

SERVICE MANUAL & PARTS LIST (without price)

KL-60 (ZX-219A/B)

AUG. 2001



KL-60

CASIO®

CONTENTS

1. MAIN FEATURES	1
2. SPECIFICATIONS	2
3. GENERAL GUIDE	3
4. RESET OPERATION (INITIALIZING)	6
5. ADJUSTMENT	7
6. OPERATION CHECK	8
7. TROUBLESHOOTING	11
8. MESSAGES	13
9. SCHEMATIC DIAGRAMS	14
10. PARTS LIST	17
11. EXPLODED VIEW	
11-1. PCB ASSY/MAIN	19
11-2. UPPER CASE ASSY	20
11-3. LOWER CASE ASSY	21
11-4. PRINTER ASSY (1/2) (2/2)	22
11-5. COMPONENTS (1/2) (2/2)	24

1. MAIN FEATURES

KL-60 is the portable easier-to-use label printer compared with KL-100/ KL-100E.

The configuration of KL-60 is more simpler compared with KL-100/ KL-100E.

The new simple printer unit is assembled in this unit.

CPU (IC1) and LSI for the head driver (IC2) are COB (Chip on Board), and these LSIs can not be replaced for repair.

For KL-60, COB is adopted as CASIO label printer for the first time.

For CASIO label printers, refer to the following Web Site.

For example,

URL- <http://world.casio.com/euro/kl/>

You may obtain some significant information concerning CASIO label printer.

Note that there are two kinds of units in KL-60 referring to the lower table.

Model Name	Shipment	Nickname (* Nickname is printed on the upper case)
KL-60	Areas except Europe	<i>EZ-LABEL PRINTER LABEL IT!</i>
	Europe only	<i>EZ-LABEL PRINTER</i>

Refer to **PARTS LIST** in this manual concerning parts differences between these units.

The upper case and the caution label for tape cartridge replacement/ installation differ between these units concerning the spare parts.

You can produce attractive, original labels thanks to such features as:

- Variable tape sizes (6mm, 9mm, 12mm)
- Attractive sans-serif font
- Font effects (shading, underline, box)
- Built-in symbols
- Text memory

2. SPECIFICATIONS

Model: KL-60

Input

Keyboard Layout: Typewriter (QWERTY)

Character Types

Alpha (English and other languages): 151

Numbers: 10

Symbols: 46

Display

Type: Liquid crystal display

Columns: 4

Character matrix: 5×7 -dot

Printing

Type: Thermal transfer

Width: 5mm

Character Matrix: 16×16 -dot

Character font: Sans-serif

Character effects: Shade, underline, box

Character sizes: 1×1 , 1×2 , 1×3 (6mm tape);

1×1 , 1×2 , 1×3 , 2×1 , 2×2 , 2×3 (other tapes)

Number of lines: 1 (6mm tape); 1 or 2 (other tapes)

Memory

Text: One block (up to 63 characters)

General

Power supply: Six AA-size alkaline batteries

Battery life: Approximately 10 tape cartridges (normal characters printing at normal temperature)

Power consumption: 9W

Current Consumption:

The conditions for measurement are as follows;

Power supply voltage: $9.0 \text{ V} \pm 4\%$, Ambient Temperature: $15^\circ\text{C} \sim 35^\circ\text{C}$

While printing with PR2 check in the operation check in this Service Manual, the current consumption is as follows;

350mA (Typical Value)/ 500mA (Maximum Value)

Note: The measurement should be performed using a analog ammeter to prevent the measurement device from noises.

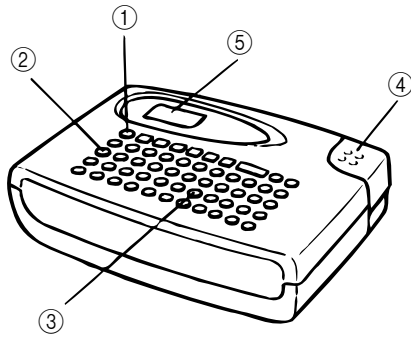
Auto Power Off: Approximately six minutes after last key operation.

Dimensions: 49 (H) $\times$ 168 (W) $\times$ 114 (D)mm ($1 \frac{15}{16}$ "H $\times$ $6 \frac{5}{8}$ "W $\times$ $4 \frac{1}{2}$ "D)

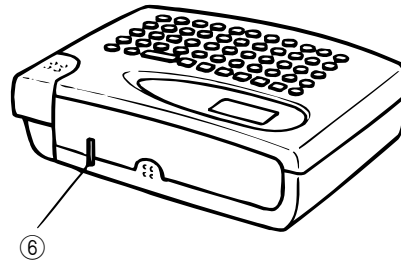
Weight: 300g (excluding batteries)

Ambient Temperature: $10^\circ\text{C} \sim 35^\circ\text{C}$ ($50^\circ\text{F} \sim 95^\circ\text{F}$)

3. GENERAL GUIDE



- ① **Power ON/OFF Key**
Turn power on and off.
- ② **Function key**
- ③ **Letter keys**



- ④ **Tape cutter button**
- ⑤ **Liquid crystal display (LCD)**
- ⑥ **Tape outlet**

Power Supply

The Label Printer can be powered by six AA-size alkaline batteries.

Replacing Batteries

A handy low battery power indicator lets you know when battery power is getting too low for proper operation. The message "BATT" appears on the display if battery power is low when you perform any of the following operations.

