# SERVICE MANUAL

## UP-400

**NOV. 2008**


INDEX

CASIO®

# CONTENTS

# 1. SPECIFICATIONS

## 1-1. PRINTING SPECIFICATION

| | | |
|---|---|---|
| Printing method: | Direct Line Thermal | |
| Dot pitch: | 8 dot / mm | |
| Printing speed: | 210 mm per second (Max.) | |
| Printing width: | 72mm / 576 dots | |
| Character structure: | 8 x 16 (font B) | 12 x 24 (font A) |
| Printing columns: | 64 columns / line | 44 columns / line |
| Character size: | 1.00 x 2.00 | 1.50 x 3.00 |
| Fonts: | US-ASCII, Katakana, international characters | |
| Feed speed: | 220 mm per second | |
| Interface: | RS232C (serial), 10/100 Base - T/ TX | |
| Command: | ESC / POS compliant | |
| Paper width & diameter: | 80 mm (W) x 80 mm Dia. Max. | |
| Thermal head life: | 100 Million Pulses / 100 km or more | |
| Cutting method: *2 | Partial cut (one point left uncut) *2 | |
| Operating temperature: | 5 °C ~ 35 °C | |
| Storage temperature: | -20 °C ~ 60 °C | |
| Dimension: | 145 mm (W) x 193.2 mm (L) x 120.1 mm (H) | |
| Transfer speed: | 38.4 kBps (Max.) : RS-232C | |
| Supply voltage in standby: | 24V DC / 100mA | |
| Mean current: | Approx. 1.3 A *3 | |
| Power consumption: | Approx. 40 W *3 | |
| Weight: | 1.1kg | |
| Barcode alignment: | ○ | |
| Near end sensor: | Near end sensor | |

*1 Manufactured by SIIP&S Inc. (Former name: Seiko Instruments Inc.)
*2 CAUTION: Paper must be fed 3 mm after cutting to prevent paper jam.
*3 These values vary according to environmental temperature when printed font A (12 × 24) with a rolling pattern.

## 1-2. PAPER SPECIFICATION

| | | |
|---|---|---|
| Paper Width: | 79.5 ± 0.5mm (3.13 ± 0.02”) | |
| Paper roll size: | Roll diameter: | Maximum 80 mm (3.15”) |
| | Take-up paper roll width: | 80 + 0.5/-1.0mm (3.15 + 0.02/-0.04”) |
| Specified paper: | Specified thermal roll paper: | NTP080-80 |
| | [Paper:TF50KS-E2C Nippon Paper Industries Co., Ltd.] | |
| | Packaged roll paper: | |
| | [Paper:PD160R-N (Oji Paper Mfg. Co., Ltd.)] | |
| | *The following paper can be used instead of the paper above: | |
| | Paper: HP220AB1 (Mitsubishi Paper Mills Ltd.) | |
| Paper roll spool diameter: | Inside 12 mm (0.47”) | |
| | Outside 18 mm (0.71”) | |

NOTE: The end of the paper roll must be free to come off the spool when finished. It must not be adhesively attached or attached in another semi-permanent manner.

## 1-3. INTERFACE SPECIFICATION

### 1-3-1. RS-232C SPECIFI CATION

| | | |
|---|---|---|
| Data transmission: | Serial. EIA RS232C compliant | |
| Synchronization: | Asynchronous | |
| Handshaking: | DTR/DSR or XON/XOFF control (*) | |
| Signal levels: | MARK = -3 to -15V: | Logic “1”/OFF |
| | SPACE = +3 to +15V: | Logic “0”/ON |
| Baud rate: | 4800, 9600, 19200, 38400 bps (*) | |
| Data word length: | 8 bits, 7 bits (*) | |
| Parity Settings: | None, even, odd (*) | |
| Stop bits: | 1 or more | |
| Connector (printer side): | Male DSUB-9 pin connector | |

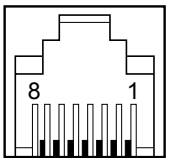
Notes: *The data word length, baud rate, and parity depend on the DIP switch settings. (Refer to **5.SETTING & CHECKING THE DIP SWITCHES**.)

### 1-3-2. RS-232C INTERFACE CONNECTION EXAMPLE

| **HOST SIDE** (DTE ex.8251) | | **PRINTER SIDE** (Pin No.) |
|---|---|---|
| TxD | ⟷ | RxD (2) |
| RxD | ⟷ | TxD (3) |
| DTR | ⟷ | DSR (6) |
| DSR | ⟷ | DTR (4) |
| RTS | ↩ | |
| CTS | ↩ | |
| GND | ⟷ | GND (5) |

### 1-3-3. LAN CONNECTOR

| PIN | DESCRIPTION |
|---|---|
| 1 | TX+ |
| 2 | TX- |
| 3 | RX+ |
| 4 | Isolated GND |
| 5 | Isolated GND |
| 6 | RX- |
| 7 | Isolated GND |
| 8 | Isolated GND |

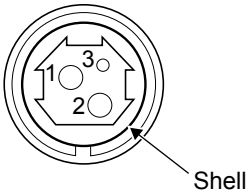



### 1-3-4. POWER SUPPLY CONNECTOR

The connector is connected the printer to an external power source.

**CONNECTOR MODEL:**

| PIN | SIGNAL |
|---|---|
| 1 | +24V |
| 2 | GND |
| 3 | NC |
| shell | FG |

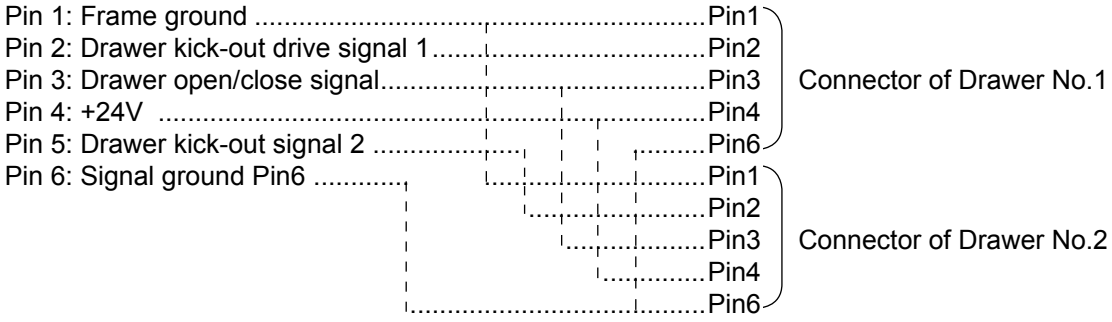


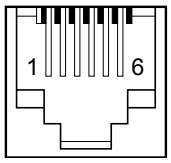
### 1-3-5. DRAWER KICK-OUT CONNECTOR

The pulse specified by ESC p or DLE DC4 is output to this connector. The HOST can confirm the status of the input signal by using the DLE EOT, GS a, or GS r commands.

| PIN | I/O | DESCIPTION |
|---|---|---|
| 1 | - | Frame ground |
| 2 | Output | Drawer kick-out drive signal 1 |
| 3 | Input | Drawer open/close signal |
| 4 | Output | +24 V |
| 5 | Output | Drawer kick-out signal 2 * |
| 6 | - | Signal ground |

* Two drawers can be used with a Y-cable that meets the following specifications.



