	CST11.059MTW107 Ceramic oscillator	381A1045B0015	1	
77	SW1	B3F-1000 Push-button switch	205A1179P1000	1	
78	L9,L10	Shorting wire (U type) 0.65 P=2.5	5KH-31036-25	2	
79	L7,L8	ZJSC-R47-181 EMI filter	342A1012P1181	2	

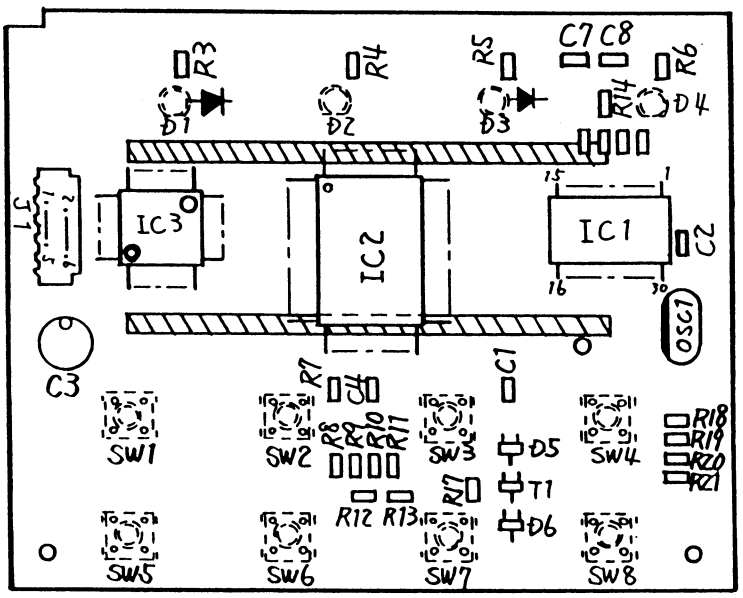




Operator Panel Assembly
4YA4083-5012G8 1/2

Operator Panel Assembly
(4YA4083-5012G8-2/2-1/1)

No.	Symbol	Type/Name	Part No.	Q'ty	Remarks
1		Panel cover	2PP4083-2222P1	1	
2		Zebra rubber	4PB4083-2224P1	2	
3		Operator panel sheet	3PB4012-2519P1	1	
4		LCD guide (B)	4PP4083-2228P1	1	
5		LLJB-2 PCB specification	4YA4087-1015G2	1	
6		LCD element LF7181G-06	653A0028M0004	1	