- Turn power on
- Execute a print operation

Whenever the "BATT" message appears, press **SET** to clear it from the display.

You should still be able to perform some Label Printer operations, but some power intensive operations (like printing) may become impossible if battery power is too low. In any case, you should replace batteries as soon as possible after the "BATT" message appears.

Important!

- All data stored in memory is deleted whenever batteries go dead and when you replace batteries. Be sure to keep written backup copies of all important data (text and documents).
- Batteries can burst or leak and damage your unit if you do not use them correctly. Note the following important points.
- Be sure that the plus (+) and minus (-) sides of each battery are facing correctly.
- Never mix batteries of different types.
- Never leave dead batteries in the Label Printer.
- Remove the batteries if you do not plan to use the Label Printer for a long time.
- Replace the batteries in accordance with the battery life marked on the side of the battery.

Auto Power Off Function

If you do not perform any key operation for about six minutes, the Label Printer automatically turns power off. To restore power, press **ON/OFF**.

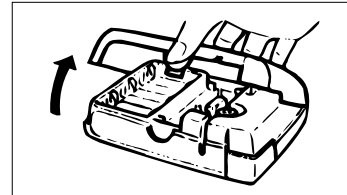
To load the batteries

Caution

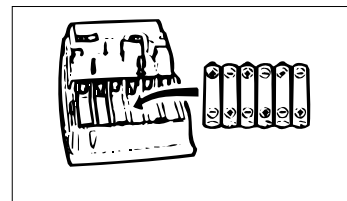
- Do not touch the springs inside the battery compartment cover with your fingers while loading or replacing batteries. The springs have sharp areas and can cut your fingers.



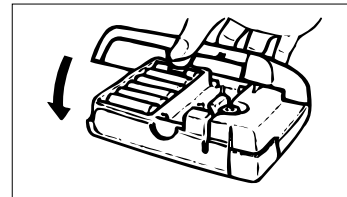
1. Turn power off.
2. Turn over the label printer. While pressing down on the back cover lock, remove the back cover as shown in the illustration.



3. Load batteries into the battery compartment.
 - Be sure to use alkaline batteries.
 - Make sure the positive (+) and negative (–) ends of the batteries are facing correctly when you load them.



4. Replace the back cover.
 - Make sure the back cover is positioned as shown in the illustration when replacing it. Trying to force the cover into place while it is in the wrong position can cause damage to the cover or label printer.
 - Make sure that the tape cartridge is securely in place and that the back cover is closed securely before using the label printer. A loose tape cartridge can cause print quality problems.



Tape Width Specification

Important!

- When using 6mm tape, using certain character sizes can cause characters to run off the top or bottom of the tape. Be sure to use the following procedure to tell the Label Printer when you are using 6mm tape.

To specify 6mm tape width

1. Turn power on.
2. Press **FUNC** and then **EFFECT** (6mm).
3. Press ◀ and ▶ to change the setting shown on the display between ON (6mm tape) and OFF (other tape width).
4. When the tape width setting is the way you want it, press **SET** to register it.
 - The tape width you set remains in effect until you change it, press **ON/OFF** or reset the Label Printer's memory.

Print Density

The print density setting controls how darkly figures are printed on your tapes.

To adjust the print density

1. Press **FUNC** and then **SIZE** (DENSITY).

1 2 3 4

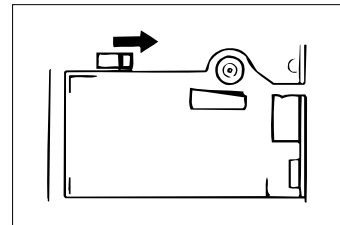
2. Use ◀ and ▶ to move the underlining to the density setting that you want.
 - The lightest setting is 1, while the darkest setting is 5. The standard setting is 3.
 - Only four of the five settings that are available can appear on the display. The display scrolls left and right when necessary to show all of the available settings.
3. When the density setting is the way you want, press **SET** to register it.

Cleaning the Printer Head and Roller

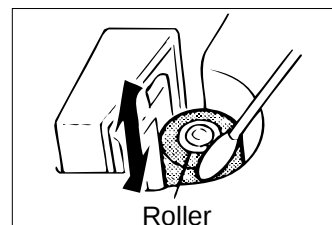
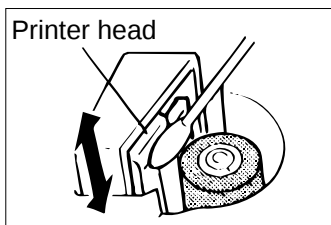
A dirty printer head and roller can result in poor printing quality. If you have problems with print quality, use the following procedure to clean the printer head and roller.

To clean the printer head and roller

1. Make sure the Label Printer is turned off.
2. Turn over the Label Printer, and open the back cover while pressing down on its lock.
3. Slide the printer head release in the direction indicated by the arrow, and remove the tape cartridge.



4. Use a cotton swab dipped in alcohol to clean the printer head and roller as shown in the illustration.



5. Replace the tape cartridge and close the back cover.

4. RESET OPERATION (INITIALIZING)

Note: Performing this operation, the data stored in the unit are deleted.

Initial Power On Settings

The following are the initial settings of the Label Printer whenever you turn power on.

Item	Power On
Display	Cleared
SIZE	AUTO (2×2)
EFFECT	CANCEL
MIRROR	OFF
6mm	OFF

Initializing the Label Printer

If you experience serious malfunction of the Label Printer or if operation fails completely, try performing the following operation to initialize the printer.