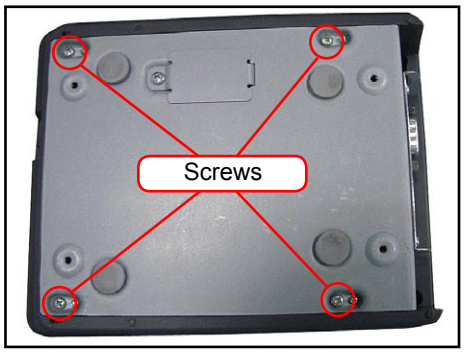




**CONNECTIOR MODEL:**

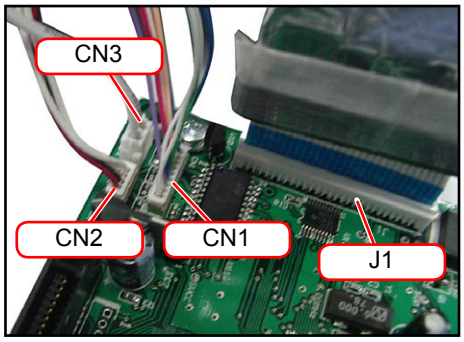
Printer side: MOLEX52065-6615 or equivalent
Used side: 6-position 6-contact (RJ12 telephone jack)

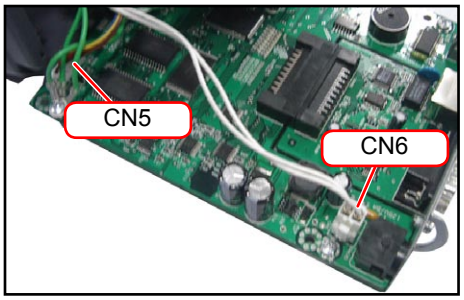
## 2. DISASSEMBLY

1. Remove four screws at the bottom of the printer unit.

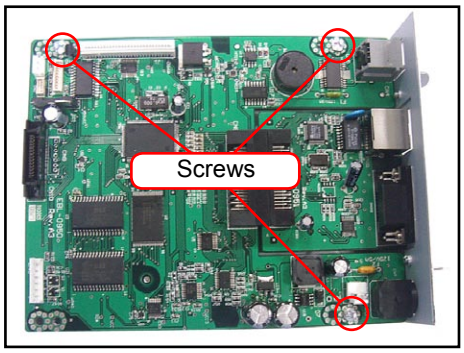



2. Remove five connectors (CN1, CN2, CN3, CN5, CN6) and the FFC (J1).

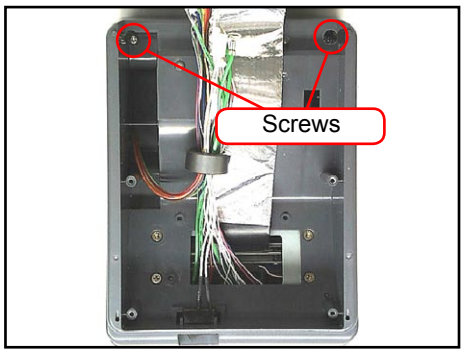



3. Remove three screws and then remove the main PCB.

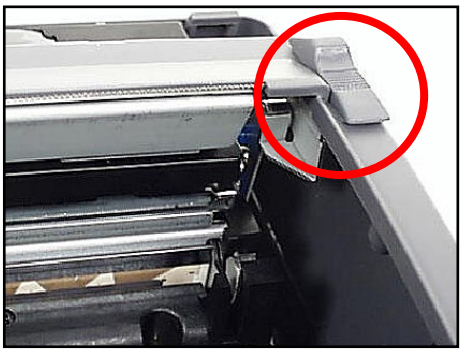


4. Remove two screws.
5. Remove the upper cover while the printer cover is open.

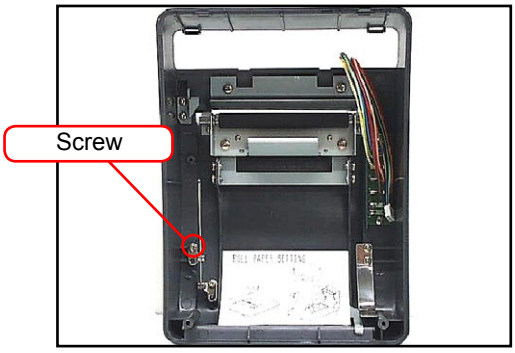



Precaution when assembling:
Let the connector through the hole.

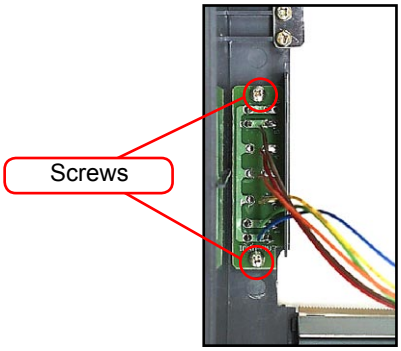
Precaution when assembling:
Slide the lever of the cover to “close” and then fit the upper cover into the printer.



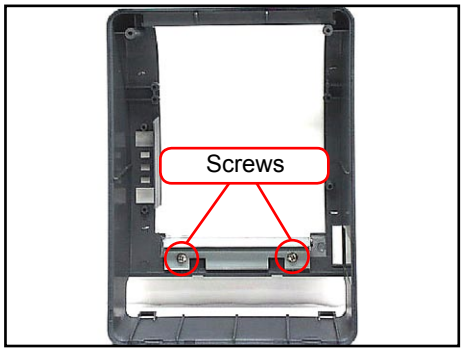
6. Remove the screw and then the printer cover.



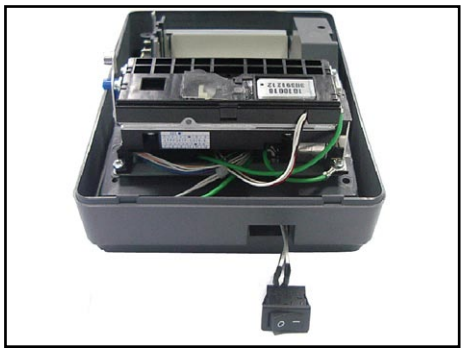

7. Remove two screws and then the control panel.



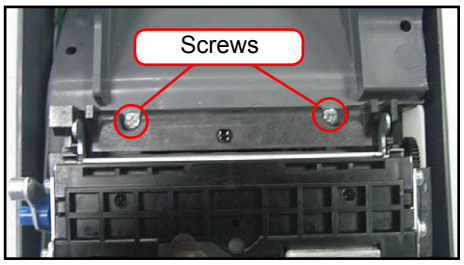
8. Remove the two screws and then the paper guide and the cutter.

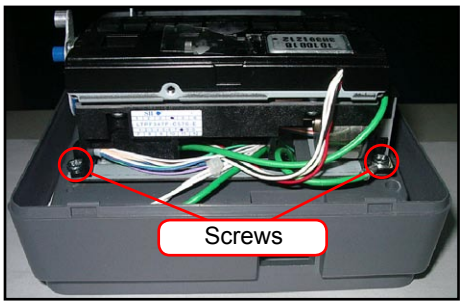



9. Remove the power switch.

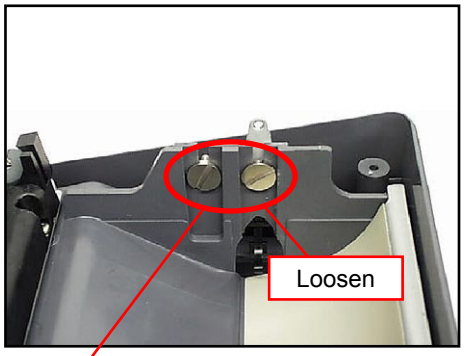


10. Remove the four screws and then the printer unit.



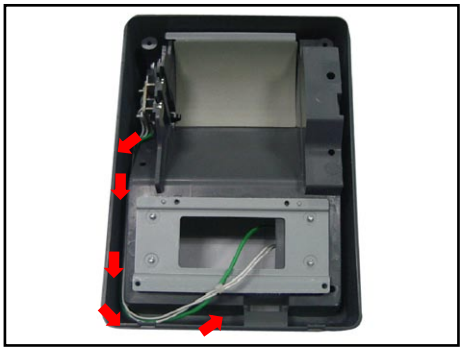




11. Loosen the two screws and then remove the end sensor unit.




Precaution when assembling
Fix the end sensor unit at the lowest of the groove.

