



# ***Service Manual***

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**LINE THERMAL PRINTER  
MODEL CT-S4000**

Rev. 1.00 Issued on Junel 5, 2007

**CITIZEN SYSTEMS JAPAN CO.,LTD.**

## REVISION

Rev.	Date	Comment
0.00	2007/6/5	Newly issued

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## INTRODUCTION

This manual describes the disassembly, reassembly, and maintenance procedures of the line thermal printer CT-S4000.

### 1. DISASSEMBLY AND REASSEMBLY

Notes the following items when maintaining the printer.

- Do not disassemble, reassemble, or adjust the printer unnecessarily when the printer operation is satisfactory.
- Do not loosen the screws fixing each component carelessly.
- After finishing inspection, perform checking for normality before turning on the printer.
- Pay attention not to leave the part or screws used for maintenance inside the printer.
- When handling the print head and electronic components, pay attention to static electricity.
- When disassembling or reassembling the printer, check the wiring and cord for damage. Pay attention not to lay the wiring and cord by force.
- Lubricate the components as necessary when reassembling them.

#### 1.1 Tools Used

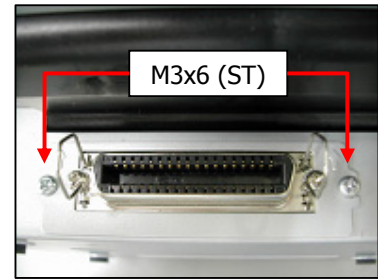
- Phillips screwdriver #0, #1, and #2
- Tweezers
- Long-nose pliers
- Oil brush
- Nipper

## 1.2 Disassembly Procedure

### 1.2.1 Disassembly of Unit

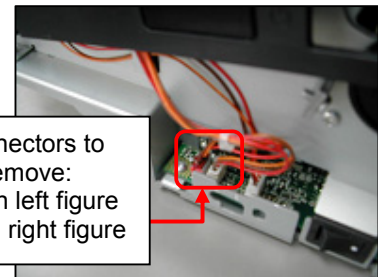
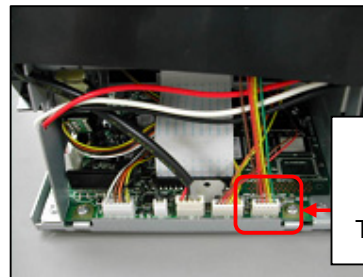
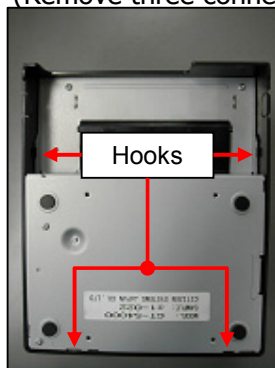
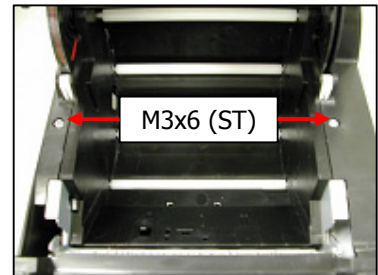
#### 1. Removing SA IF PCB

- Remove two M3x6(ST) screws.
- Remove SA IF PCB.  
(When reassembling, insert the connector correctly.)



#### 2. Removing CASE

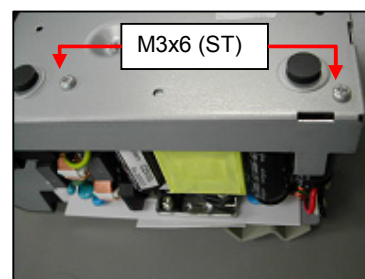
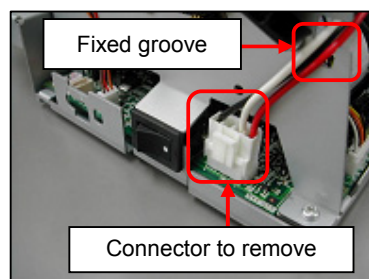
- Open COVER and remove two M3x6(ST) screws.
- Remove FRAME, BOTTOM from the two hooks on the front of CASE bottom, remove FRAME, BOTTOM from two hooks on the right and left of the CASE, and lift CASE for removal.  
(Remove three connectors while lifting CASE.)



Connectors to remove:  
One in left figure  
Two in right figure

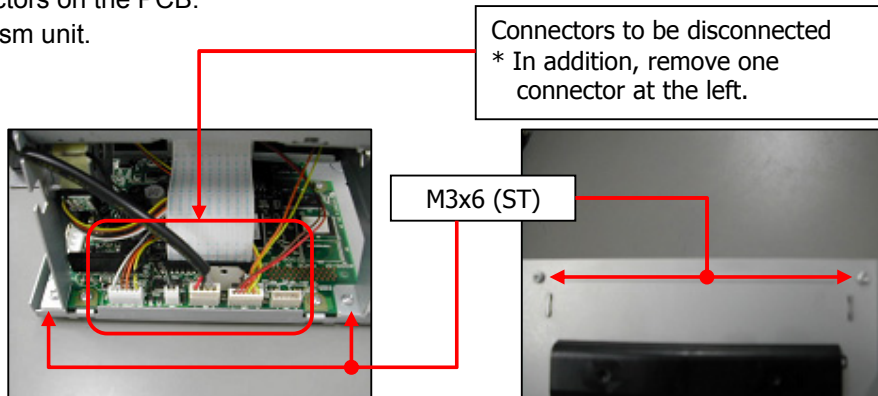
#### 3. Removing Power Unit

- Remove the connector on UNIT MAIN PWB and remove cable from the fixed groove.
- Remove the two M3x6(ST) screws from the bottom and remove the power unit.



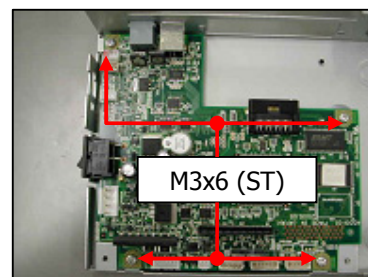
#### 4. Removing Mechanism Unit

- Remove four M3x6(ST) screws. (2 places in the front and 2 places in the rear bottom)
- Disconnect all connectors on the PCB.
- Remove the mechanism unit.



#### 5. Removing UNIT, MAIN PCB

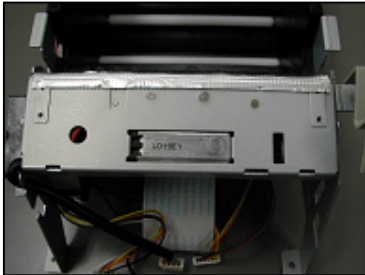
- Remove four M3x6(ST) screws.
- Detach the power switch from the switch guide of FRAME, BOTTOM and then remove UNIT, MAIN PCB.



## 1.2.2 Disassembling Mechanism Unit

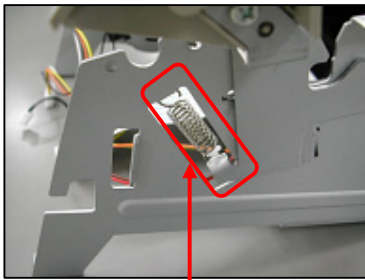
### 1. Removing UNIT, AUT CUTTER

- Remove two M3x6(ST) screws from both sides.
- Broaden FRAME, MAIN a little and remove UNIT, AUT CUTTER.
- \* Be sure not to add deformation to FRAME, MAIN by broadening excessively.

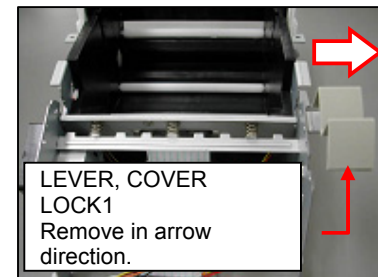
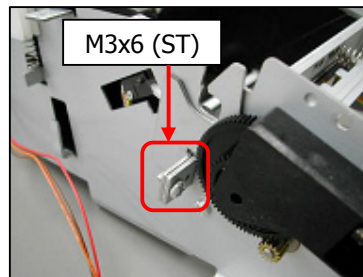


### 2. Removing LEVER, COVER LOCK2

- Remove SPRING, COVER LOCK LEVER from LEVER, COVER LOCK1.
- Remove one M3x6(ST) screw.
- From FRAME, MAIN remove LEVER, COVER LOCK1.



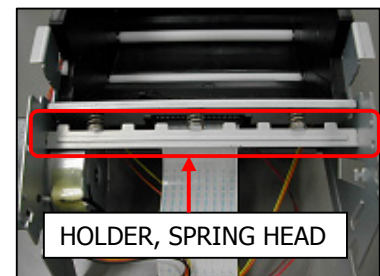
SPRING, COVER LOCK LEVER



LEVER, COVER LOCK1  
Remove in arrow direction.

### 3. Removing HOLDER, SPRING HEAD

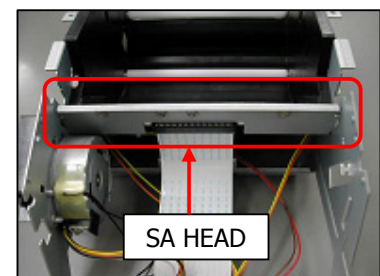
- Broaden FRAME, MAIN a little and remove HOLDER, SPRING HEAD.
- \* Be careful not to add excessive deformation to FRAME, MAIN.
- \* Be sure not to have SPRING, HEAD lost in removal.