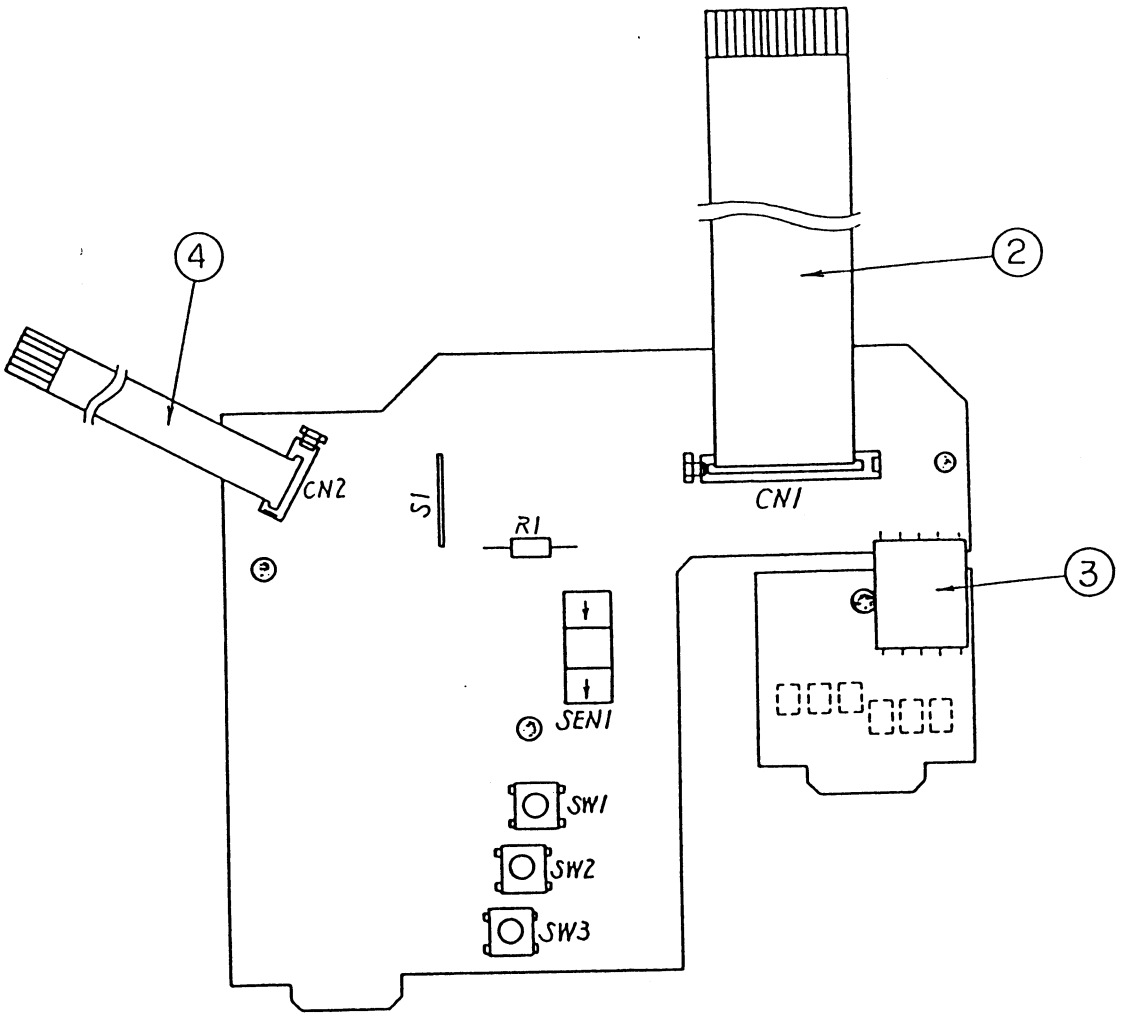
LLJB-2 PCB (Operator Panel) REV. 1
4YA4087-1015G2-1/2

LLJB-2 Printed Circuit Board (Operator Panel) REV. 1
(4YA4087-1015G2-2/2-1/2)

No.	Symbol	Type/Name	Part No.	Q'ty	Remarks
1	D1,D4	SEL3810D-YZ LED	650A0229M0017	2	
2	D2,D3	SEL3210R-YZ LED	650A0129M0016	2	
3	D5	MA151WK/N202K/2838C Signal diode (CP)	611A0003N0003	1	
4	D6	RD3.9M-B2 Zener diode (CP)	613A0233M0082B	1	
5	C1,C2,C4	CK2012F1E104Z 25V CK capacitor (CP)	303A6008Z2104	3	
6	C3	CEUSM1A101 10V CE capacitor 100UF	304A1041A1101	1	
7	C7,C8	CC2012CH1H101J 50V CC capacitor (CP)	303A3007C0101	2	
8	R1,R2	RM73B2A392J RN resistor (CP)	323A5003J0392	2	
9	R3,R6	RM73B2A181J RN resistor (CP)	323A5003J0181	2	
10	R4,R5	RM73B2A271J RN resistor (CP)	323A5003J0271	2	
11	R7	RM73B2A913F RN resistor (CP)	323A5003F0913	1	
12	R13	RM73B2A682J RN resistor (CP)	323A5003J0682	1	
13	R8,R9,R10, R11,R12	RM73B2A752J RN resistor (CP)	323A5003J0752	5	
14	R14	RM73B2A152J RN resistor (CP)	323A5003J0152	1	
15	R17	RM73B2A102J RN resistor (CP)	323A5003J0102	1	
16	R18,R19,R20, R21	RM73B2A103J RN resistor (CP)	323A5003J0103	4	
17	R22,R23	RM73B2A562J RN resistor (CP)	323A5003J0562	2	
18	OSC1	CST4.000MGW Ceramic oscillator	381A1025B0002	1	