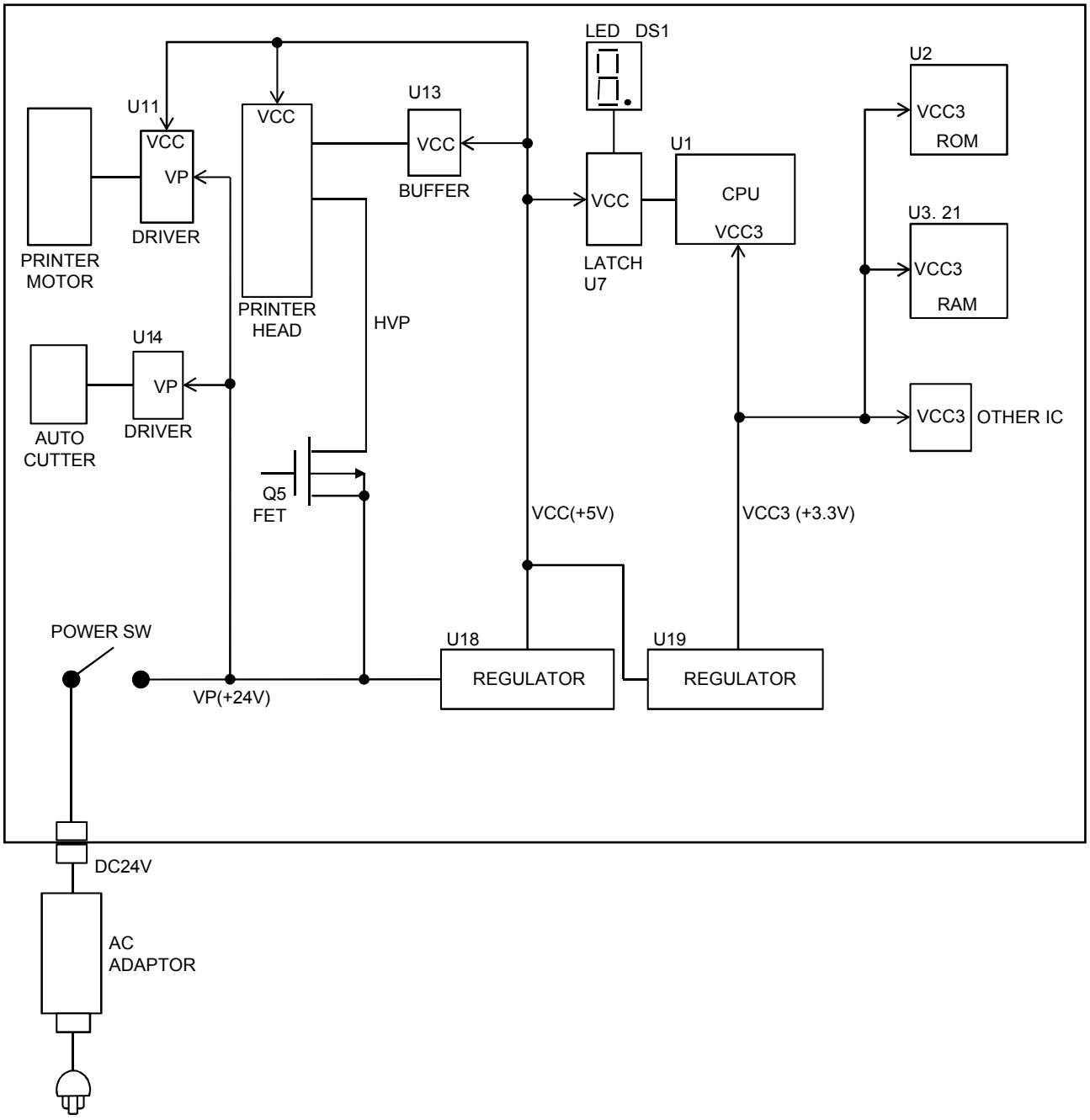
Precaution when assembling:



# 3. CIRCUITRY

## 3-1. POWER SUPPLY CIRCUIT

The power supply source is a DC 24V.

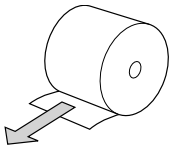


# 4. MAINTERNANCE & TROUBLESHOOTING

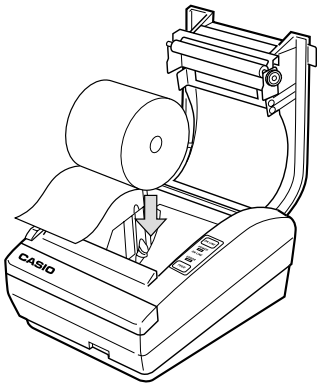
## 4-1. INSTALLING OR REPLACING PAPER ROLL

**CAUTION**: Make sure that paper rolls meets printer's specifi cation. Do not use paper rolls that have one end glued to the core. This causes excessive load on the paper feed.

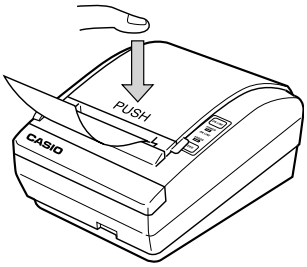
1: Make sure that the printer is not printing or receiving data, and open the printer cover by sliding the cover open knob. Unroll 10 to 15 cm of the paper as shown.



2: Insert the paper roll as shown.



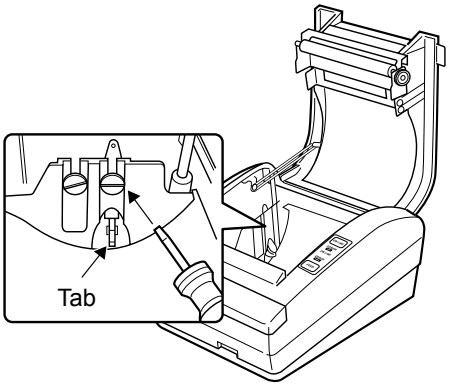

3: Pull out 10 to 15 cm of paper and close the printer cover as shown. Tear off the excess paper on the cutter edge.




## 4-2. ADJUSTING THE PAPER NEAR END SENSOR

A sensor detects when the paper roll is running out. Due to variation in the width of paper roll cores, it is diffi cult to measure the exact length of the paper left on the roll when the detector is triggered. The factory setting is based on a paper roll core with an outside diameter of 18 mm and an inside diameter of 12 mm. If you use a paper roll with different widths, adjust the setting as described below.

1: Open the printer cover and remove the paper roll.
2: Loosen the adjusting screw and move the tab to fit the core of the paper roll.
3: Tighten the adjusting screw.
4: Replace the paper roll and close the printer cover.



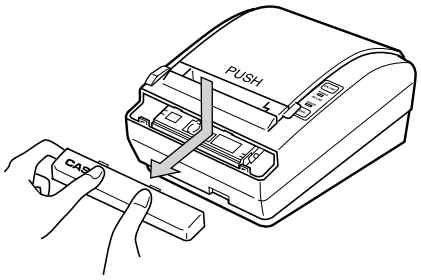
## 4-3. PAPER JAM

**CAUTION** : Do not touch the printer head because they are very hot after continuous printing. Do not attempt to clear a paper jam until the printer cools down.

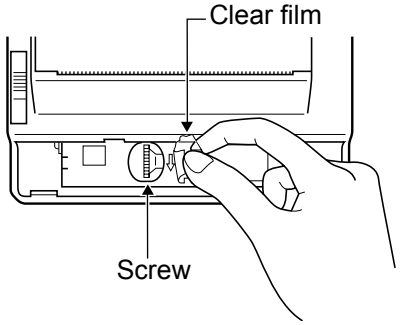
1: Turn the printer off and slide the cover open knob.
2: Remove the jammed paper and replace the paper roll.