HOLDER, SPRING HEAD

### 4. Removing SA HEAD

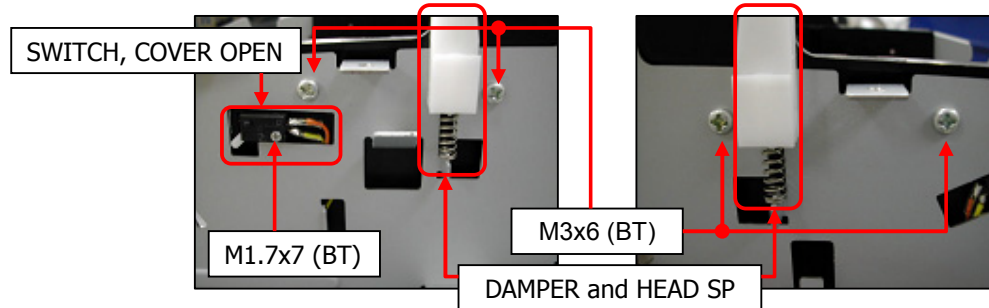
- Broaden FRAME, MAIN a little and remove SA HEAD.
- \* Be careful not to add excessive deformation to FRAME, MAIN.



SA HEAD

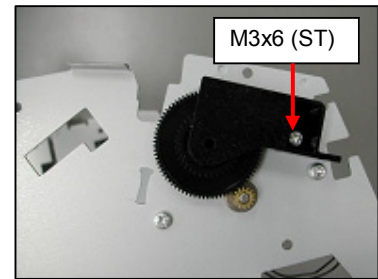
### 5. Removing HOLDER, PAPER

- Remove one M1.7x7(BT) screw holding SWITCH, COVER OPEN of HOLDER, PAPER in the right.
- Remove four M3x6(BT) screws from both sides.
- Broaden FRAME, MAIN a little and remove HOLDER, PAPER.
- \* Be careful not to add excessive deformation to FRAME, MAIN.
- \* Be sure not to have DAMPER and HEAD SP lost when removing HOLDER, PAPER.



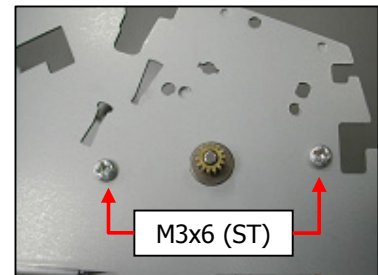
### 6. Removing HOLDER, GEAR

- Remove one M3x6(ST) screw.
- Remove HOLDER, GEAR and GEAR, REDUCTION.



### 7. Removing SA MOTOR

- Remove two M3x6(ST) screws and detach SA MOTOR.

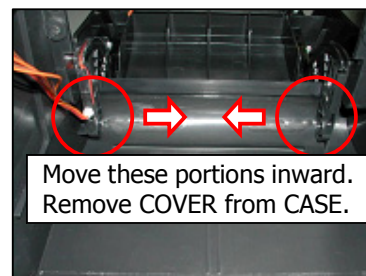




### 1.2.3 Disassembling COVER

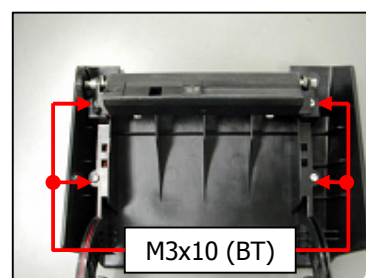
#### 1. Removing COVER

- Remove COVER from CASE.



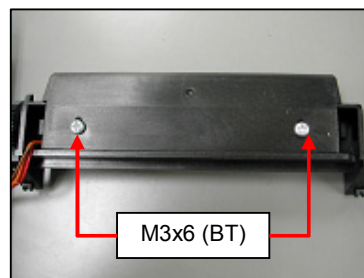
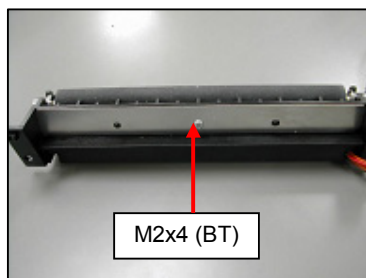
#### 2. Removing CABLE, HOLDER and HOLDER, PLATEN

- Remove four M3x10(BT) screws and detach CABLE, HOLDER1, 2 and HOLDER, PLATEN.



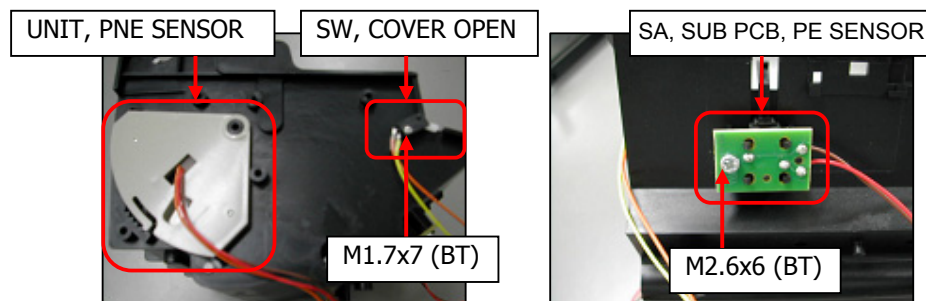
### 1.2.4 Disassembling SA PLATEN

1. Remove M2x4 (BT) screw and detach BLADE, FIXED.
2. Remove two M3x6 (BT) screws of COVER, SENSOR.



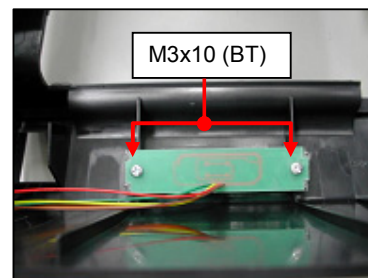
### 1.2.5 Disassembling HOLDER, PAPER

1. Remove UNIT, PNE SENSOR.
2. Remove M1.7x7 (BT) screw and detach SW, COVER OPEN.
3. Remove M2.6x6 (BT) screw and detach SA, SUB PCB, PE SENSOR.
4. Remove SHAFT, PAPER ROLLER (4 pieces)



### 1.2.6 Disassembling OPE-PANE

1. Remove two M3x10(BT) screws and detach SA, PCB, OPE-PANE from CASE.
2. Remove CONDUCTOR, LED.



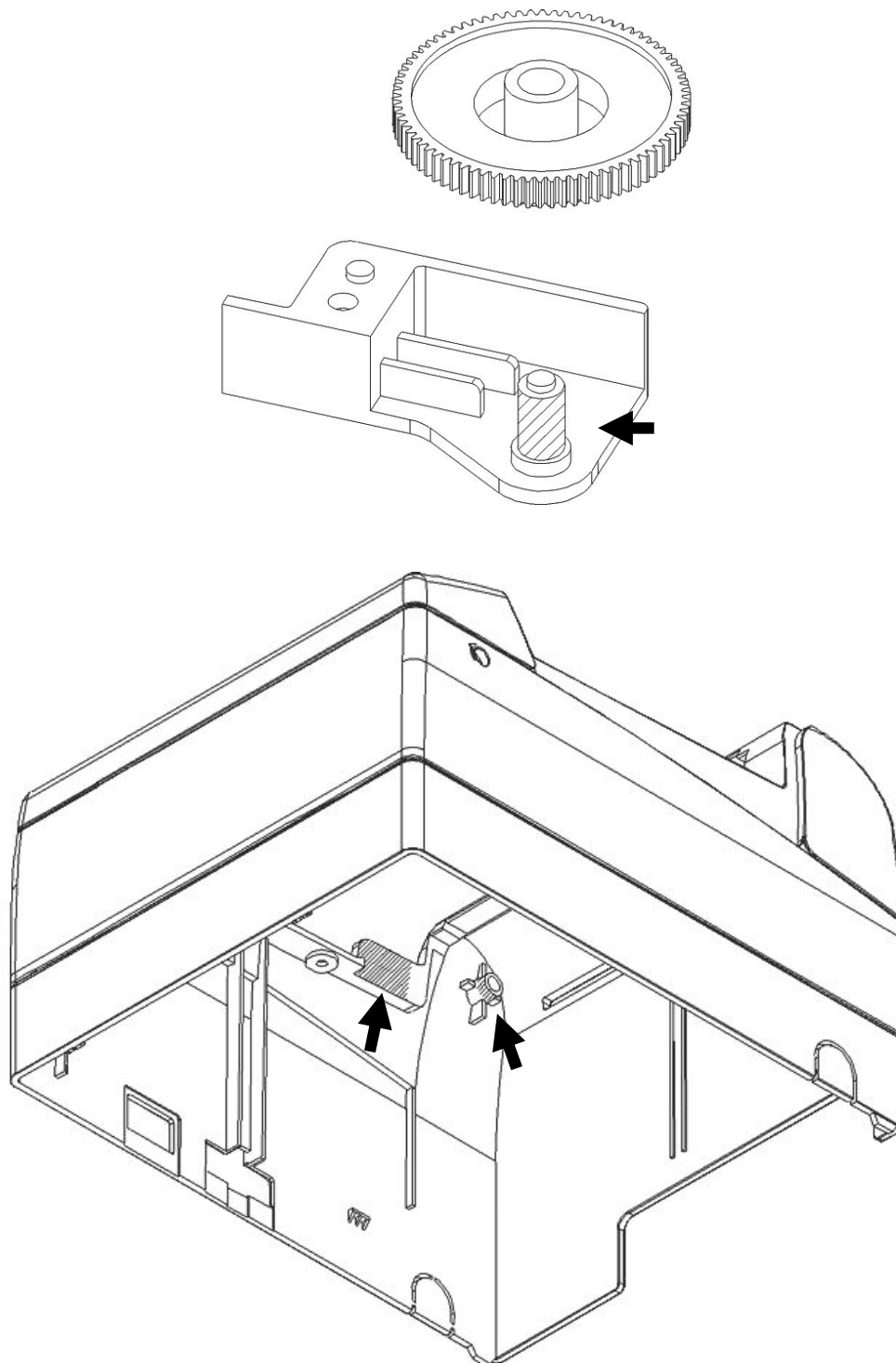
## 1.3 Reassembly Procedure

Reverse the procedure in "1.2 Disassembly Procedure".