LLJB-2 Printed Circuit Board (Operator Panel) REV. 1
(4YA4087-1015G2-2/2-2/2)

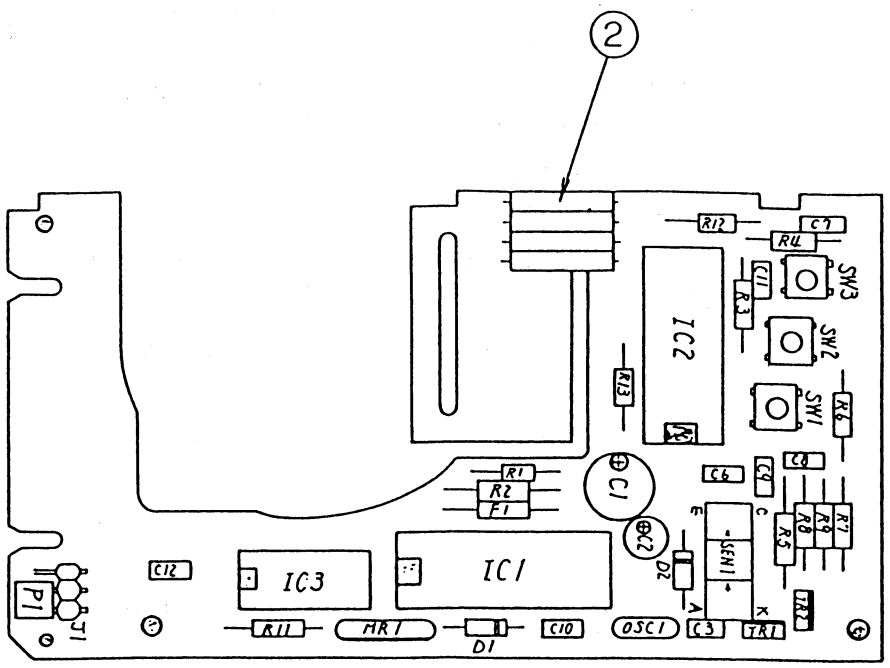
No.	Symbol	Type/Name	Part No.	Q'ty	Remarks
19	T1	A1344/UN2111/DTA114K PNP-HF-TR (CP)	600A1003N0003	1	
20	IC1	LC6543C-4161 MOS-CPU(ROM) (SO)	853A0029N4161	1	
21	IC2	HD44780 CPU-INF-IC (FP)	855A0421N0059	1	
22	IC3	MSM5259GS-VK CPU-INF-IC (FP)	855A0024N0001	1	
23	J1	ZC-006 PC connector	224A3590P0060	1	
24	SW1-SW8	B3F-1002 Push-button switch	205A1177P1000	8	



LLCC-PCB (Engine Connection) REV. 3
4YA4083-5011G1 1/2

LLCC-Printed Circuit Board (Engine Connection) REV. 3
(4YA4083-5011G1-2/2-1/1)

No.	Symbol	Type/Name	Part No.	Q'ty	Remarks
1	SEN1	EE-SJ5-B Photocoupler	652A0127M0009	1	
2	R1	RD1/4Y430ΩJ RD resistor	321A1421J0431	1	
3	SW1,SW2,SW3	B3W-1000 Push-button switch	205A1321P1000	3	
4	S1	0.65Tin-plated soft copper wire	TA-0.65	1	
5	CN1	00-5062-301-016-000 PC connector	224A5114P0160	1	
6	CN2	00-5062-301-006-000 PC connector	224A5114P0060	1	
7	2	SMCD16X120ES10(2.7)7 Extension card	238A1063P0003	1	
8	3	V2RJ-D-OM-1SX5X25 Jumper	238A1043P0027	1	
9	4	SMCD6X120ES10(2.7)7 Extension card	238A1063P0001	1	