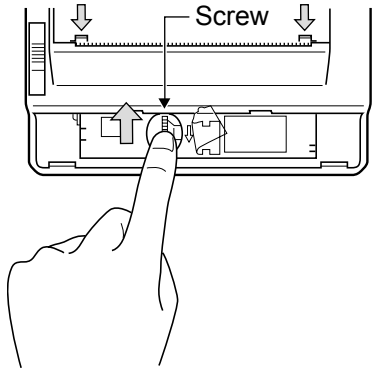
If the printer cover can't be opened after a paper jam, follow the procedure below.

1. Push down and slide to remove the Automatic Paper Cutter Cover.




2. Pull up the clear fi lm, and slowly turn the screw inside counter-clockwise until the cutter edge reaches home position.




3. Push down and slide to close the Automatic Paper Cutter Cover.
4. Now, the printer cover should open easily.
   Remove the paper jam and replace the paper roll.

## 4-4. TROUBLESHOOTING

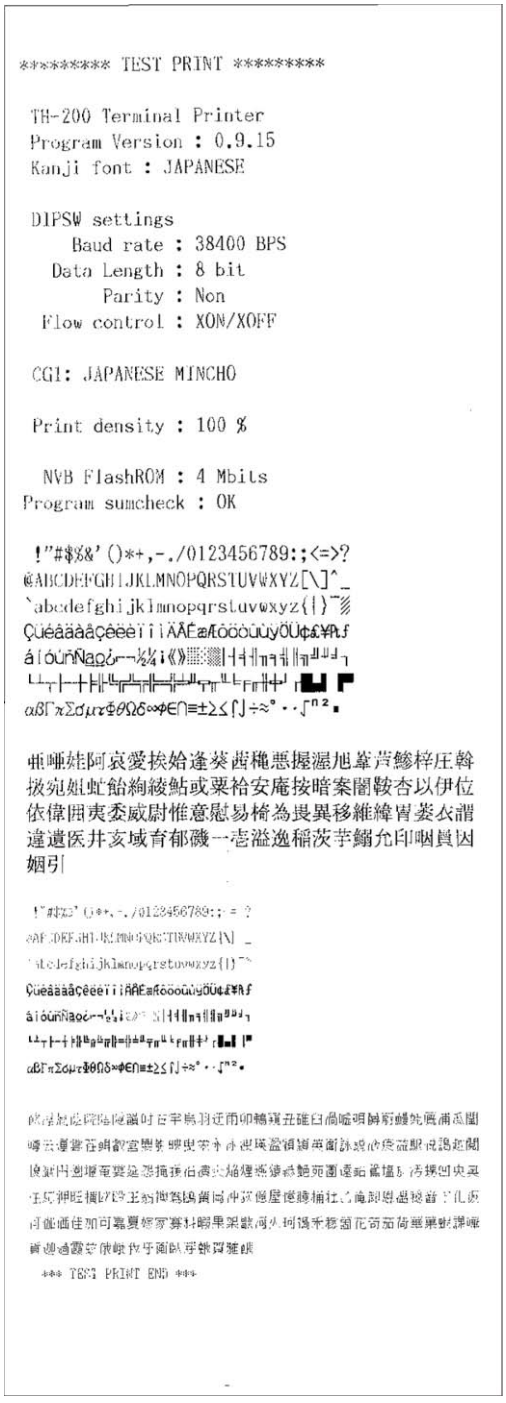
| Error Contents | Causes / Points to check | Solutions |
|---|---|---|
| Can't turn the printer ON | Is the power switch turned ON? | Turn the power switch ON |
| | Is the connector on the power adapter properly connected? | Connect the connector firmly |
| | Does the printer reset when you turn the power switch ON? | If it does, something is wrong with the operation Panel. |
| | Does the LED on the adapter light up when connected to the wall? | If it doesn't, check the connection of the Power Supply cord. If the connection is OK, something is wrong with the adapter. |
| | Other | Something may be wrong with the power switch parts or with the main board. |
| The ON LINE indicator doesn't light up | Is the ERROR Indicator ON? | If it is, see "the ERROR Indicator is ON" |
| | Press the ON LINE button | If the ON LINE Indicator turns on, it's normal |
| The ERROR Indicator is ON | Check if the printer is out of paper | If paper is out, replace with a new roll |
| | The cover doesn't open even if you slide the cover open knob | The Automatic Paper Cutter may be locked. 3.3, "Printer Jam" |
| | The printer cover doesn't close completely | Open the cover by sliding the cover open knob, and close it again by pushing at center of the cover. |
| The ERROR indicator doesn't light up while paper is exhausted (The Printer Cover is close) | The ON LINE Indicator lights up by using the ON LINE button | Something is wrong with the paper sensor of the main board inside the printer |
| | Other | Something is wrong with the operating panel |
| Can't print the self test | The ON LINE indicator is not ON | See "ON LINE Indicator doesn't light up |
| | Printing causes the paper to feed | Something is wrong internally or with the printer head. |
| Printing cannot be done by the commands from the HOST or printing garbled | Check print capability by running the Self-Test | If printing fails, see "Can't Print" |
| | Is the Connector of Interface firmly connected with screws? | Seat the connector firmly and tighten the screws |
| | Check the setting of DIP switch | Refer Appendix and set the switches correctly, then power cycle the printer |
| The drawer Kick doesn't work | Is the drawer kick connected properly? | Re-plug in the cable. You should hear or feel a click if the proper connection is made. |
| | Is Y-cable connected in reverse order? | Check the Y-cable and verify it is connected in the correct order. |
| | Other | Something may be wrong with the main board inside the printer. |
| The ERROR Indication and ON LINE Indication flash on and off alternately | Check the setting of DIP Switch | Refer to Appendix. Turn the printer off, make any necessary changes, then turn the printer on |

## 4-5. SELF TEST

Use the self test to check that your printer is operating properly. It checks the control circuits, printer mechanisms, print quality, and displays the firmware version and DIP switch settings.

1: Make sure that the printer cover is closed properly and turn the power off.
2: While holding down the FEED button, turn the printer on and continue holding down the FEED button until the self test starts.
3: The self test will end automatically and detach the self test print out.

Self Print (Japanese CG)




The number changes according to the version.
Confirm that the font is JAPANESE.

DIPSW setting appears differently if the setting at the factory default is different.

Board defect if "not found" appears.

Write defect if "OK" does not appear.

Printing quality is confirmed.
24 dot font ANK (one byte) characters
Page 1 <20> h ~ <FF>h

24 dot font Chinese characters
<30>h <21>h ~ 90 characters total

16 dot font ANK (one byte) characters
Page 1 <20>h ~ <FF>h

16 dot font Chinese characters
<30>h<7B>h ~ 176 characters total

Cut

# 5. SETTING & CHECKING THE DIP SWITCHES

## 5-1. Dip switch 1 setting

| No. | CONTENTS | STATUS | | STATUS | |
|---|---|---|---|---|---|
| 1 | Reset By Dtr Signals | Off | Invalid | On | Valid |
| 2 | Reserved | Off | Fixed to Off | | |
| 3 | Protocol | Off | XON/XOFF | On | DTR/DSR |
| 4<br>5 | Baud Rate | Refer to the table “a” below | | | |
| 6<br>7 | Parity | Refer to the table “b” below | | | |
| 8 | Busy status | Off | Buffer full | On | Buffer full + OFFLINE |
| 9 | Low power consumption mode* | Off | Off | On | On |
| 10 | 3 mm feed after auto cut | Off | Valid | On | Invalid |

*1 Printing speed is fi xed to 150 mm/sec. max. and power consumption to approx. 8 A max. (instantaneous value).

*2 In case of connecting by LAN, select “ON”.