Important!

- Initializing the Label Printer deletes all memory contents. Make sure you have a back-up copy of text stored in memory if you need it.

To initialize the Label Printer

- Turn power off.
 - While holding down the **PRINT** and **ESC** keys, press **ON/OFF** to turn power on.
 - Keeping **PRINT** and **ESC** held down, release the **ON/OFF** key only.
 - Release **PRINT** and **ESC** keys.
 - This prompt confirms whether or not you want to initialize the Label Printer.
5. Press **SET** to initialize the Label Printer or **ESC** to abort the reset operation.
- The following table shows the initial settings.



Item	Reset
Display	Cleared
Memory	Cleared
SYMBOL	,
SIZE	AUTO (2×2)
EFFECT	CANCEL
MIRROR	OFF
MEMO	STR?
DENSITY	3
6mm	OFF

5. ADJUSTMENT

Only the adjustment for thermal resistance rank of the thermal head is needed concerning KL-60. Be sure to perform this adjustment after replacing the thermal head or the printer unit.

<Procedure>

Refer to the lower Figure-1 concerning the adjustment procedure.

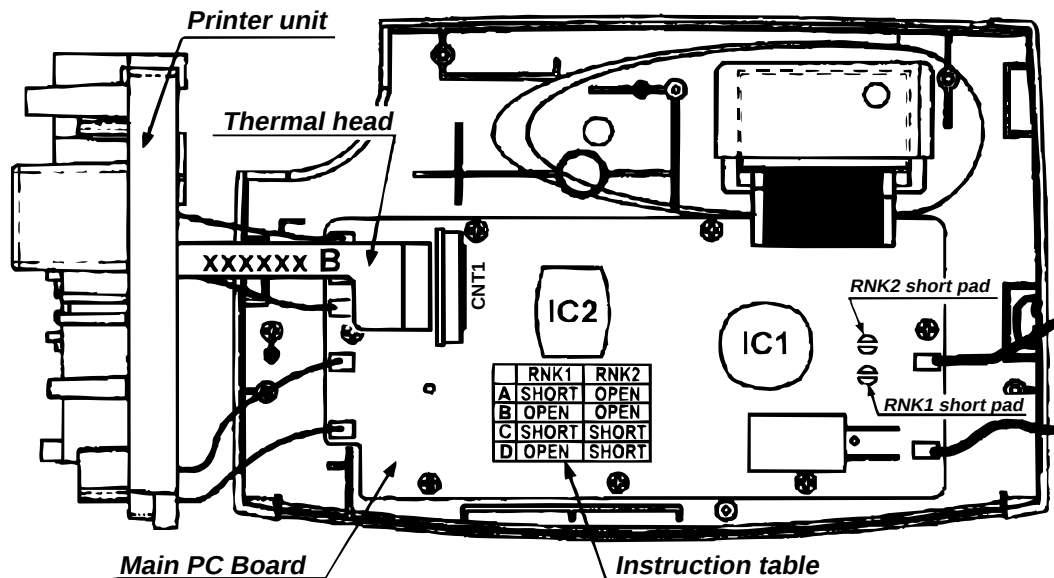


Figure-1

1. For example, confirm that "xxxxxx B" is printed on FPC of the thermal head.
This description "xxxxxx B" indicates that the thermal resistance rank of the thermal head is B. There are four kinds of the thermal resistance ranks. Those are A, B, C and D.
2. See the instruction table printed on the main PC Board.
3. Connect (short circuit: SHORT) or disconnect (OPEN) **RNK1** pad using the soldering iron according to this table.
Connect (short circuit: OPEN) or disconnect (OPEN) **RNK2** pad using the soldering iron according to this table also.
4. Finally, confirm the thermal resistance rank display with the head rank check in **OPERATION CHECK**. Refer to **OPERATION CHECK** in this manual for detail.
If this display is the same as the thermal resistance rank printed on FPC of the thermal head, this adjustment will be completed.

6. OPERATION CHECK

1-1. To enter into the operation check

Turn off the unit using **ON/OFF** button if the unit is turned on.
Press **ON/OFF** button while holding down **P**, **SPACE** and **Z** at the same time.
Doing so, "**PALL**" display will appear.

1-2. Main Menu for the operation check

"**PALL**" is the first main menu in this check.
Pressing the cursor button ">", the next second main menu "**ALL1**" will appear.
Then, pressing the cursor button ">" one after another, the following main menus will appear sequentially.
ALL2 -> PRN -> ROM -> LCD -> KEY -> SEN -> SEK -> KAI -> RST
Then, pressing the cursor button ">", the first main menu "**PALL**" will appear again.
Pressing the cursor button "<", the previous main menu display will appear.
The **PALL**, **ALL1**, **ALL2**, **SEK** and **KAI** checks are not needed after repair.
SRT check is also not needed after repair.
Because, these checks are for production and development of KL-60.

1-3. Procedure

1. Enter into the operation check referring to above 1-1.
Doing so "**PALL**" display will appear.
2. Pressing the cursor button ">" three times, "**PRN**" display will appear.
3. Install the tape cartridge to the unit.
4. Pressing **SET** button, "**SRT**" display will appear.
5. Pressing the cursor button ">", "**PR1**" display will appear.
Pressing **SET** button, the following drawing will be printed.



"**PRNT**" display will appear while printing.