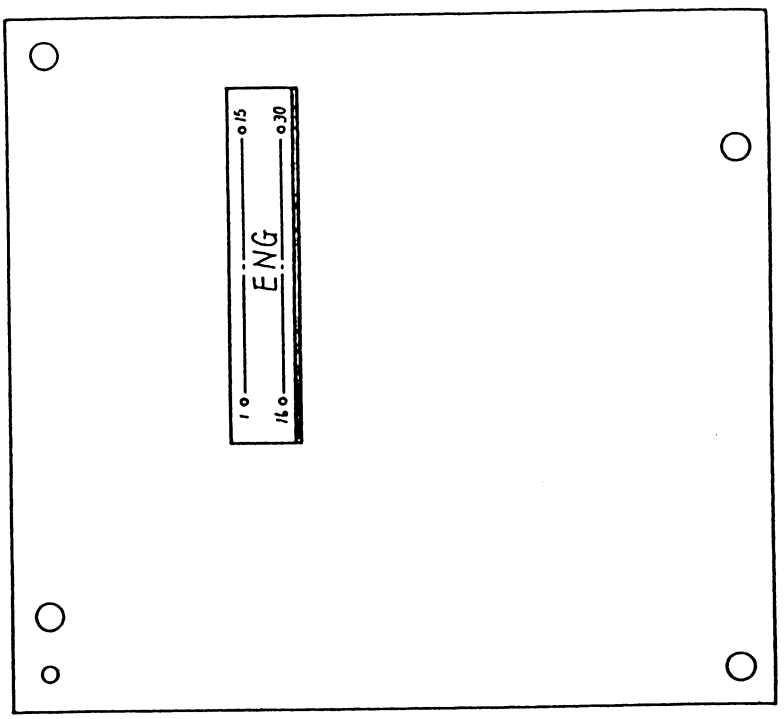
LLFC-PCB (Second Paper Supply Unit Controller) REV. 5
4YA4083-5015G1 1/2

LLFC-Printed Circuit Board (Second Paper Supply Unit Controller) REV. 5
(4YA4083-5015G1-2/2-1/2)

No.	Symbol	Type/Name	Part No.	Q'ty	Remarks
1	D2	RD3.9E-B Zener DI	613A1231L0082	1	
2	D1	1S953/1S2075K/1S2473 Signal DI	611A0003L0001	1	
3	R1,R4	RD1/4Y47KΩJ RD resistor	321A1421J0473	2	
4	R2,R5	MSF1/2B0.51ΩJ RS resistor	324A1001J0518	2	
5	R3,R6,R11	RD1/4Y1KΩJ RD resistor	321A1421J0102	3	
6	R7	RD1/4Y1.6KΩJ RD resistor	321A1421J0162	1	
7	R8	RD1/4Y270ΩJ RD resistor	321A1421J0271	1	
8	R9	RD1/4Y10ΩJ RD resistor	321A1421J0103	1	
9	R12	RD1/4Y75KΩJ RD resistor	321A1421J0753	1	
10	R13	RD1/4Y100KΩJ RD resistor	321A1421J0104	1	
11	MR1	MRM-4-102JA Block resistor	334A3266J0102	1	
12	C1	CEUSM1H470 50V CE capacitor 47UF	304A1040H1470	1	
13	C2	10MS5-33M 10V CE capacitor 33UF	304A1046A1330	1	
14	C3	RPE122-127E334M50 CK capacitor 0.33UF	303A4116M3334	1	
15	C6,C7,C8,C9	FK20COG1H102K 50V CC capacitor 1000PF	303A1010C0102	4	
16	C10,C11,D12	CK92F1H104ZY 50V CK capacitor 0.1UF	303A0420Z3104	3	
17	IC1	LC6546C-3825 MOS-CPU (ROM)	853A0028M3825	1	
18	IC2	M54646AP BIP linear IC	720A1822M0002	1	