### Table "a" Baud rate

| NO. | 4800 bps | 9600 bps | 19200 bps | 38400 bps |
|---|---|---|---|---|
| 4 | off | off | on | on |
| 5 | off | on | off | on |

### Table "b" Parity

| NO. | NON | EVEN | ODD | NON |
|---|---|---|---|---|
| 6 | off | off | on | on |
| 7 | off | on | off | on |

## 5-2. Dip switch 2 setting

| No. | CONTENTS | STATUS | | STATUS | |
|---|---|---|---|---|---|
| 1 | Data reception error | Off | Print “?” | On | Ignore |
| 2 | Bit length | Off | 8 bit | On | 7 bit |
| 3 | Reception buffer full | Off | *1 | On | *2 |
| 4 | Set ID/ set IP | Off | Set ID | On | Set IP |
| 5 | Use DHCP server | Off | Disable | On | Enable |
| 6 | Set default value | Off | | On | Set default value |
| 7 | Undefi ned | Off | / | On | / |
| 8 | Undefi ned | Off | / | On | / |

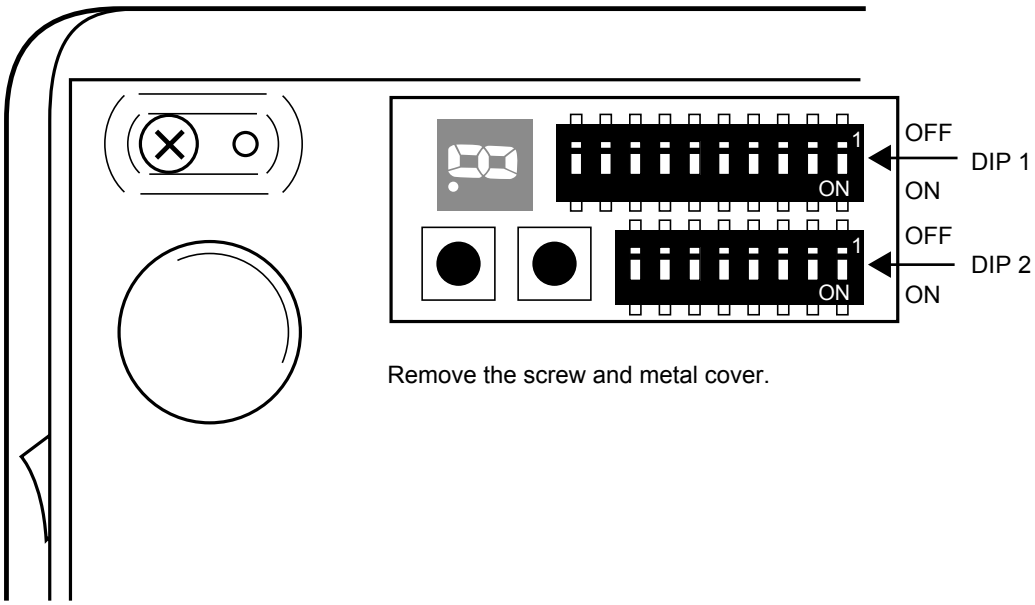
*1 Until the room of the reception buffer increases from 1k bytes to 2k bytes

*2 Until the non-processing data in the reception buffer decreases from 31 bytes to 21 bytes

For changing DIP switch setting

1: Make sure that Power of the printer is turned off.
2: Loose the screw and remove the metal plate at the bottom of the printer.
3: Change the status of DIP switch by using something with a point.
4: Replace the metal cover and fasten the screw.