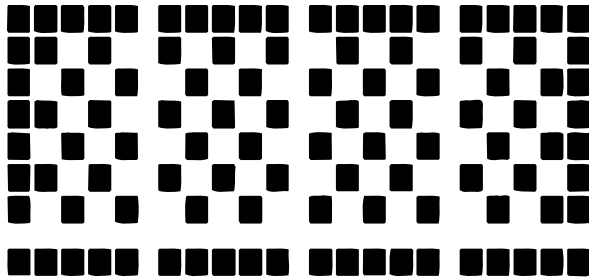
6. Pressing the cursor button ">", "**PR2**" display will appear.
Pressing **SET** button, the following drawing will be printed.



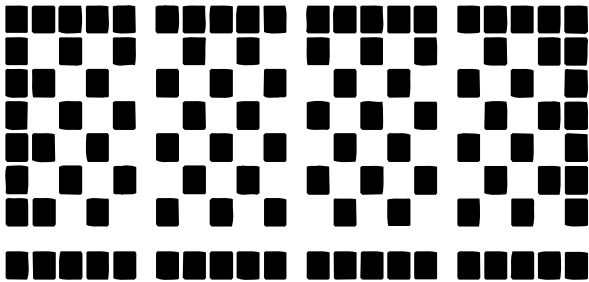
"**PRNT**" display will appear while printing.

7. After printing, "**PR2**" display will appear again.
Check the printing quality using above PR1 and PR2 checks.
8. Pressing **ESC** button, "**PRN**" display will appear.
9. Pressing the cursor button ">", "**ROM**" display will appear.
10. Pressing **SET** button, the following check sum value of ROM in CPU display will appear.
For example, "**1E68**" display may appear.
11. Pressing **ESC** or **SET** button, "**ROM**" display will appear again.
12. Pressing the cursor button ">", "**LCD**" display will appear.
13. Pressing **SET** button, all display will appear.

14. Pressing **SET** button , the following display will appear.



15. Pressing **SET** button again, the following display will appear.



Check LCD display quality using above LCD checks.

16. Pressing **SET** button again, "**LCD**" display will appear.

17. Pressing the cursor button ">", "**KEY**" display will appear.

18. Pressing **SET** button, "**ALL**" display will appear.

19. Pressing **SET** button again, "**MEMO**" display will appear.

20. Pressing **MEMO** button according to this display, "**SIZE**" display will appear.

21. Press the buttons, in order, one after another, according to the displays which continue to appear on the screen one after another.

22. Finally, pressing **SET** button, "**OK**" display will appear.

23. Pressing **ESC** button twice, "**KEY**" display will appear again.

24. Pressing the cursor button ">", "**SEN**" display will appear.

25. Pressing **SET** button, "**AUT**" display will appear.

26. Pressing the cursor button ">" twice, "**RANK**" display will appear.

27. Pressing **SET** button, "**RK=B**" display will appear if the head rank is adjusted to B on PC Board Assembly. Refer to **ADJUSTMENT** in this service manual for KL-60 for detail.
"RK=A", "RK=B", "RK=C" or "RK=D" will be displayed by this adjustment.

28. Pressing **SET** button again, "**RANK**" display will appear again.

29. Pressing the cursor button ">", "**VOLT**" display will appear.

30. Pressing **SET** button, "**9.0v**" display will appear if the loaded batteries voltage for power supply is 9.0V.
Using this check, you can check power supply voltage.
The power supply voltage should be 8.1~9.9V.
If not so, ERROR display may appear.
31. Pressing **ESC** button twice, "**SEN**" display will appear again.
32. Pressing the cursor button ">" three times, "**RST**" display will appear.
"**RST**" indicates the initialization by RESET.
** Note that performing this initialization, the data stored in the checking unit are wholly deleted.
If you don't want to delete the data, it is recommended that this check is not performed.
If you want to complete this check, turn off the checking unit pressing **ON/OFF** button.*
33. Pressing **SET** button, "**INT?**" display will appear.
34. Pressing **SET** button, "**RST**" display will appear again.
Note that the checking unit is initialized, and by this operation.
35. Press **ON/OFF** button.
Pressing **ON/OFF** button while performing the operation check, you can abort this check.
If this check is recovered, press **ON/OFF** button while holding down **P**, **SPACE** and **Z** buttons at the same time again.

7. TROUBLESHOOTING

• Power Supply

Nothing appears on the display.	
Possible Cause	Action
Low batteries	Replace batteries.
Batteries loaded incorrectly	Remove batteries and reload them correctly.

• Text Input

Cannot input text.	
Possible Cause	Action
FUNC key has been pressed.	Press ESC to clear FUNC key operation.

Tape dose not come out when PRINT is pressed.	
Possible Cause	Action
Back cover is not closed completely.	Securely close the back cover.
No more tape left in the cartridge.	Replace the tape cartridge with a new one.
Tape jam	Remove the tape cartridge and pull out the jammed tape by hand. Cut off excess tape with scissors, and carefully replace the cartridge into the label printer. Important! Never allow the tape outlet to become blocked and never touch tape as it is being fed during printing.

Tape comes out when PRINT is pressed, but nothing is printed on it.	
Possible Cause	Action
Only blank spaces were input.	Input the text you want to print.

Printing is blurred, blotched, broken, etc.	
Possible Cause	Action
Improper print density setting	Adjust the print density setting.
Improper loading of the cartridge	Remove the tape cartridge and reload it correctly.
Dirty print head or rubber roller	Clean the printer head and roller.