LLFC-Printed Circuit Board (Second Paper Supply Unit Controller) REV. 5
(4YA4083-5015G1-2/2-2/2)

No.	Symbol	Type/Name	Part No.	Q'ty	Remarks
19	IC3	74LS38P BIP digital IC	700A0503M0038	1	
20	SEN1	EE-SJ5-B Photocoupler	652A0127M0009	1	
21	TR1,TR2	DTA114S PNP-HF-TR	600A1035M0005	2	
22	OSC1	CST4.000MGW Ceramic oscillator	381A1025B0002	1	
23	SW1,SW2,SW3	B3W-1000 Push-button switch	205A1321P1000	3	
24	J1	FFC-3LAMEP1 FC connector	225A3125P0030	1	
25	P1	DIC-252 PC connector	224A3182P0020	1	
26	F1	251-001 Fuse	540A2208S1102	1	
27	2	V2RJ-D-OM-1S×4×25 Jumper	238A1043P0035	1	

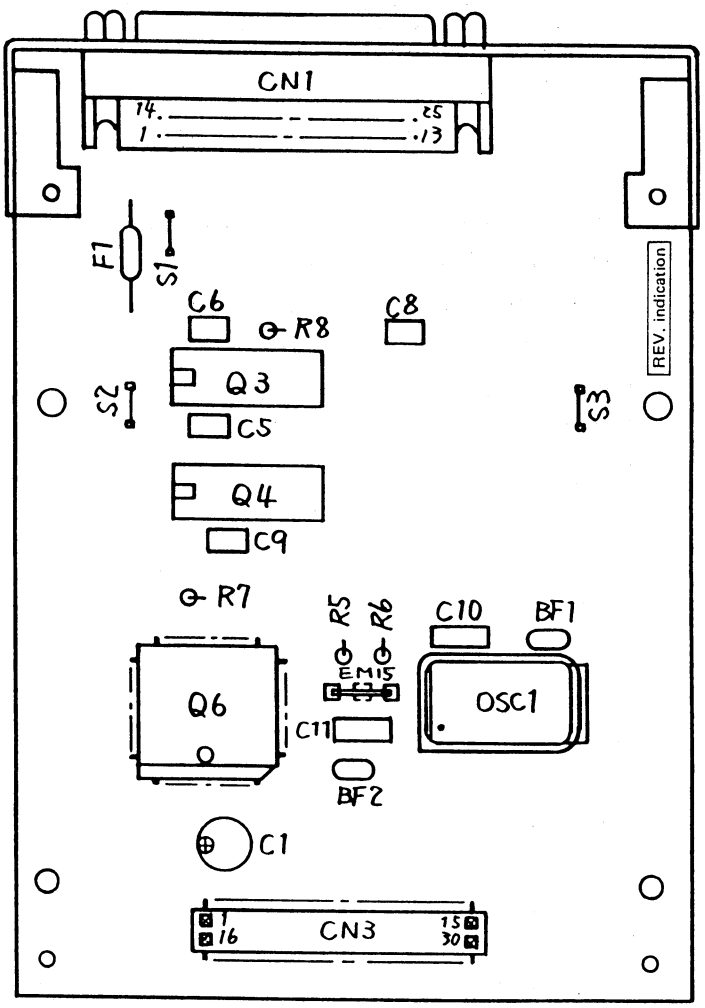


LLIF-PCB (Second Tray Connection) REV. 1

4YA4046-1496G1 1/2

LLIF-Printed Circuit Board (Second Tray Connection) REV. 1
(4YA4046-1496G1-2/2-1/1)