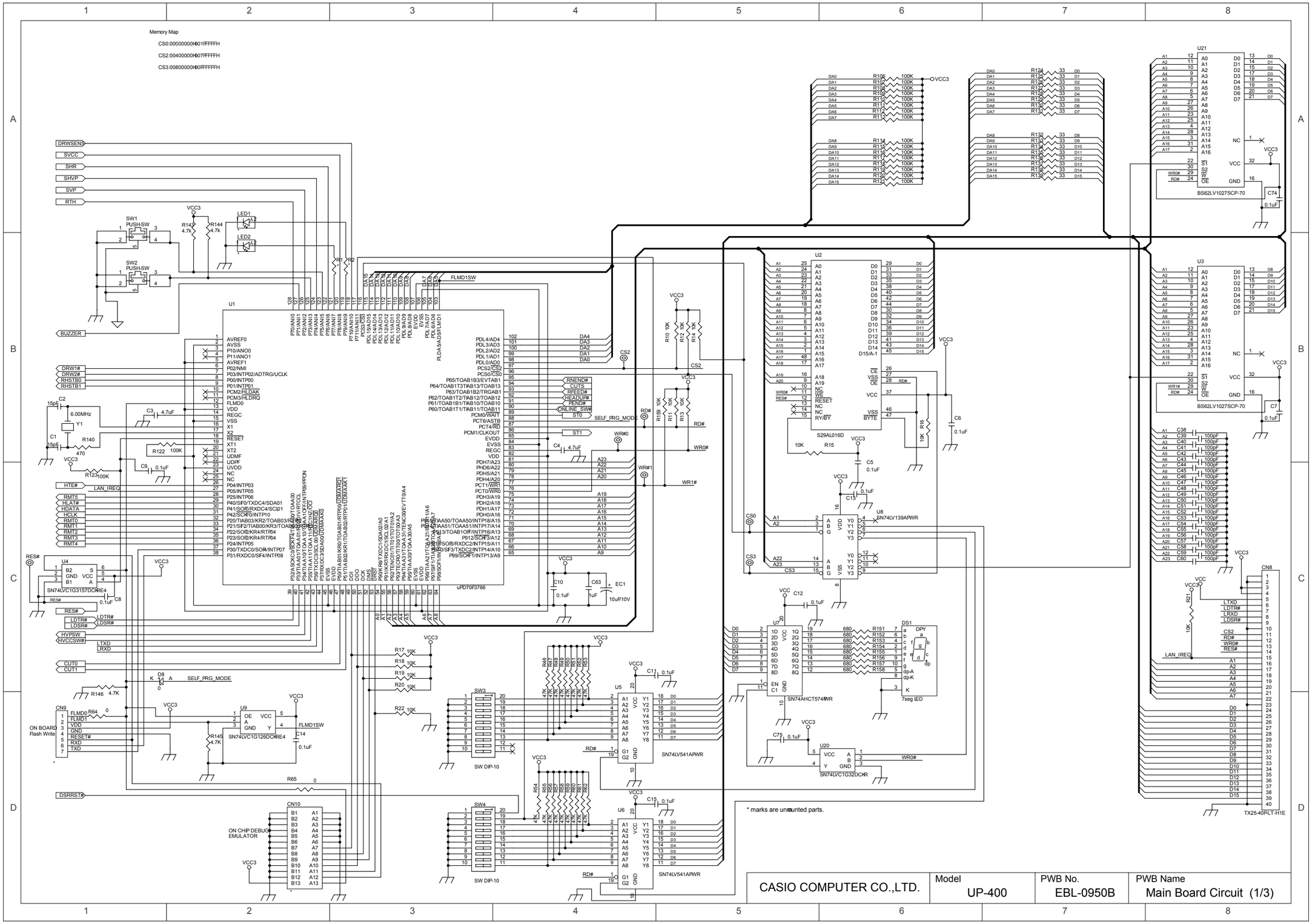
**DIP SWITCH POSITION**

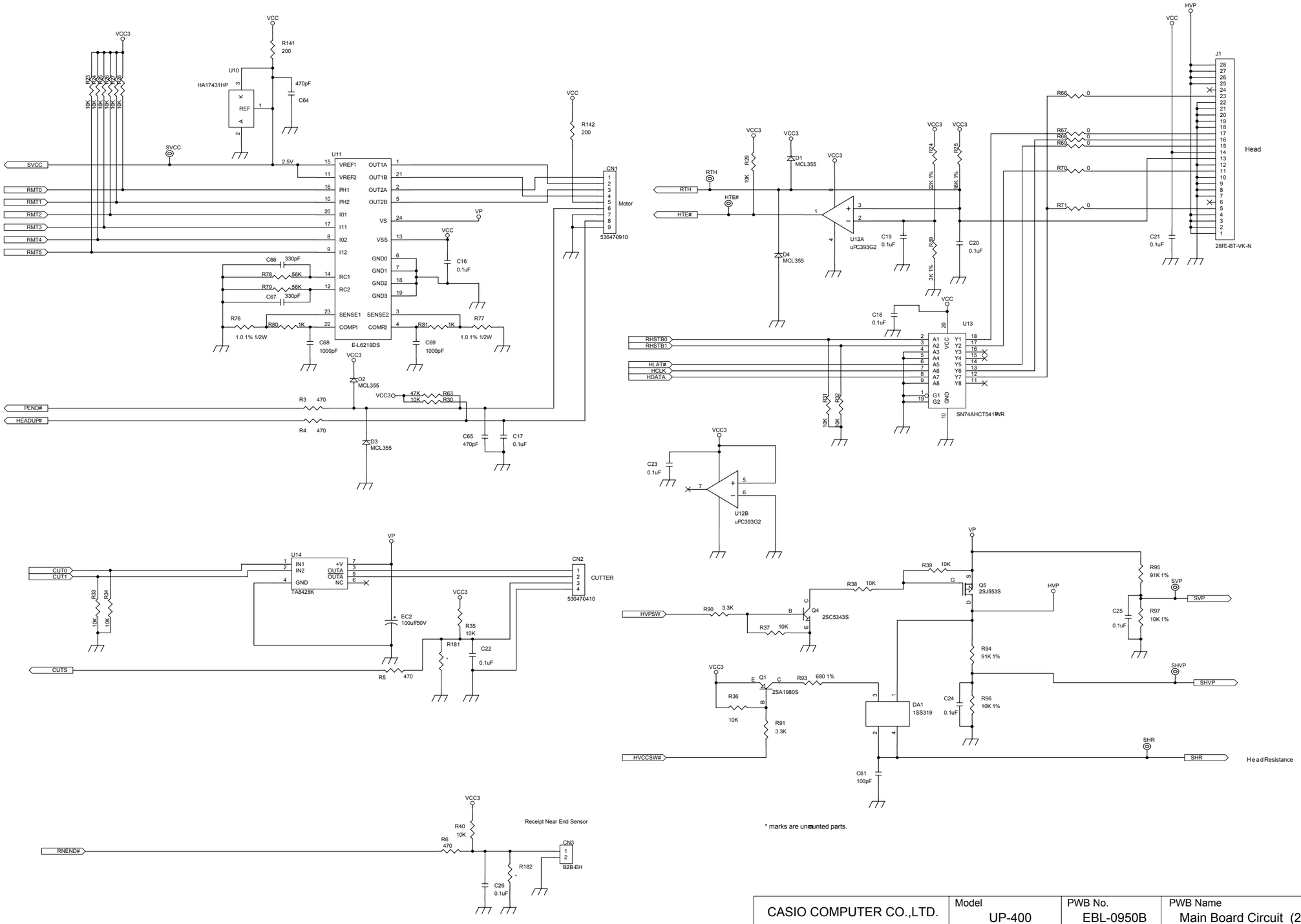



Remove the screw and metal cover.

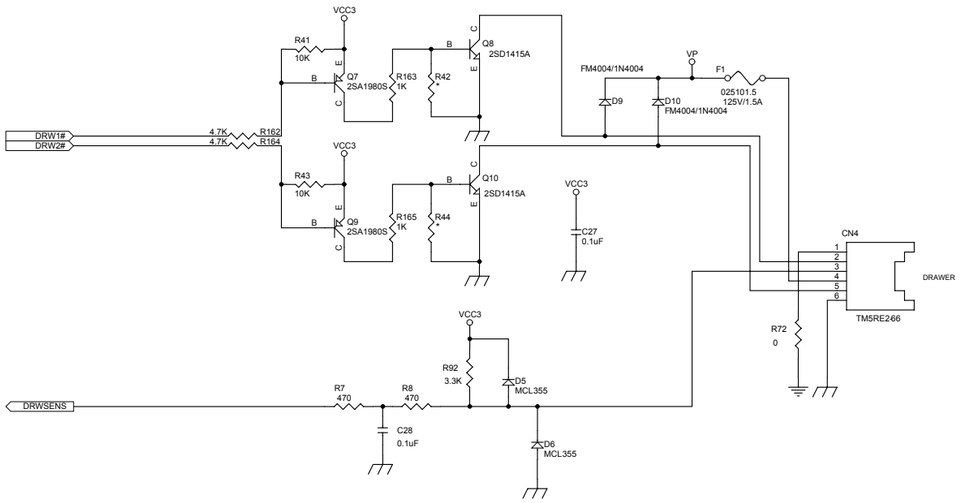
**CAUTION: The new status becomes effective when the printer power is turned on.**

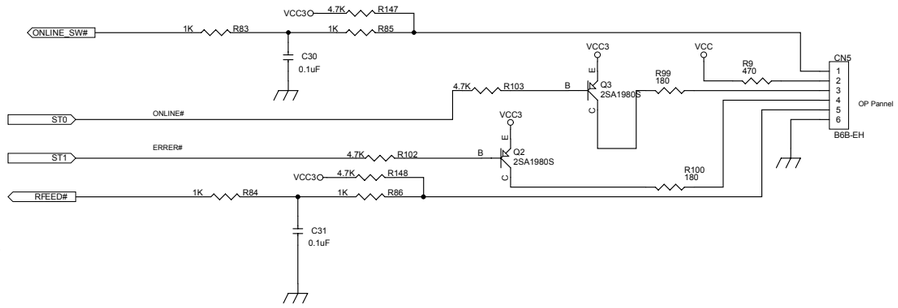
# 6. CIRCUIT DIAGRAMS

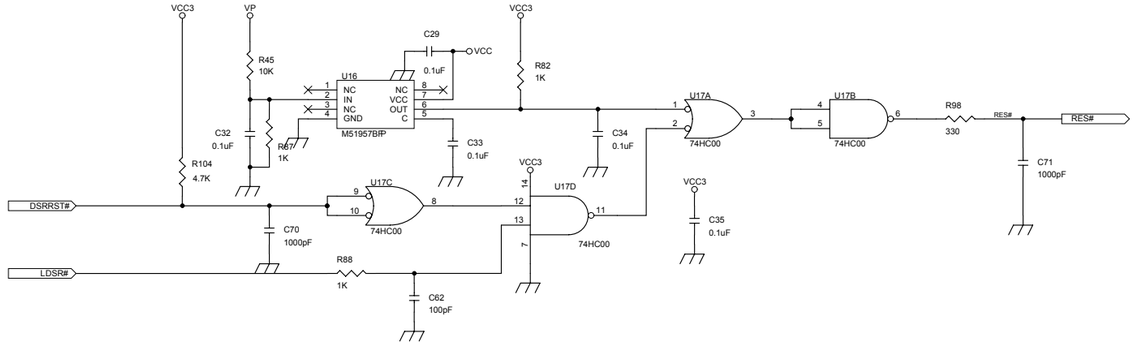


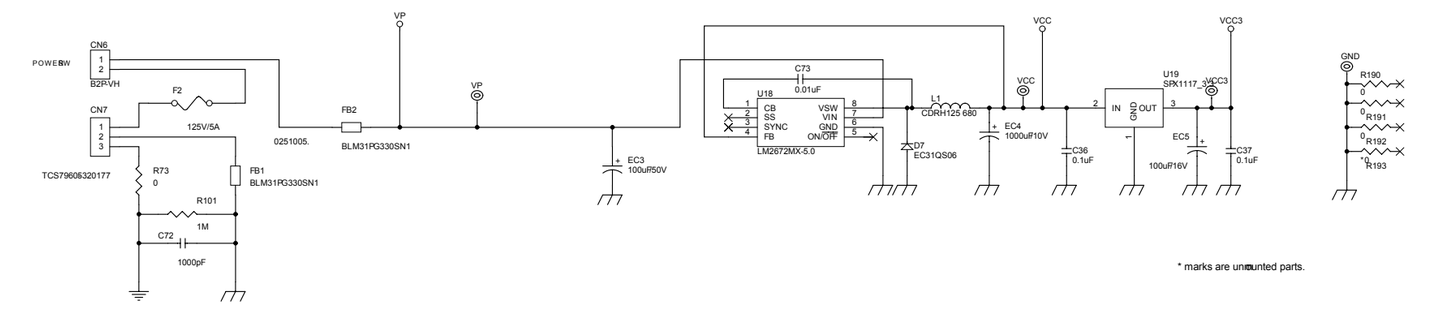


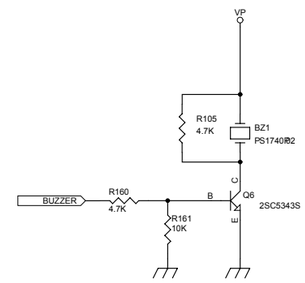

| CASIO COMPUTER CO.,LTD. | Model | PWB No. | PWB Name |
|---|---|---|---|
| | UP-400 | EBL-0950B | Main Board Circuit (2/3) |