## 1.4 Lubrication

(1) Oil (Grease)  
Furoyll G-943 (Kanto Kasei Co., Ltd.)

(2) Lubrication points

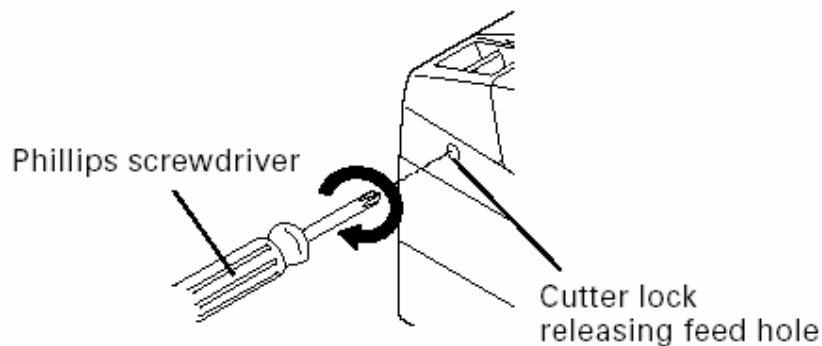


## 2. TROUBLESHOOTING

### 2.1 Error Indication

- Paper end  
Paper out is detected in two steps: paper near-end and paper end. ERROR LED will light when the paper is empty. If paper end is detected, refill the paper. If the printer cover is open, a paper-end is detected.
- Printer cover open  
During printing, do not open the printer cover. If you open the printer cover accidentally, the ERROR LED blinks. Check the paper, pull the paper straightforward several cm (or inches) out of the printer, and then close the printer cover. Printing resumes automatically. Sending a command to resume printing may be required depending on the memory switch setting.
- Thermal head overheat  
When you print dense characters or dark image, the head temperature rises. If the head temperature exceeds a specified level, the printer stops printing operation and waits till the head temperature is lowered. During waiting, the ERROR LED blinks. When the head temperature is lowered, printing resumes automatically.
- Cutter lock  
If the cutter blade stops operating due to paper jam or the like, the ERROR LED blinks. Remove the cause of the trouble and press the FEED button. If the blade still does not move and the printer cover cannot be opened. In this case, do not open the paper cover forcibly. Insert a Phillips screwdriver (size #1) into the cutter lock releasing feed hole and turn it in the direction of arrow (clockwise).














When you find that both ends of the blade reached the lowest position, stop turning the screwdriver. Open the cover and follow the procedure of removing jam or other cause of trouble.



- Black Mark detection error (in Black Mark mode)

When Black Mark cannot be detected even if a certain amount of paper feed is carried out for Black mark detection, a Black Mark detection error occurs. If black detection continues more than the specified period, a No Paper condition is assumed and the same error as No Paper is indicated.

Lighting and blinking status of each error including the above is shown below.

Status	POWER LED	ERROR LED	Buzzer
Paper-end	Lights	Lights	
Paper near-end	Lights	Lights	—
Printer cover open	Lights	Lights	—
Printer cover open error *1	Lights		
Cutter lock error	Lights		
Head overheat error	Lights		—
Paper jam error	Lights		—
Memory check error		Lights	—
Low voltage error	Lights		—
High voltage error	Lights		—
Macro execution wait *2	Lights		—
Black Mark detection error	Lights		

\*1: When the printer is printing.

\*2: The ERROR LED may blink even in the execution of macro function.

Caution: In many cases, “Low voltage error” is caused by blown F2 fuse. Please check the conduction of F2 fuse.

## 2.2 Troubleshooting Procedure

When a trouble occurs, confirm its phenomenon, locate a defective part in accordance with “2.2 Troubleshooting Guide”, and troubleshoot as described below.

<b>Phenomenon</b>	Find a trouble phenomenon in this column. If there are multiple phenomena, take all the corresponding items into consideration to locate hidden defective parts.
<b>Cause</b>	Lists as many possible causes as possible. Guess a trouble cause out of them and take its check method to specify the trouble cause.
<b>Check Method</b>	Describes a check method to specify a trouble cause.
<b>Remedy</b>	Troubleshoot by taking a remedy described in this column.

By troubleshooting in accordance with the above-mentioned procedure, you can troubleshoot efficiently with fewer misjudgments.

## 2.3 Troubleshooting Guide

### • Power Supply Failure

Phenomenon	Cause	Check Method	Remedy
No power (POWER lamp not illuminated)	The AC cable is not connected.	—	Connect AC cable.
	The fuse is gone.	Check whether the specified fuse is used.	Use the specified fuse.
The fuse immediately goes again after replacing with a new one.	Faulty control PCB assy	—	Replace the control PCB assy.
	The circuit drive power is abnormal.	Use instruments such as tester to measure circuit driving voltage.	Replace the control PCB assy.

\* If the fuse is gone with the specified AC adapter used, it is likely that the thermal head unit or control PCB assy is defective. Replace either defective one. Check wiring for drawer cable and interface cable.

● **Printing failure**

Phenomenon	Cause	Check Method	Remedy
No printing	Faulty control PCB assy	—	Replace the control PCB assy.
	Failed contact/connection of thermal head connector	Check contact/connection condition.	Re-insert thermal head connector.
	Faulty thermal head	—	Replace the thermal head.
Partly not printed	Faulty contact/connection in thermal head connector	Check contact/connection conditions.	Re-insert thermal head connector.
	Faulty thermal head	—	Replace the thermal head.
Faint printout or uneven printout	Low output voltage	Check the supply voltage with tester or others.	Use within specified voltage range.
	Faulty thermal head	—	Replace the thermal head.
	Foreign substance is adhered to the thermal head.	Check whether any foreign substances are adhered to the head.	Wipe foreign materials with swab or soft cloth immersed with ethyl alcohol.
	Non-recommended paper is used.	Check whether the paper being used meets the specification.	Replace it with the specified paper.
	Faulty mounting of the platen roller	Check mounting condition of the platen roller.	Mount the platen roller properly.

### ● Paper feed failure

Phenomenon	Cause	Check Method	Remedy
Paper is not fed or jammed.	Faulty connection of the motor connector	Check the connector connection.	Connect the connector correctly.
	Failed motor's main unit	Use tester or oscilloscope or other instrument to measure supply voltage.	If the supply voltage is normal, replace the motor.
	Low output voltage	Check the supply voltage with tester or others.	Use within specified voltage range.
	Faulty control PCB assy	—	Replace the control PCB assy.
	Faulty mounting of the platen roller	Check mounting condition of the platen roller.	Mount the platen roller properly.
	Paper feed failure	Check that no paper is jammed, torn or caught in the paper path.	Remove unnecessary paper and set correctly.
	Foreign substance in the gear or broken gear	Remove the gear holder and check for any foreign substance caught in the gears or any breakage of the gears.	Eliminate the foreign substance. If the gear is broken, replace it with new one.

### ● Faulty sensor

Phenomenon	Cause	Check Method	Remedy
Failed detection of paper feed Failed detection of paper's near-end	Faulty paper sensor	Check whether the ERROR LED flickers if paper expires.	Replace the SA SUB PWB PE SENSOR.
	Faulty paper near-end sensor		Replace the SA PNE SENSOR.
	Foreign substance is attached to the paper sensor	Check whether any foreign substances are adhered to the paper sensor.	Remove the foreign substance.
	Faulty connection of the paper sensor connector	Check the connector connection.	Connect the connector correctly.



**• Faulty auto cutter**

<b>Phenomenon</b>	<b>Cause</b>	<b>Check Method</b>	<b>Remedy</b>
No operation of auto-cutter	Faulty connection of the auto cutter connector	Check the connecting condition of the auto cutter connector.	Connect the connector correctly.
	Failure in auto-cutter's main unit	Use tester or oscilloscope or other instrument to measure supply voltage.	If the supply voltage is normal, replace the auto cutter.
	Paper feed failure (Paper jam)	Check that no paper is jammed, torn or caught in the paper path.	Remove unnecessary paper and set correctly.