No.	Symbol	Type/Name	Part No.	Q'ty	Remarks
1	ENG	CR22A-30D-2.54DS PC connector	224A1078P0300	1	

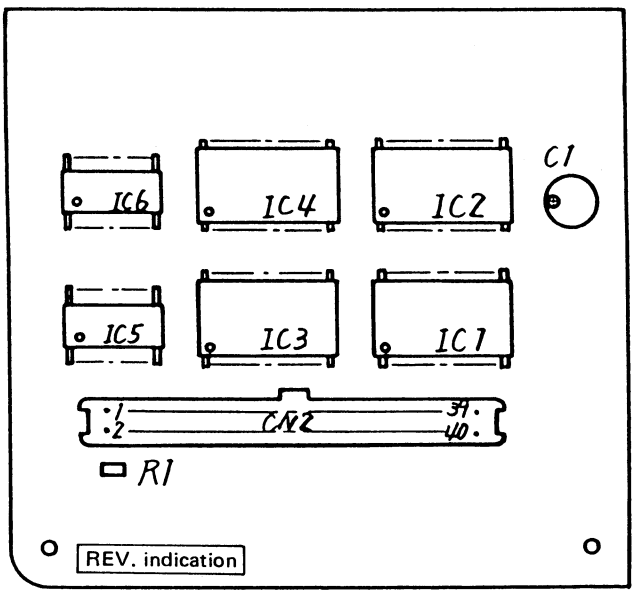


OLSA-PCB (Option Interface board) REV. 1
(4YA4046-1517G1-1/2)

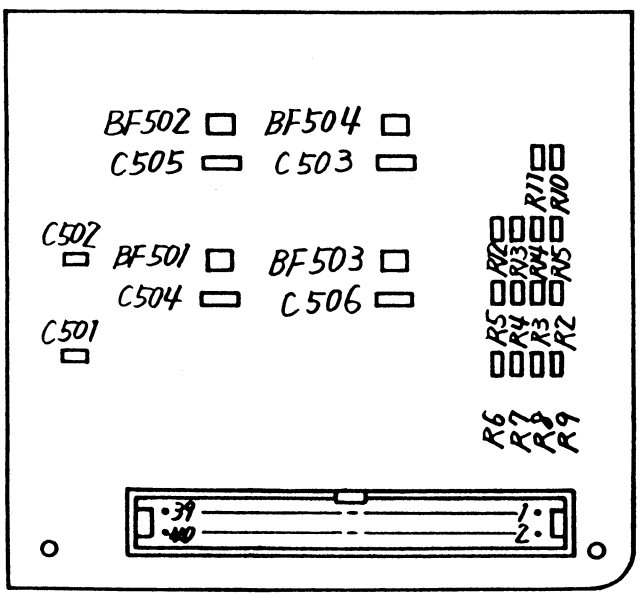
OLSA-Printed Circuit Board (Option Interface board) REV. 1
(4YA4046-1517G1-2/2-1/1)

No.	Symbol	Type/Name	Part No.	Q'ty	Remarks
1	R5,R6	RD1/6-33ΩJ(Vertical) RD resistor	321A3412J0330	2	
2	R7,R8	RD1/6-4.7ΩJ(Vertical) RD resistor	321A3412J0472	2	
3	C5-C6,C8	CK92F1H104ZY 50V CK capacitor 0.1UF	303A0420Z3104	3	
4	C9	CK92C1H471MS 50V CK capacitor 470PF	303A4115M3471	1	
5	C10,C11	CK92F1E105ZS 25V CK capacitor 1UF	303A4117Z2105	2	
6	C1	10MS5-68M 10V CE capacitor 68UF	304A1046A1680	1	
7	Q3	75188P BIP-INF-IC	710A0003M0188	1	
8	Q4	75189P BIP-INF-IC	710A0003M0189	1	
9	Q6	AM8530H-8JC CPU-INF-IC (CC)	855A0454N0019	1	
10	BF1,BF2	ZBF253D-01 Beading filter	377A1115P1309	2	
11	F1	251-001 Fuse	540A2208S1102	1	
12	OSC1	CXO-043C-3.6864MHZ Crystal oscillator	384A2030B2034	1	
13	2	HF70MH2.5X7.6X16A R core	105A1042C1001	1	
14	CN3	00-9072-230-901-883 PC connector	224A3377P0300	1	
15	CN1	17LE-13250-27(D4CC) Rectangular connector	220A1448P0250	1	
16	S1,S2,S3,EM15	Shorting wire (U type) 0.65 P=5.0	5KH-31036-50	4	
17	3	Shield board (Serial 810)	4PP4083-3244P001	1	
18	4	Rivet	HR2-5-AL	2	