Ink ribbon is being fed from the tape outlet along with the tape.	
Possible Cause	Action
Tape cartridge loaded while the ink ribbon is slack.	Remove the tape cartridge and check to make sure the ink ribbon is not broken. Next, take up any slack in the ink ribbon and then reload the tape cartridge. Important! • Before loading a tape cartridge into the label printer, always make sure you take up any slack in the ink ribbon first. • If the ink ribbon is broken, you must change to another tape cartridge.

• ***Tape Cutting***

Cannot cut tape.	
Possible Cause	Action
Tape cutter blade is dull.	Take the label printer to the dealer from whom you purchased it to have the tape cutter blade replaced.

Printed text is cut off by tape cut operation.	
Possible Cause	Action
Out of tape	Replace the tape cartridge with a new one.

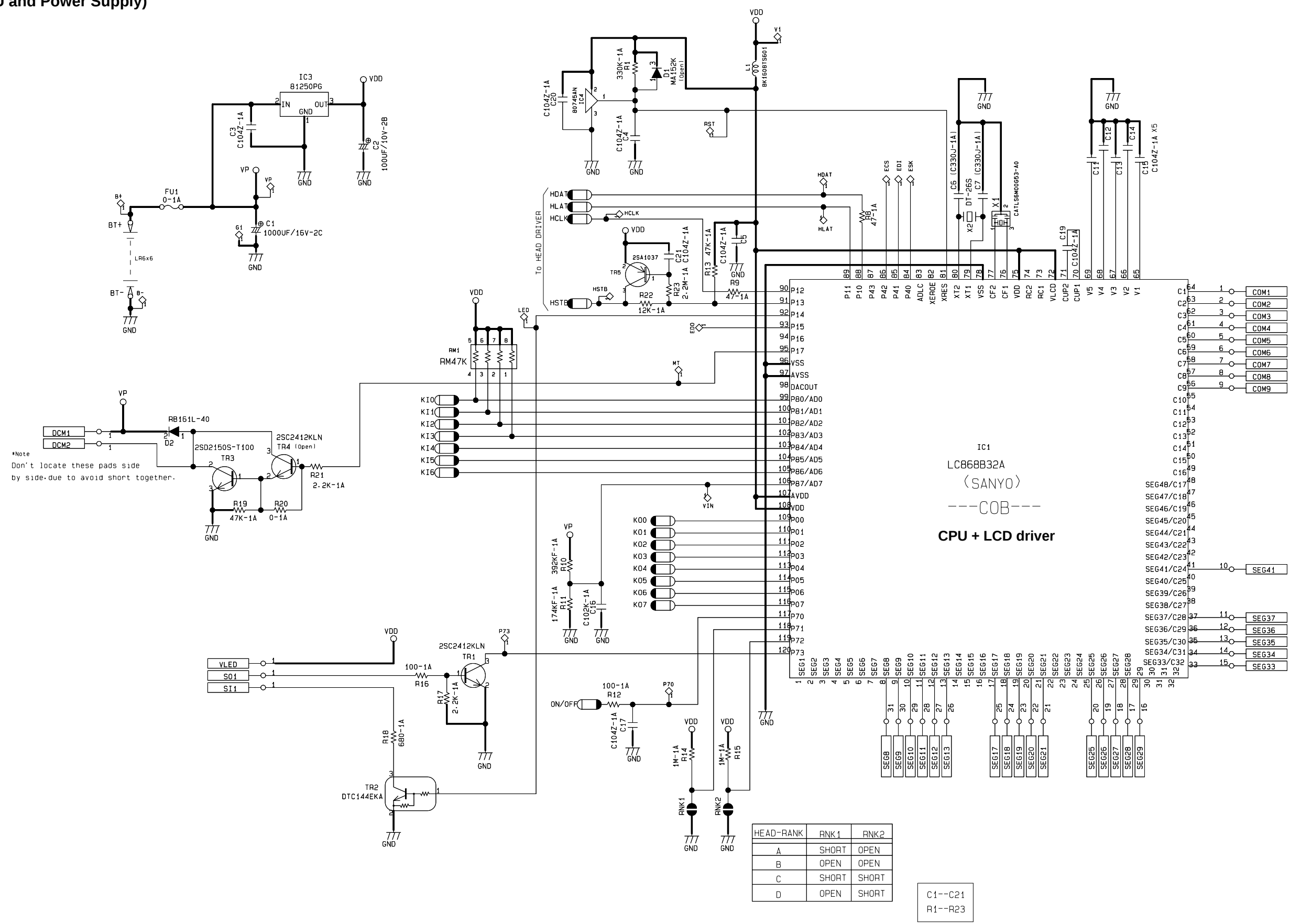
• ***Using Labels***

Label will not adhere to a surface.	
Possible Cause	Action
The backing paper is still on the back of the tape.	Peel the backing paper from the back of the tape to expose the adhesive.
Surface is unsuitable for affixing a tape.	Labels do not adhere well to surfaces that are rough, wet, oily, or dirty.