### 3. SERVICE PARTS LIST

#### 3.1 Parts List for Mechanism

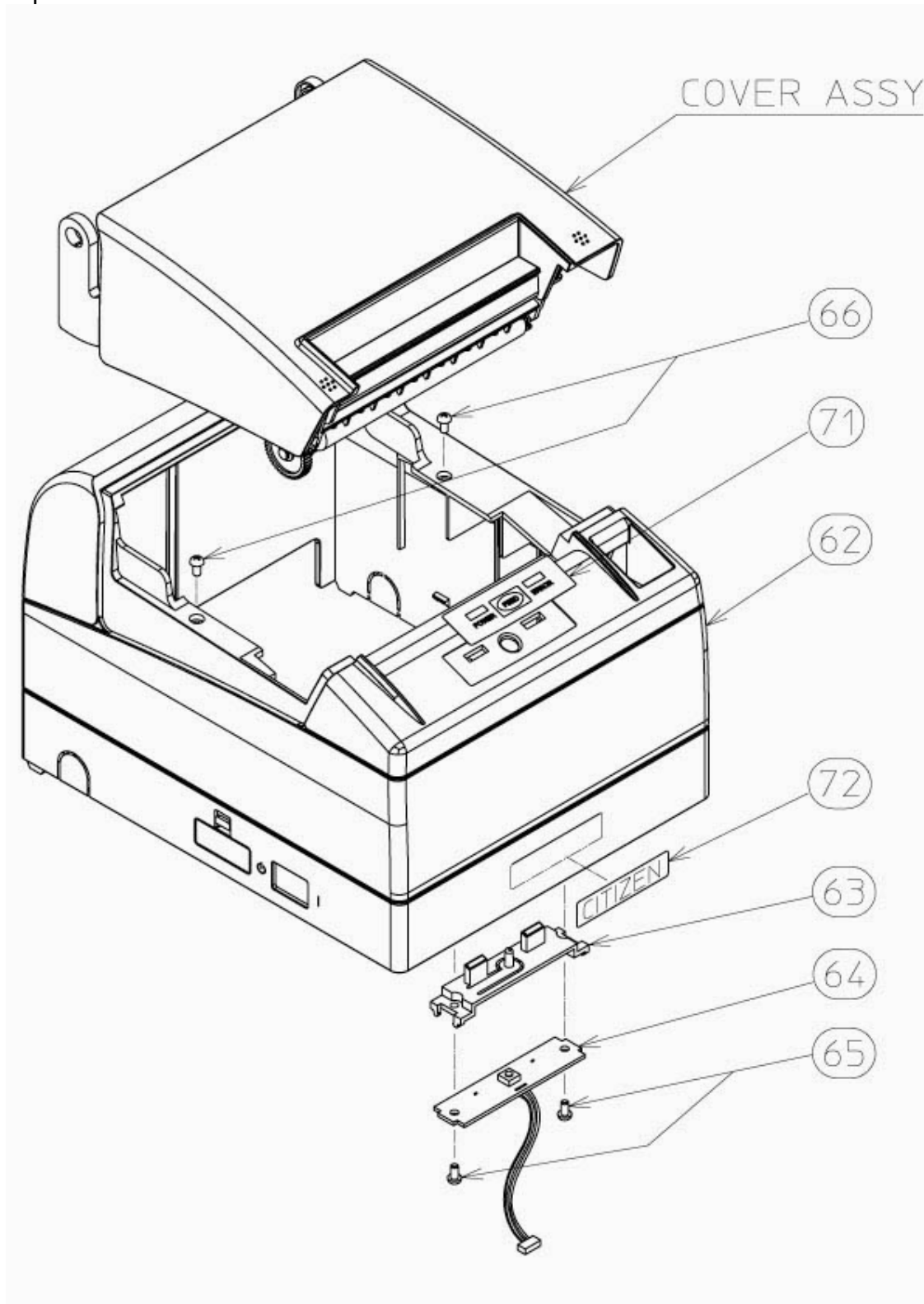
No.	PARTS No.	DESCRIPTION	QTY		REMARKS
				-DC	
1	TB56202-10F	COVER ASSY			
	TB56202-00F	COVER,WT	(1)	(1)	WHITE
	TB56209-10F	COVER,WT	(1)	(1)	WHITE OLD TYPE
	TB56209-00F	COVER,BK	(1)	(1)	BLACK
	TB56210-10F	COVER,BK	(1)	(1)	BLACK OLD TYPE
	TB56210-00F	COVER,GR	(1)	(1)	GRAY
	TB56210-00F	COVER,GR	(1)	(1)	GRAY OLD TYPE
2	TB44202-00F	HOLDER,PLATEN	1	1	
3	TB28511-00F	SA,PLATEN	1	1	
4	23SEC-3697	BUSHING,PLATEN	2	2	
5	TB44213-00F	COVER,SENSOR	1	1	
6	TB66710-00F	SA SUB PCB JAM SENSOR	1	1	
7	TB66711-00F	SA SUB PCB BM SENSOR	1	1	BLACK MARK OPTION
8	TB66709-00F	SA SUB PCB LABEL SENSOR 2	1	1	BLACK MARK & LABEL OPTION
9	TB44208-00F	HOLDER,CABLE1	1	1	
10	TB44209-00F	HOLDER,CABLE2	1	1	
11	TB54103-00F	COVER,CABLE R	1	1	
12	TB54104-00F	COVER,CABLE L	1	1	
13	E60340-000F	E-RING,4.0	2	2	
14	TB24103-00F	BLADE,FIXED	1	1	
15	E11730-060F	SCREW,PHT(BT#3),M3.0×6	2	2	
16	E11730-100F	SCREW,PHT(BT#3),M3.0×10	4	4	
17	E13520-040F	SCREW,No.0,PHT(BT#3),M2.0×4	1	1	
18	TB24111-00F	CUTTER,PAPER	1	1	
19	TB24108-00F	CUTTER,PAPER	1	1	OLD TYPE
20	E11726-080F	SCREW,PHT(BT#3),M2.6×8	2	2	
21	E14220-030F	SCREW,No.0,PHT(ST#3),M2.0×3	2	2	OLD TYPE
22	TB67709-00F	CABLE,CUTTER PAPER	1	1	
23	TB56216-00F	COVER,CUTTER PAPER	1	1	
25	TB44101-00F	FRAME,MAIN ASSY			
	TB44101-00F	FRAME,MAIN	1	1	
26	TB14701-00F	SA,HEAD	1	1	
27	TB44105-00F	HOLDER,SPRING HEAD	1	1	
28	700021-00	SPRING,HEAD	3	3	
29	25-0347	FFC	1	1	
30	600378-00	HOLDER,GEAR	1	1	
31	600377-00	GEAR,REDUCTION	1	1	
32	TA25702	MOTOR ASSY	1	1	
33	TB44103-00F	LEVER,COVER LOCK 1	1	1	
34	TB44104-00F	LEVER,COVER LOCK 2	1	1	
35	TB56203-00F	KNOB,OPEN	1	1	
36	700014-10	LOCK LEVER SPRING	1	1	
37	TB24109-00F	SHEET,CUTTER	1	1	
38	TB54102-00F	SHEET,FRAME MAIN	1	1	
40	E11130-060F	SCREW,PHT(ST#3),M3.0×6	6	6	
42	E11730-060F	SCREW,PHT(BT#3),M3.0×6	1	1	
45	TB29801-00F	UNIT,AUTO CUTTER	1	1	

No.	PARTS No.	DESCRIPTION	QTY		REMARKS
				-DC	
50	TB44211-00F	HOLDER,PAPER ASSY	1	1	
51	TB22001-00F	HOLDER,PAPER	4	4	
52	TB94101-00F	SHAFT,PAPER ROLLER	1	1	
53	TB66712-00F	SHEET,PAPER HOLDER	1	1	
		SA COVEROPEN SENSOR & SUB PCB	1	1	
		PE SENSOR			
54	TB66805-00F	UNIT,SUB PCB PNE SENSOR	1	1	
55	TB66708-00F	SA SUB PCB LABEL SENSOR1	1	1	LABEL OPTION
56	TB44205-00F	PARTITION,PAPER	1	1	
57	E11726-080F	SCREW,PHT(BT#3),M2.6×8	1	1	
58	E00530-080DF	SCREW,BH,M3.0×8	1	1	
59	E13517-070F	SCREW,No.0,PHT(BT#3),M1.7×7	2	2	
60	TB44207-00F	DAMPER	2	2	
61	700018-00	SPRING,DAMPER	2	2	
62	TB56211-00F	CASE,WH	(1)	(1)	WHITE
	TB56221-00F	CASE,WH	(1)	(1)	WHITE BLACK MARK & LABEL OPTION
	TB56217-00F	CASE,BK	(1)	(1)	BLACK
	TB56227-00F	CASE,BK	(1)	(1)	BLACK BLACK MARK & LABEL OPTION
	TB56218-00F	CASE,GR	(1)	(1)	GRAY
	TB56228-00F	CASE,GR	(1)	(1)	GRAY BLACK MARK & LABEL OPTION
63	TB56204-00F	CONDUCTOR,LED	1	1	
64	TB66707-00F	SA,SUB PCB OPEPANE	1	1	
65	E11730-100F	SCREW,PHT(BT#3),M3.0×10	2	2	
66	E11130-060F	SCREW,PHT(ST#3),M3.0×6	12	12	
67	E16330-060F	SCREW,PHT(ST#3 OUTTW), M3.0×6	1	1	
68	E11730-060F	SCREW,PHT(BT#3),M3.0×6	7	7	
73	TB56205-00F	COVER,VOLUME ADJUST	1	1	BLACK MARK & LABEL OPTION
74	TB59101-00F	STRAP,VOLUME COVER	1	1	BLACK MARK & LABEL OPTION