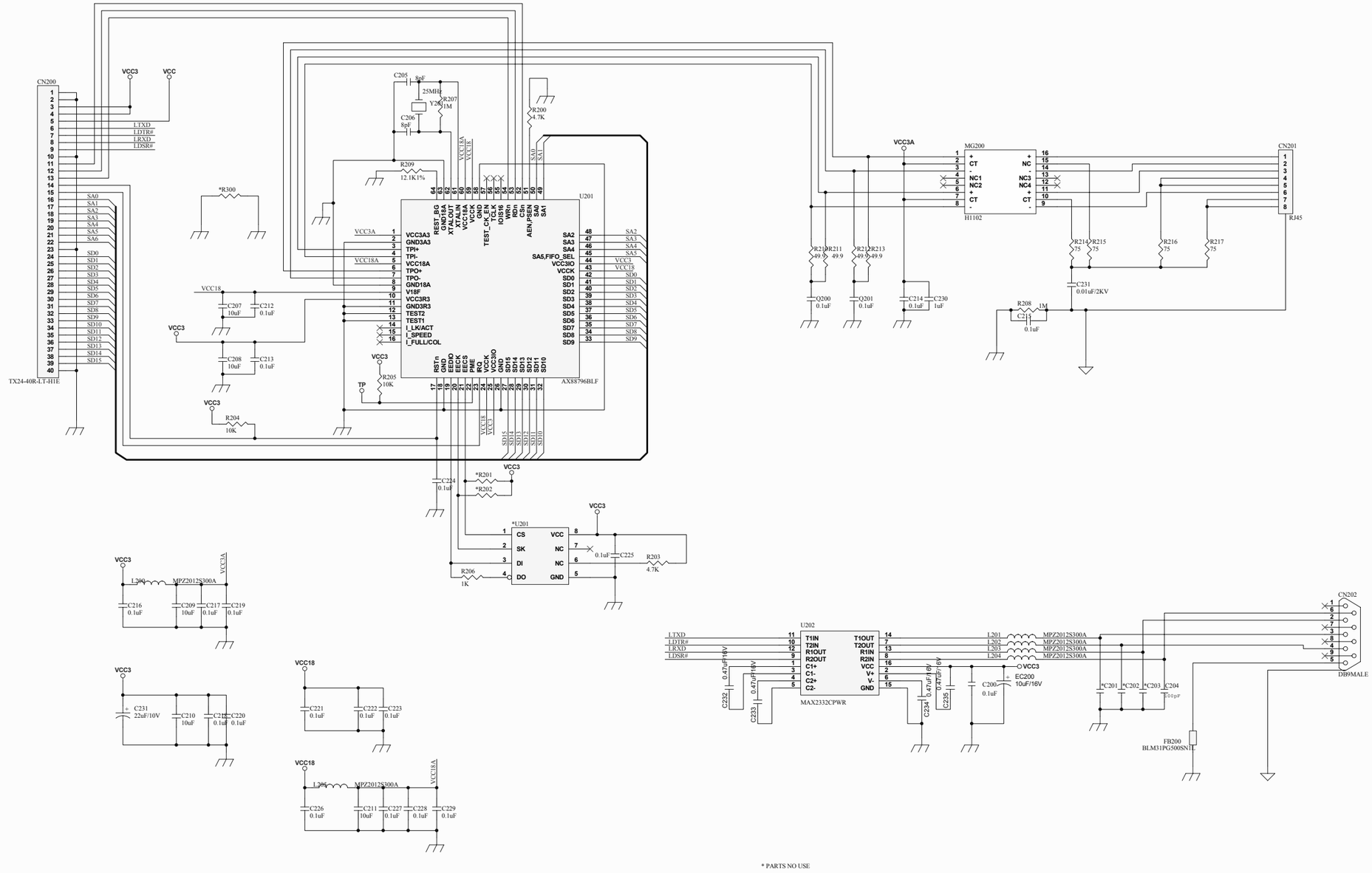




* marks are unmounted parts.

| CASIO COMPUTER CO.,LTD. | Model | PWB No. | PWB Name |
|---|---|---|---|
| | UP-400 | EBL-0950B | Main Board Circuit (3/3) |




| CASIO COMPUTER CO.,LTD. | Model | PWB No. | PWB Name |
|---|---|---|---|
| | UP-400 | EAL-0951 | Sub(LAN) Board Circuit |