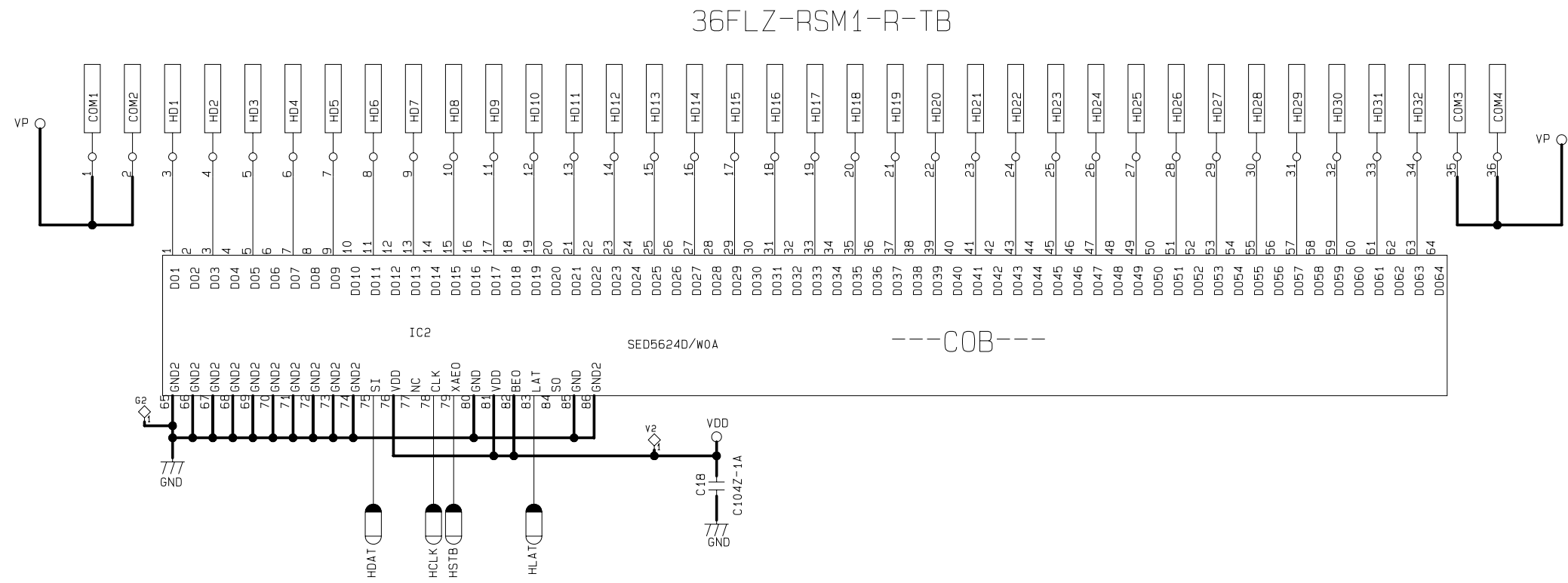
8. MESSAGES

Message	Possible Causes	Action
BATT	• Battery power is too low.	• Replace batteries.
ERR! * This message appears on the screen for about one second.	• Attempt to input two ↵ marks within the same text. • Attempt to input ↵ mark while 6mm is specified as the tape width. • Label text containing a ↵ mark was input and then tape width specification was changed to 6mm. (ERR! message appears when you try to perform a print operation.) • Attempt to recall call text from memory when memory is empty. • Attempt to store text into memory when there is no text on the input display.	• Use only one ↵ mark. Only two lines of text can be input, so text can contain only one ↵ mark. • Do not use ↵ marks. 6mm tape can have only one line of text, so text cannot contain any ↵ marks. • Delete the ↵ mark to print on 6mm tape or switch back to a wider tape.
ERR!	• Memory data has become corrupted for some reason.	• Initialize the Label Printer.
Perr (Printer Error)	• Tape jam during printing.	• Turn off power, remove the tape cartridge, and clear the tape jam.