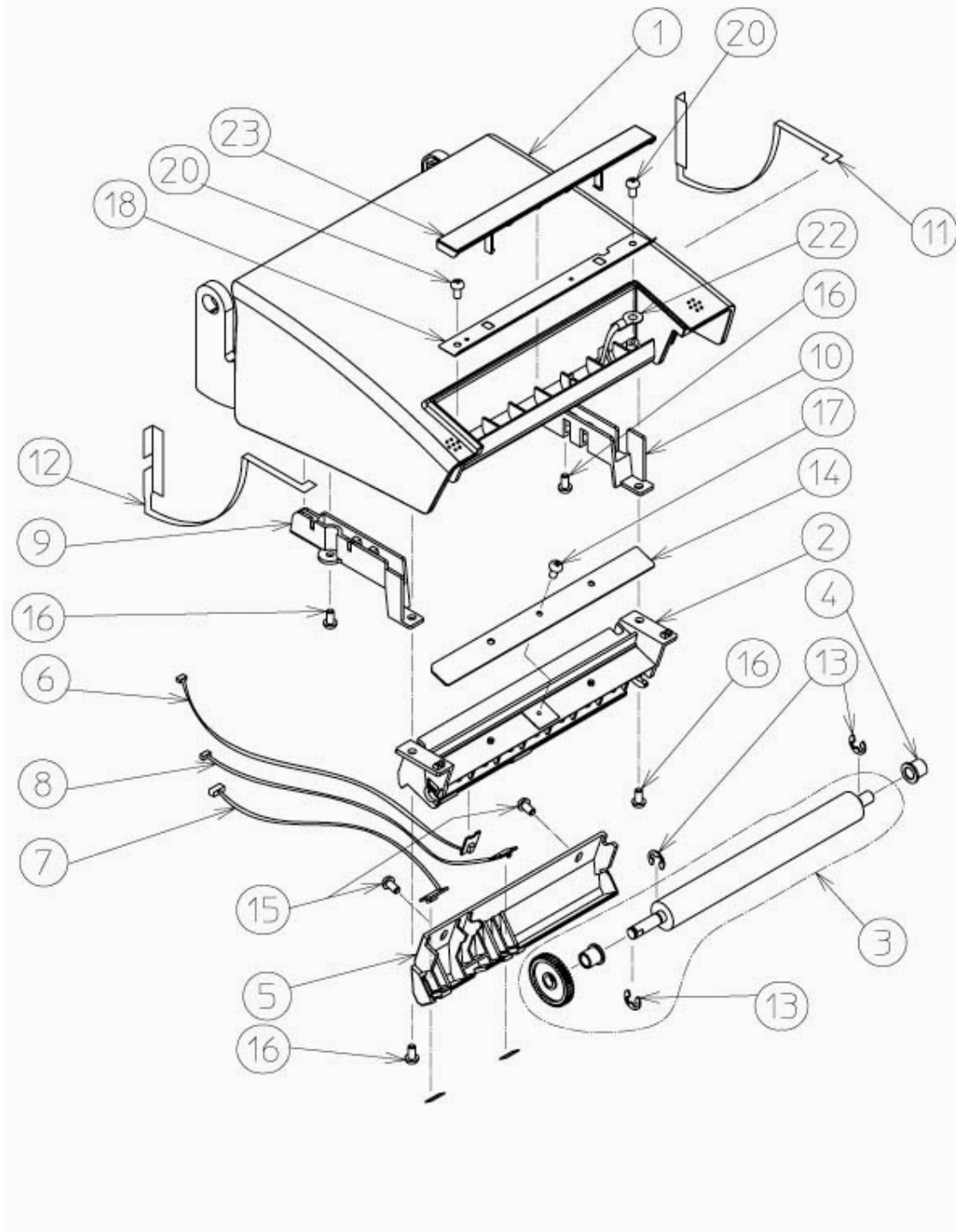
No.	PARTS No.	DESCRIPTION	QTY		REMARKS
				-DC	
80	TB66716-00F	SA POWER SOURCE	1		
81	TB66801-00F	UNIT,MAIN PCB (WITH ROM) CJ	(1)	(1)	JAPAN MODEL
	TB66821-00F	UNIT,MAIN PCB (WITH ROM) CJ M	(1)	(1)	JAPAN MODEL WITH BLACK MARK OPTION
	TB66841-00F	UNIT,MAIN PCB (WITH ROM) CJ L	(1)	(1)	JAPAN MODEL WITH LABEL OPTION
	TB66802-00F	UNIT,MAIN PCB (WITH ROM) CU	(1)	(1)	US&EURO MODEL
	TB66822-00F	UNIT,MAIN PCB (WITH ROM) CU M	(1)	(1)	US&EURO MODEL WITH BLACK MARK OPTION
	TB66842-00F	UNIT,MAIN PCB (WITH ROM) CU L	(1)	(1)	US&EURO MODEL WITH LABEL OPTION
	TB66803-00F	UNIT,MAIN PCB (WITH ROM) CK	(1)	(1)	KOREA MODEL
	TB66823-00F	UNIT,MAIN PCB (WITH ROM) CK M	(1)	(1)	KOREA MODEL WITH BLACK MARK OPTION
	TB66843-00F	UNIT,MAIN PCB (WITH ROM) CK L	(1)	(1)	KOREA MODEL WITH LABEL OPTION
	TB66804-00F	UNIT,MAIN PCB (WITH ROM) CC	(1)	(1)	CHINA MODEL
	TB66824-00F	UNIT,MAIN PCB (WITH ROM) CC M	(1)	(1)	CHINA MODEL WITH BLACK MARK OPTION
	TB66844-00F	UNIT,MAIN PCB (WITH ROM) CC L	(1)	(1)	CHINA MODEL WITH LABEL OPTION
	TB66807-00F	UNIT,MAIN PCB (WITH ROM) CCT	(1)	(1)	CHINA BIG 5 MODEL
	TB66827-00F	UNIT,MAIN PCB (WITH ROM) CT M	(1)	(1)	CHINA BIG 5 MODEL WITH BLACK MARK OPTION
TB66847-00F	UNIT,MAIN PCB (WITH ROM) CT L	(1)	(1)	CHINA BIG 5 MODEL WITH LABEL OPTION	
82	TA66709-00F	SA,SUB PCB POWER		1	
83	TA66811-0	UNIT,SUB PCB I/F PARALLEL	(1)	(1)	PARALLEL
84	TB66831-00F	UNIT,SUB PCB I/F SERIAL (MM)	(1)	(1)	SERIAL (MM)
85	TA66832-00F	UNIT,SUB PCB I/F SERIAL (INCH)	(1)	(1)	SERIAL (INCH)
86	TA54107-0	PLATE,I/F COVER	(1)	(1)	USB Only MODEL