Components side



Solder side

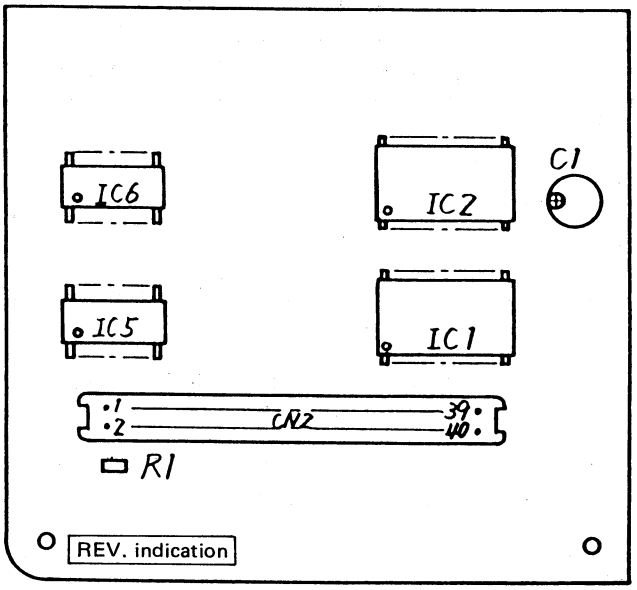


OLRA-PCB (Option Memory board, 2M) REV. 1
4YA4046-1518G1-1/2

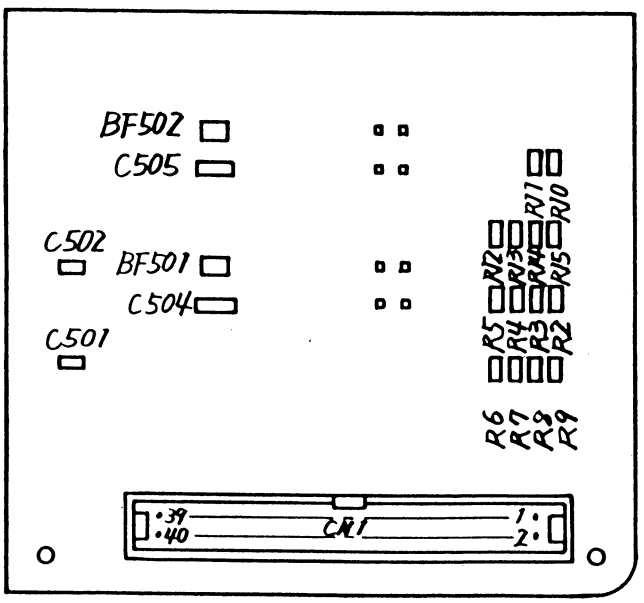
OLRA-Printed Circuit Board (Option Memory board) REV. 1
(4YA4046-1518G1-2/2-1/1)