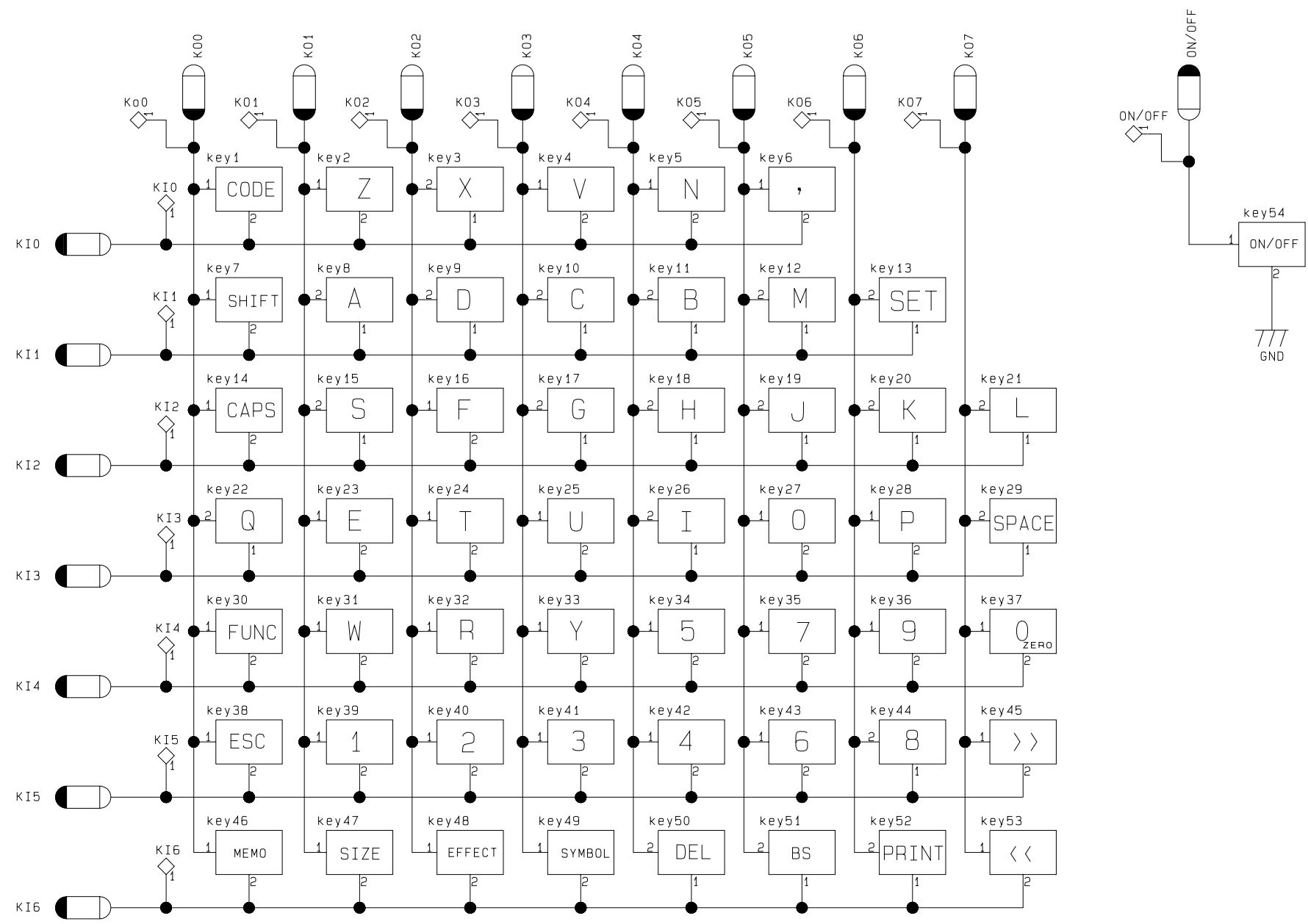
9. SCHEMATIC DIAGRAMS
(CPU and Power Supply)



(Head driver)



(Keys)



PARTS PRICE LIST

* Refer to the lower table concerning A and B in "Applicable" column.

Note that the model names for both units are the same.

Applicable	Model Name	Shipment	Nickname printed on the upper case (CASE/UPPER)
A	KL-60	Areas except Europe	EZ-LABEL PRINTER LABEL-IT!
B		Europe only	EZ-LABEL PRINTER

N	Item	Code No.	Parts Name	Specification	Applicable	Q	Price Code	R
PCB ASSY/MAIN (TK-A141626*1)								
N	1	1005 7666	HEAT SEAL	A445688-1	Common	1	AC	B
N	2	1006 1425	LCD	WK-TH4696-RG-C	Common	1	AE	B
N	X1	1006 1925	RESONATOR	CSTLS6M00G56-B0	Common	1	AB	C
	X2	7110 0642	OSCILLATOR/CRYSTAL	DT-26S	Common	1	AC	C
	IC3	2105 2702	IC/MOS	S-81250PG-PD-T1	Common	1	AD	C
	TR2	2250 1435	TRANSISTOR	DTC144EKA-T146	Common	1	AA	C
N	TR3	2253 0718	TRANSISTOR/CHIP	2SD2150S-T100	Common	1	AB	C
	TR1	2252 0595	TRANSISTOR/CHIP	2SC2412KT-146R,S	Common	1	AA	C
N	CNT1	1006 1137	CONNECTOR	36FLZ-RSM1-R-TB	Common	1	AE	C
N	L1	1006 1914	INDUCTOR/CHIP	BK1608TS601-T	Common	1	AA	C
N	TR5	2390 3076	TRANSISTOR/CHIP	2SA1037AKT146	Common	1	AA	C
	IC4	2105 2331	IC/MOS	S-80745AN-D9-T1	Common	1	AC	C
UPPER CASE ASSY								
N	3	1005 7615	CASE/UPPER	A141617-1	A	1	AF	C
N	3	1005 7620	CASE/UPPER	A141617-2	B	1	AF	C
N	4	1006 4422	PCB ASSY/MAIN	TK-A141626*1	Common	1	CD	B
N	5	1006 4423	PRINTER ASSY	TK-A242126*1	Common	1	CE	B
N	6	1005 7616	KEY/RUBBER	A141620-1	Common	1	AD	C
LOWER CASE ASSY								
N	7	1005 7637	CASE/LOWER	A141618-1	Common	1	AF	C
	8	1002 4234	SPRING/BATTERY	A343430-1	Common	1	AA	C
	9	1002 4235	SPRING/BATTERY	A343431-1	Common	1	AA	C
	10	1002 4239	SPRING/BATTERY	A343432-1	Common	3	AA	C
	11	1002 4236	SPRING/BATTERY	A343433-1	Common	2	AA	C
PRINTER ASSY (TK-A242126*1)								
N	12	1006 4425	MOTOR ASSY	TK-A343968*1	Common	1	AW	C
N	13	1006 4424	PCB ASSY	TK-A343966*1	Common	1	AN	B
	14	6400 9750	WASHER	A412353-2	Common	2	AA	X
	15	6400 9760	WASHER	A412353-3	Common	1	AA	X
N	16	1005 7626	CHASSIS SUB ASSY	A343921*1	Common	1	AF	C
N	17	1005 7622	BUTTON	A242117-1	Common	1	AA	C
N	18	1005 7624	SCISSORS SUB ASSY	A343916*1	Common	1	AJ	B
N	19	1005 7625	SPRING	A343919-1	Common	1	AA	C
N	20	1004 2290	PIN	A414873A-1	Common	1	AA	X
N	21	1005 7623	ROLLER/PLATEN	A343895-1	Common	1	AE	C
N	22	1005 3741	PRINT HEAD/THERMAL	TAH32D-C1	Common	1	BK	C
N	23	1005 7621	CASE/CASSETTE	A242108-1	Common	1	AV	C