### 3.2 Exploded View of Mechanism

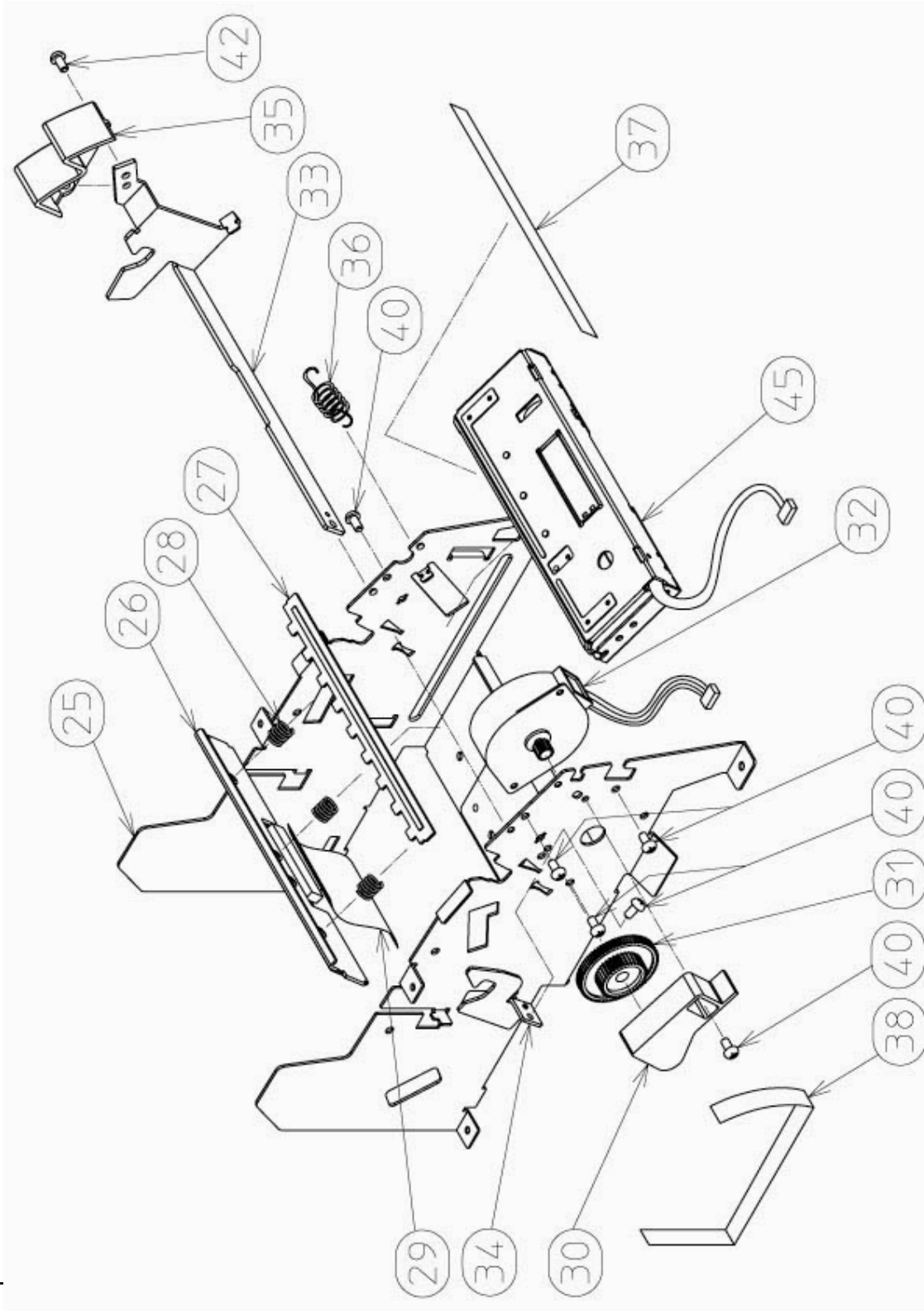
Exploded View-1



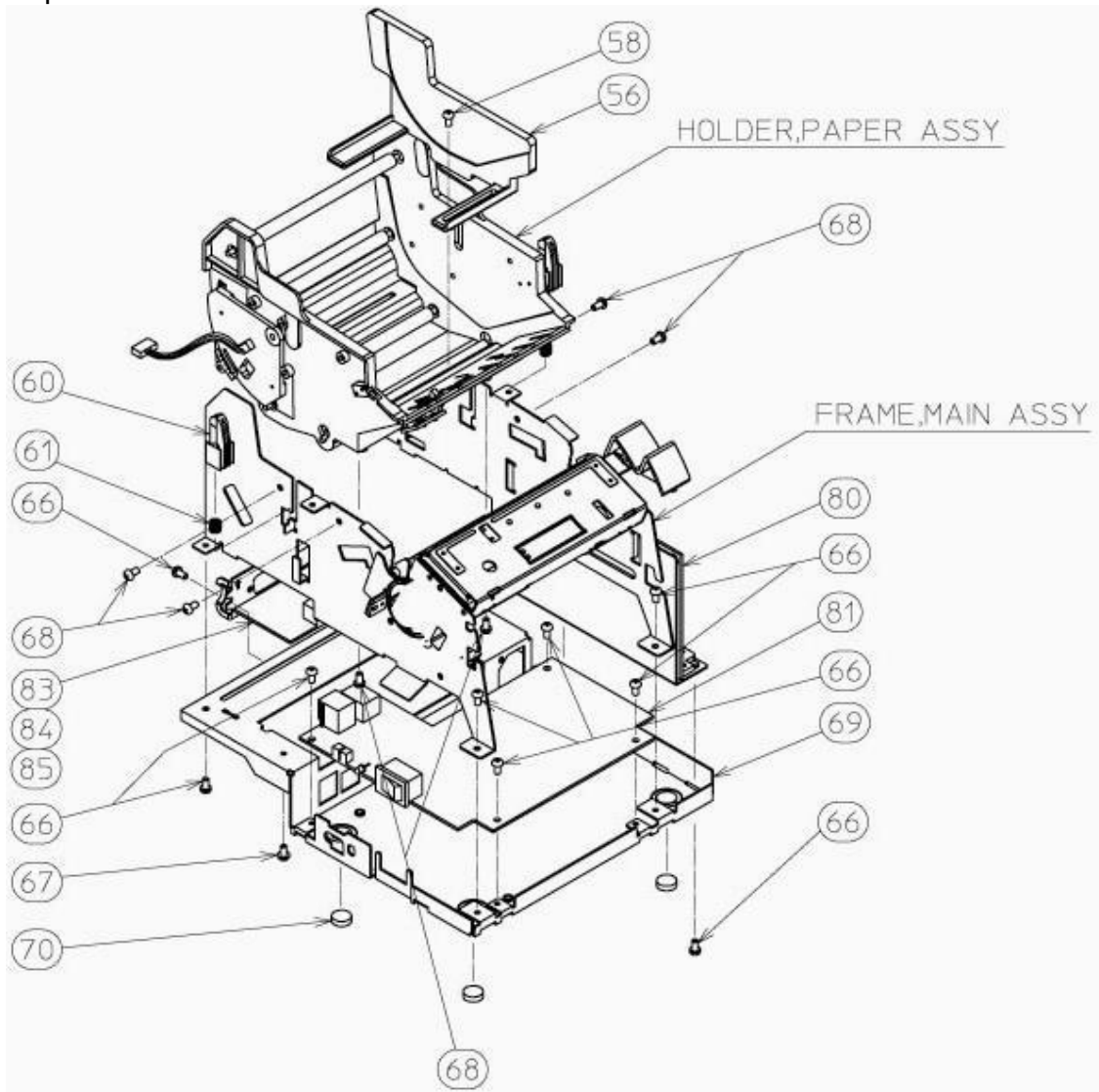
## Exploded View-2



Exploded View-3

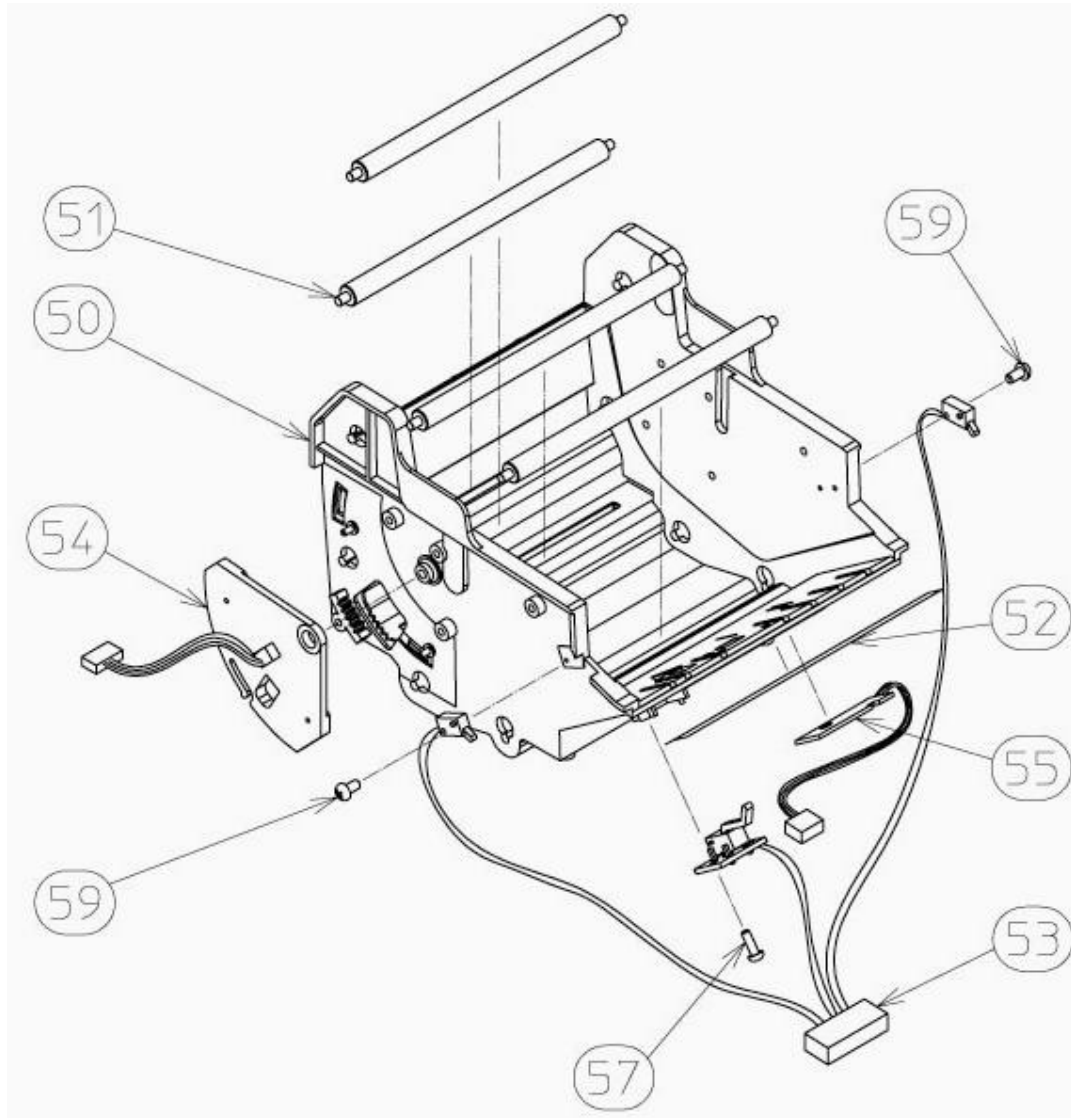


Exploded View-4





## Exploded View-5

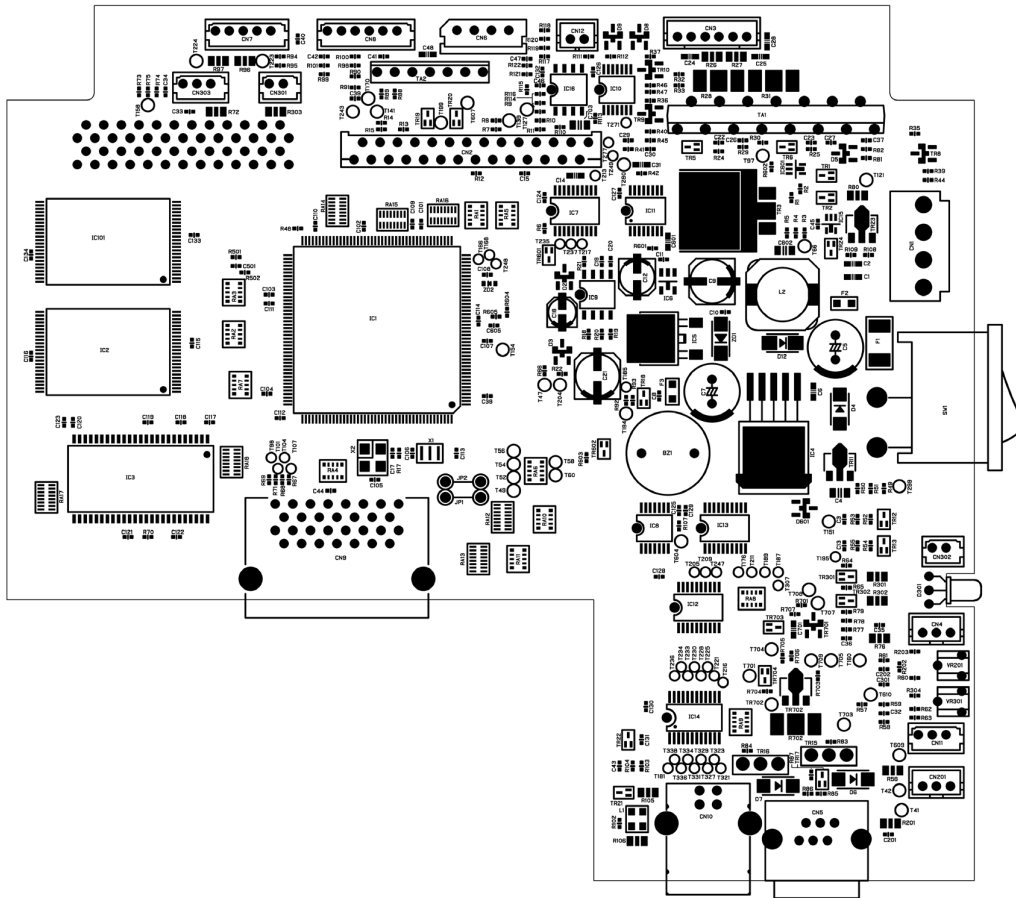


### 3.3 List of Electric Parts

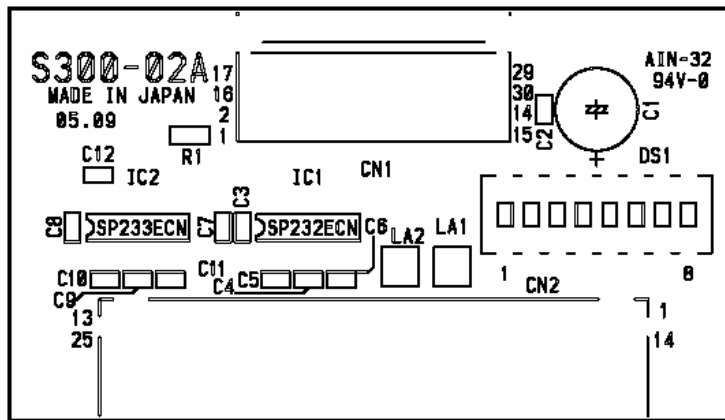
MARK	PARTS No.	DESCRIPTION	PARTS NAME	QTY	OPTION
IC1	C2400-037#	UPD703111AGM-10-UEU-A	CPU	1	
IC2	C2308-082#	TC58FVM5B2ATG65BAH	Flash Memory	1	
IC3	C2330-934#	M12L16161A-7TG	SDRAM	1	
IC4	C2800-132#	SI-8050JD	DC/DC Converter	1	
IC5	C2800-144#	UPC2933AT-E1-AZ	Regulator	1	
IC6	C2800-109#	TAR5S15(TE85L,F)	Regulator	1	
IC7,12	C2256-093#	SN74AHC244PWR	HCMOS	2	
IC8	C2256-091#	TC74VHC132FT(EL,K)	HCMOS	1	
IC9	C2900-155#	M62050FP-DF0J	RESET-IC	1	
IC10	C2256-089#	TC74VHC32FT(EL,K)	HCMOS	1	
IC11	C2256-088#	TC74VHC123AFT(EL,K)	HCMOS	1	
IC13	C2256-090#	TC74VHC244FT(EL,K)	HCMOS	1	
IC14	C2256-092#	SN74LVC4245APWR	CCMOS	1	
IC15	C2256-052#	SN74AHC1G02DCKR	HCMOS	1	
IC16	C2330-***#	uPC393G2	Comparator	1	
IC601	C2256-048#	SN74AHC1G08DCKR	HCMOS	1	
TA1	C2701-001#	SMA7029M	Transistor Array	1	
TA2	C2256-032#	TA8428K	Transistor Array	1	
TR1,17,18	C3305-658#	2SC5658T2L	Transistor	3	
TR2,19,20,602	C3905-078#	DTC114EMT2L	Transistor	4	
TR301,302	C3905-078#	DTC114EMT2L	Transistor	2	BM,LABEL
TR3	C3903-078#	2SJ553STR-E	Transistor	1	
TR5,6,12,13,22,24, 601,703	C3905-079#	DTC143TMT2L	Transistor	8	
TR8	C3903-085#	2SK1133-T1B-A/JM	Transistor	1	
TR9,10	C3903-085#	2SK1133-T1B-A/JM	Transistor	2	
TR11,702	C3903-115#	2SJ518AZTR-E	Transistor	2	