## 7. PARTS LIST

# PARTS LIST

## MODEL : UP-400

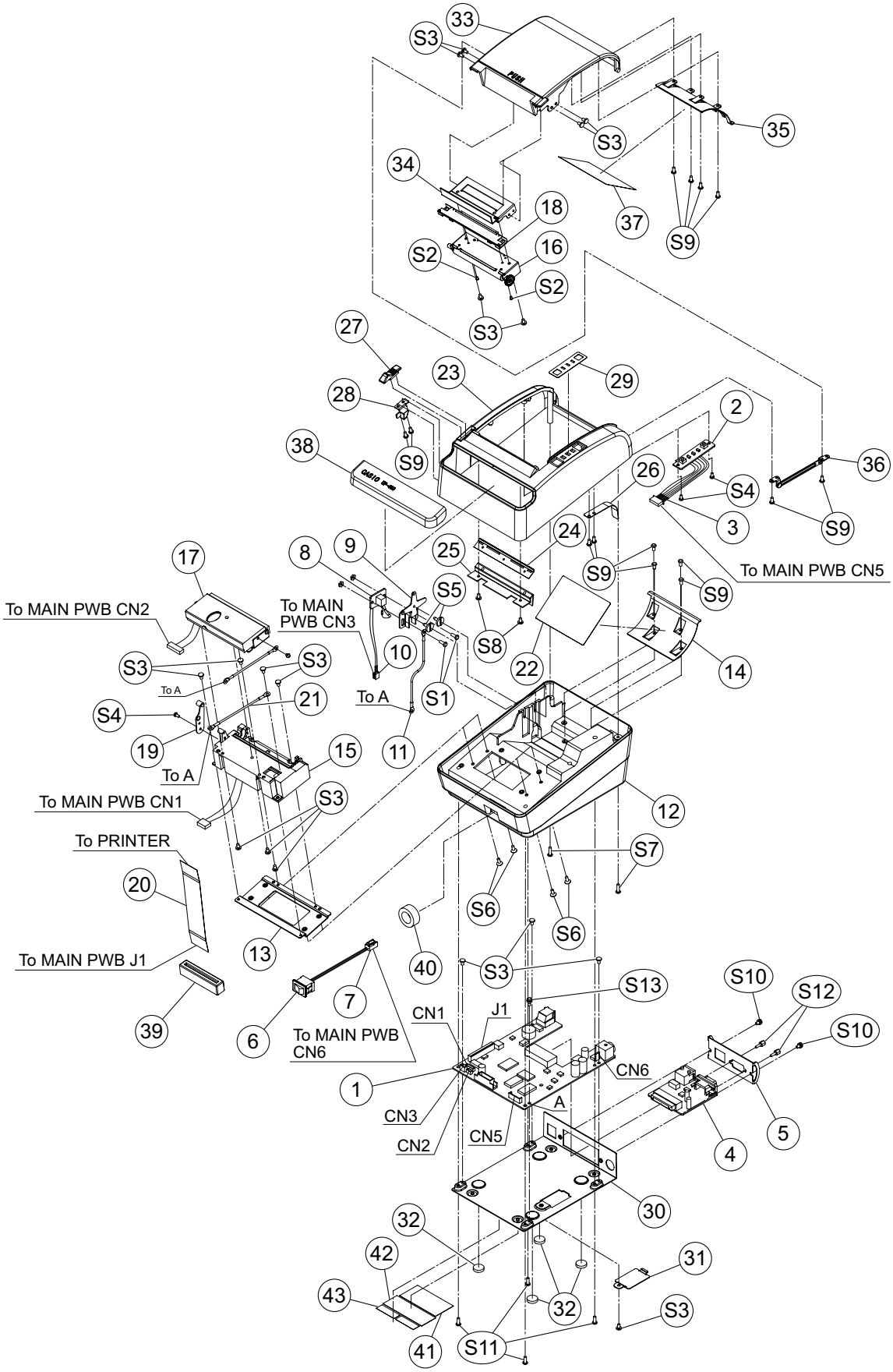
CONTENTS



NOTES :

1. Price and specifications are subject to change withput prior notice.
2. As for spare parts order and supply, refer to the “GUIDEBOOK for Spare Parts Supply”, published separately.
3. The numbers in item column corespond to the same numbers in drawing.
4. CASIO does not supply the spare parts without parts code.
5. Remarks

   Q'ty : Quantity used per unit
   RANK: A = Essential
   B = Stock recommended
   C = Less recommended
   X = No stock recommended


33
S3
35
34
18
37
S9
16
S2
S2
S3
27
23
29
28
2
S9
38
26
36
S4
3
S9
24
S9
To MAIN PWB CN5
17
8
9
25
S5
S9
To MAIN PWB CN2
To MAIN PWB CN3
S8
22
14
S3
S3
10
S1
To A
To A
21
S4
19
15
11
To A
12
To MAIN PWB CN1
S3
To PRINTER
S7
20
S6
S6
13
40
S3
S13
S10
S12
To MAIN PWB J1
39
7
CN1
J1
S10
6
To MAIN PWB CN6
1
CN6
A
CN3
CN5
CN2
4
5
30
32
42
31
43
32
S3
41
S11

| N | Item | Code No. | Parts Name | Specification | Q'ty | Price Code | Rank |
|---|---|---|---|---|---|---|---|
| | **1. MAIN BOARD UNIT** | | | | | | |
| | **1** | 10328145 | PWB/MAIN | 20-010667-01 | 1 | EE | A |
| | **2. CONTROL PANEL UNIT** | | | | | | |
| | **2** | 10328146 | ASSY/CONTROL PANEL | 20-080050-05 | 1 | BA | A |
| | **3** | | ASSY/HARNESS | 03-47411126LF | 1 | | |
| | **3. I/F LAN PWB UNIT** | | | | | | |
| | **4** | 10328147 | LAN BOARD UNIT | 20-010669-01 | 1 | DF | A |
| | **5** | | PLATE/LAN | 03-45430600LF | 1 | | |
| | **4. POWER SW ASSY** | | | | | | |
| | **6** | 10328148 | ASSY/POWER SW | 20-090008-13 | 1 | AX | A |
| | **7** | | ASSY/HARNESS | 03-47421014LF | 1 | | |
| | **5. NEAR END SENSOR UNIT** | | | | | | |
| | **8** | 10328149 | NEAR END SENSOR UNIT | 20-120056-03 | 1 | BL | A |
| | **9** | | PLATE/NE | 03-10101370LF | 1 | | |
| | **10** | | ASSY/HARNESS | 03-47405350LF | 1 | | |
| | **11** | | ASSY/HARNESS | 03-47410900LF | 1 | | |
| | | | NUT | 03-55200010LF | 2 | | |
| | **6. CASE UNIT** | | | | | | |
| | **12** | 10328951 | CASE/BOTTOM | 03-24490300BLF | 1 | BQ | C |
| | **13** | | CHASSIS/PRINTER | 03-42100060BLF | 1 | | |
| | **14** | | PLATE/SUPPORT | 03-41501400CLF | 1 | | |
| | **15,16** | 10328151 | PRINTER | 00-24791155LF | 1 | DS | A |
| | **17,18** | 10328157 | AUTO CUTTER | 00-24791270LF | 1 | DD | A |
| | **19** | | LEVER | 03-45300870LF | 1 | | |
| | **20** | 10328158 | F.F.C | 00-62200555LF | 1 | AR | C |
| | **21** | | ASSY/HARNESS | 03-47410550LF | 2 | | |
| | **22** | | SHEET/PVC | 03-13170200BLF | 1 | | |
| | **23** | 10328152 | CASE/TOP | 03-24190898BLF | 1 | BB | C |
| | **24** | 10328153 | PAPER CUTTER | 01-24301030LF | 1 | AE | A |
| | **25** | 10328154 | PAPER GUIDE | 03-46001130CLF | 1 | AO | C |
| | **26** | | SPRING | 03-10400410BLF | 1 | | |
| | **27** | 10328155 | KNOB | 03-10602129LF | 1 | AC | C |
| | **28** | | HOOK ARM | 03-41502450CLF | 1 | | |
| | **29** | | LABEL/CONTROL SW | 00-31113740LF | 1 | | |
| | **30** | | PLATE/BOTTOM | 03-10170500LF | 1 | | |
| | **31** | | COVER/DIP SW | 03-24290500LF | 1 | | |
| | **32** | | RUBBER/FOOT | 03-25800870LF | 4 | | |
| | **33** | 10328156 | COVER/PRINTER | 03-24281219LLF | 1 | AY | C |
| | **34** | 10328159 | SET PIECE'(PLATEN) | 03-46505300BLF | 1 | AV | C |
| | **35** | | PLATE/UP | 03-10105570DLF | 1 | | |
| | **36** | | ASSY/STOPPER | 03-49000200LF | 1 | | |
| | **37** | | LABEL/RP SETTING | 03-31110806LF | 1 | | |
| | **38** | | CASE/SUB TOP | 03-24190901BLF* | 1 | | |
| | **39** | | FERRITE CORE | 00-21001100LF | 1 | | |
| | **40** | | CORE | 02-40300521LF | 1 | | |
| | **41** | | LABEL/FCC | 03-31104520LF | 1 | | |
| | **42** | | LABEL/RATING | 03-32170700LF | 1 | | |
| | **43** | | LABEL | 03-31100997LF | 2 | | |

| N | Item | Code No. | Parts Name | Specification | Q'ty | Price Code | Rank |
|---|---|---|---|---|---|---|---|
| | **S1** | | SCREW | 03-55100128LF | 2 | | |
| | **S2** | | SCREW | 03-55100010LF | 2 | | |
| | **S3** | | SCREW | 03-55191250LF | 17 | | |
| | **S4** | | SCREW | 03-55190710LF | 3 | | |
| | **S5** | | SCREW | 03-55101260BLF | 2 | | |
| | **S6** | | SCREW | 03-55104020LF | 4 | | |
| | **S7** | | SCREW | 03-55100440LF | 2 | | |
| | **S8** | | SCREW | 03-55180045LF | 2 | | |
| | **S9** | | SCREW | 03-55100420LF | 14 | | |
| | **S10** | | SCREW | 03-55100121LF | 2 | | |
| | **S11** | | SCREW | 03-55100430LF | 4 | | |
| | **S12** | | SCREW | | 2 | | |
| | **S13** | | SCREW | 03-55100150LF | 1 | | |
| | | 10328160 | ADAPTOR | 02-22620150LF | 1 | DK | A |

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