No.	Symbol	Type/Name	Part No.	Q'ty	Remarks
1	R1	RM73B2A102J RN resistor (CP)	323A5003J0102	1	
2	R2-R15	RM73B2A560J RN resistor (CP)	323A5003J0560	14	
3	C501,C502	CK2012F1E104Z 25V CK capacitor (CP)	303A6008Z2104	2	
4	C503-C506	CK3216F1C105Z 16V CK capacitor (CP) 1UF	303A6009Z1105	4	
5	C1	10MS5-68M 10V CE capacitor 68UF	304A1046A1680	1	
6	IC1-IC4	HM514800JP-8 MOS-D-RAM (SO)	802A0021N2605	4	
7	IC5,IC6	SN74BCT2244NS MOS digital IC (SO)	702A3050N0002	2	
8	BF501-BF504	CB30-322513 Beading core (CP)	105A5001C1001	4	
9	CN2	6840-4500 PC connector	224A3674P0400	1	
10	CN1	J3595-6002FL FC connector	225A3017P0400	1	

Components side



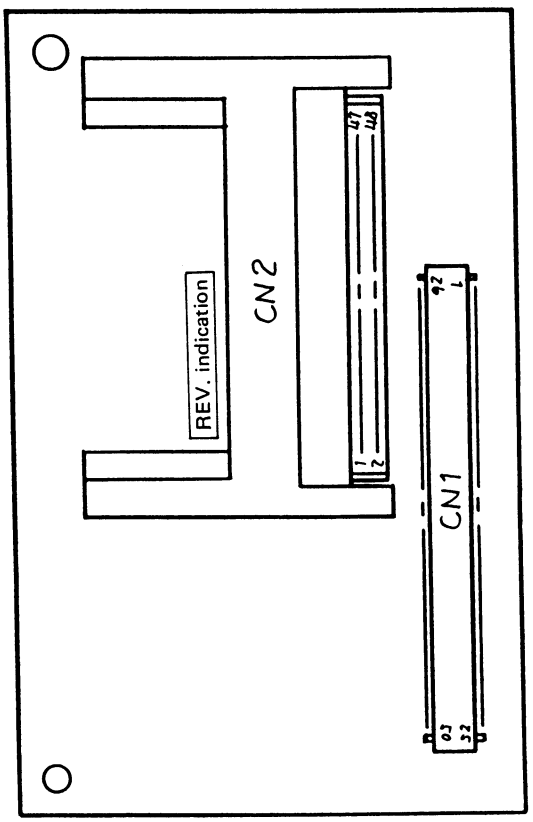
Solder side



OLRA-2 PCB (Option Memory board, 1M) REV. 1
4YA4046-1518G2

OLRA-2 Printed Circuit Board (Option Memory board, 1M) REV. 1
(4YA4046-1518G2-2/2-1/1)

No.	Symbol	Type/Name	Part No.	Q'ty	Remarks
1	R1	RM73B2A102J RN resistor (CP)	323A5003J0102	1	
2	R2-R15	RM73B2A560J RN resistor (CP)	323A5003J0560	14	
3	C501,C502	CK2012F1E104Z 25V CK capacitor (CP)	303A6008Z2104	2	
4	C504,C505	CK3216F1C105Z 16V CK capacitor (CP) 1UF	303A6009Z1105	2	
5	C1	10MS5-68M 10V CE capacitor 68UF	304A1046A1680	1	
6	IC1,IC2	HM514800JP-8 MOS-D-RAM (SO)	802A0021N2605	2	
7	IC5,IC6	SN74BCT2244NS MOS digital IC (SO)	702A3050N0002	2	
8	BF501,BF502	CB30-322513 Beading core (CP)	105A5001C1001	2	
9	CN2	6840-4500 PC connector	224A3674P0400	1	
10	CN1	J3595-6002FL FC connector	225A3017P0400	1	



OLCA-PCB (Font Card board)
4YA4046-1520G1

OLCA-Printed Circuit Board (Font Card board)
(4YA4046-1520G1)

No.	Symbol	Type/Name	Part No.	Q'ty	Remarks
1	CN2	2PJ48D2A PC connector	224A1281P0482	1	
2	CN1	00-9072-250-901-883 PC connector	224A3377P0500	1	