TR15,16	C3303-786#	2SC3786	Transistor	2	
TR21	C3905-080#	DTA114EMT2L	Transistor	1	
TR23	C3903-098#	2SJ356	Transistor	1	
TR701	C3101-464#	2SA1464-T1B-A	Transistor	1	
TR704	C3905-082#	DTA114TMAT2L	Transistor	1	
D2,3,5,601	C3610-024#	1SS193(TE85L,F)	Diode	4	
D4,6,7	C3600-141#	D1F20-5063	Diode	3	
D8,9	C3610-085#	1SS348	Diode	2	
D12	C3610-079#	SFPB66V	Diode	1	
D301	C3803-117#	GL3CL8	Led	1	BM,LABEL
ZD1	C3750-172#	RD6.2FM-T1-AZ	Zenner Diode	1	
ZD2	C3610-081#	RB521S-30TE61	Zenner Diode	1	
F1	C7302-423#	0453010.MR	Fuse	1	
F2,3	C7302-413#	0467002.NR	Fuse	1	
BZ1	C7900-115#	MEB-12C-5	Buzzer	1	
X1	C7400-008#	CSTCE12M5G55-R0	X'tal	1	
X2	C7485-486#	FCXO-03L(48MHZ)	X'tal	1	
CN1	C6199-904#	B4P-VH(LF)(SN)	Connector	1	
CN2	C6180-293#	6216-28 000 806	Connector	1	
CN3	C6196-706#	B6B-PH-K-S(LF)(SN)	Connector	1	
CN4	C6196-703#	B3B-PH-K-S(LF)(SN)	Connector	1	
CN5	C6179-030#	TM5RJ3-66(50)	Connector	1	
CN6	C6198-404#	5267-04A	Connector	1	
CN7	C6190-069#	53014-0510	Connector	1	
CN8	C6190-046#	53014-0610	Connector	1	
CN9	C6149-167#	DHB-PA30-R131N-FA	Connector	1	
CN10	C6149-159#	DUSB-BRA42-T11-FA	Connector	1	
CN11	C6190-055#	53014-0310	Connector	1	
CN12	C6196-702#	B2B-PH-K-S(LF)(SN)	Connector	1	
CN201	C6202-403#	B3B-PH-K-R(LF)(SN)	Connector	1	BM
CN301,CN302	C6190-053#	53014-0210	Connector	2	LABEL
SW1	C7602-105#	SF-W1P1A-01BB	Switch	1	
VR201	C4541-473#	RH0412CS4J	Volume	1	BM
VR301	C4541-473#	RH0412CS4J	Volume	1	LABEL

## 3.4 Parts Configuration

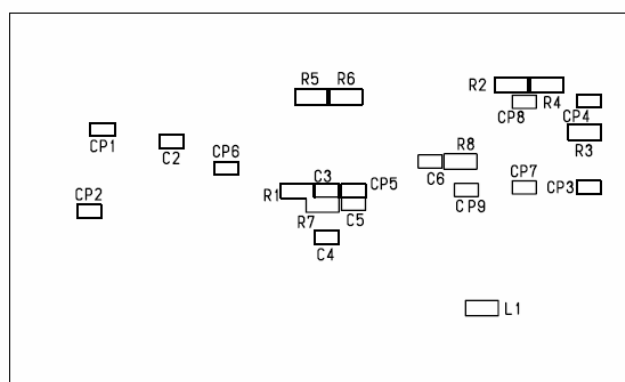
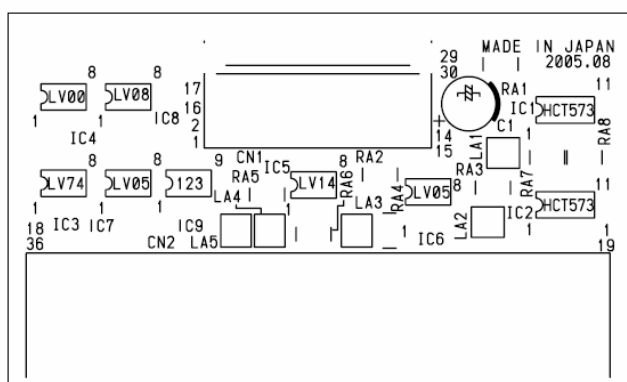
### 3.4.1 Main Control Board



3.4.2 Serial Interface Board

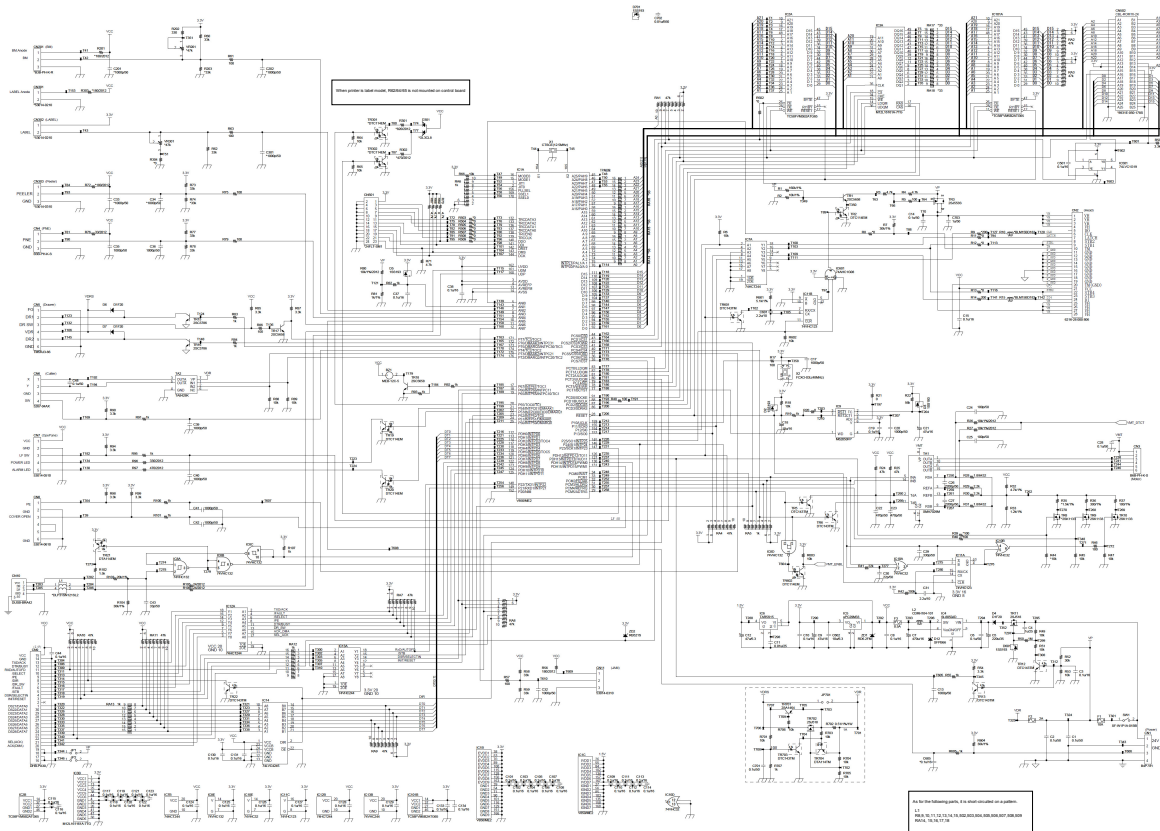


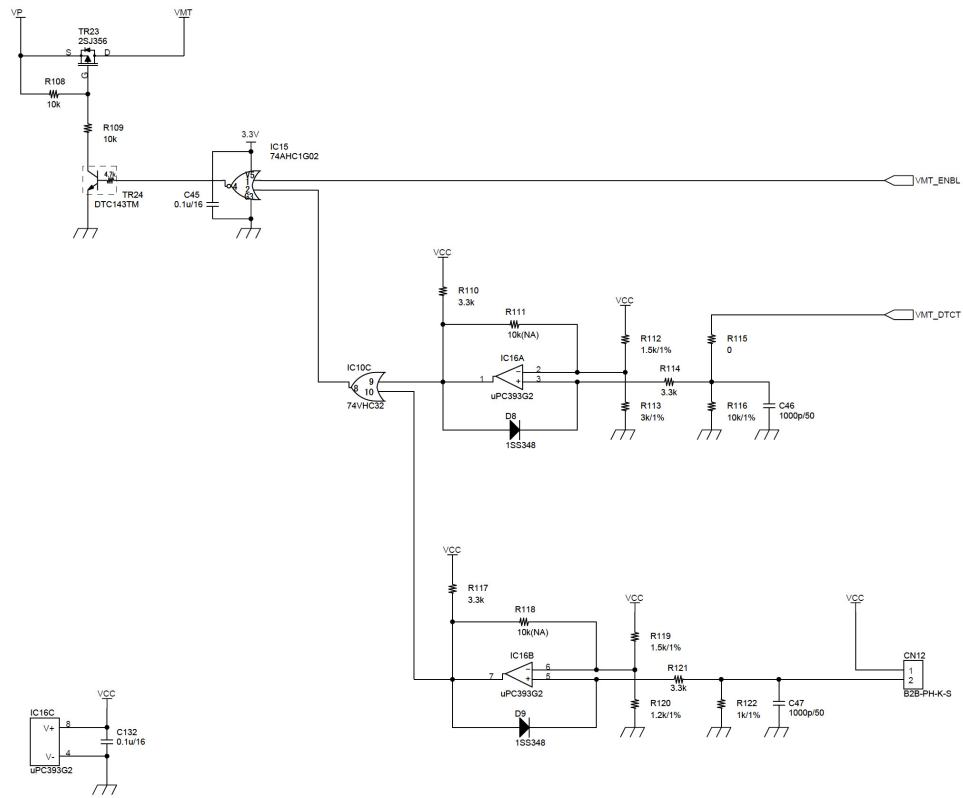
### 3.4.3 Parallel Interface Board



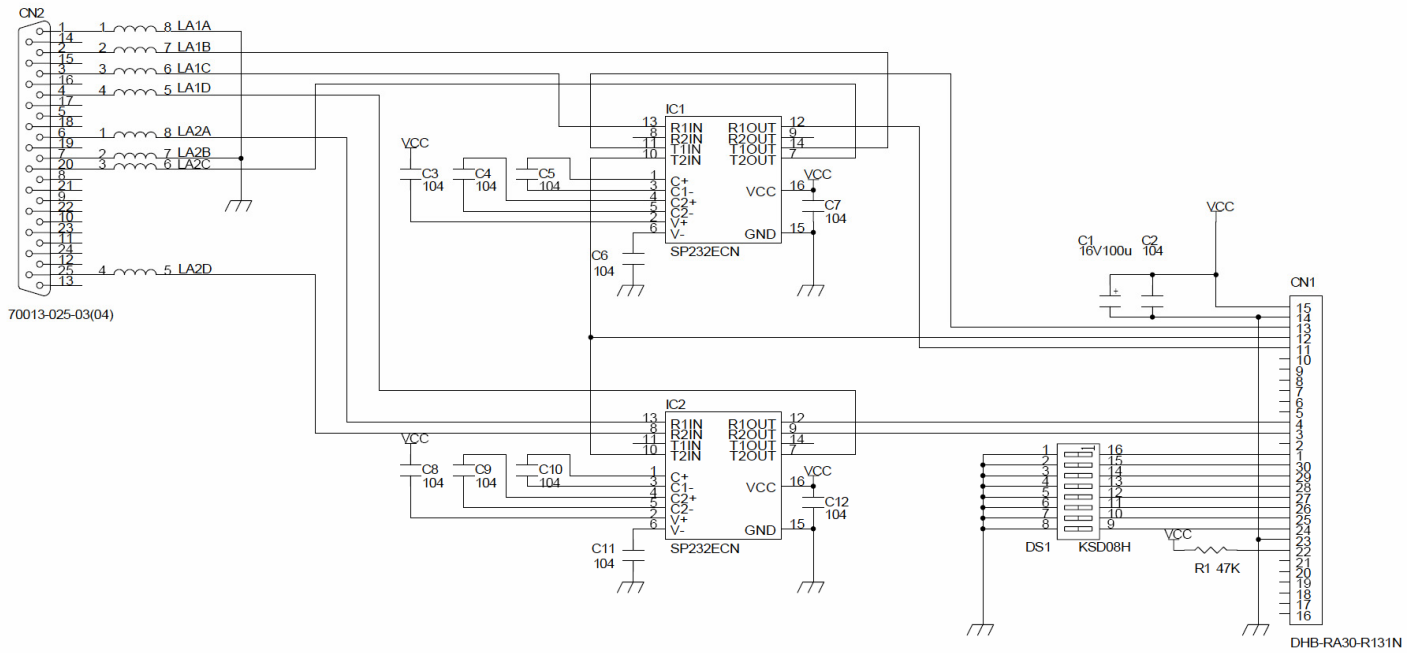
## 4. CIRCUIT DIAGRAM

### 4.1 Main Control Board





### 4.2 Serial Interface Board





### 4.3 Parallel Interface Board