Notes: N-New parts

Q-Quantity used per unit

R-Rank

R- A: Essential

B: Stock recommended

C: Others

X: No stock recommended

N	Item	Code No.	Parts Name	Specification	Applicable	Q	Price Code	R
COMPONENTS								
N	24	1005 7606	COVER/BATTERY	A141619-1	Common	1	AE	C
N	25	1005 7609	SWITCH/HEAD	A343943-1	Common	1	AA	C
N	26	1005 6129	PLATE/DISPLAY	A343942-1	Common	1	AA	C
N	27	1005 7612	CUSHION	A445697-1	Common	1	AA	X
N	28	1005 7608	LABEL	A343898-1	A	1	AA	C
N	28	1006 1992	LABEL	A344033-1	B	1	AD	C
N	29	1005 7611	SPRING	A445691-1	Common	1	AA	C

Notes: **N**-New parts

Q-Quantity used per unit

R-Rank

R- A: Essential

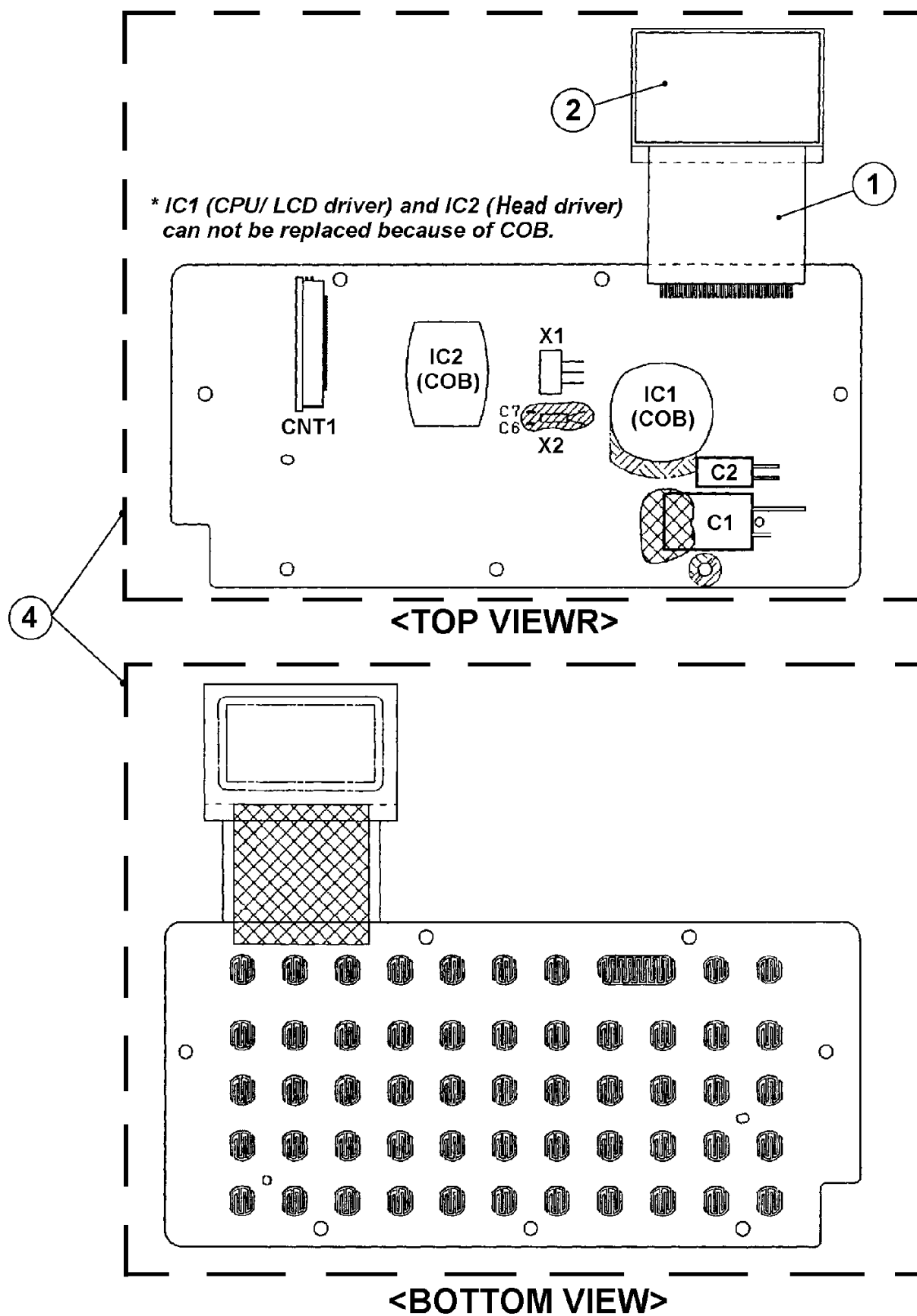
B: Stock recommended

C: Others

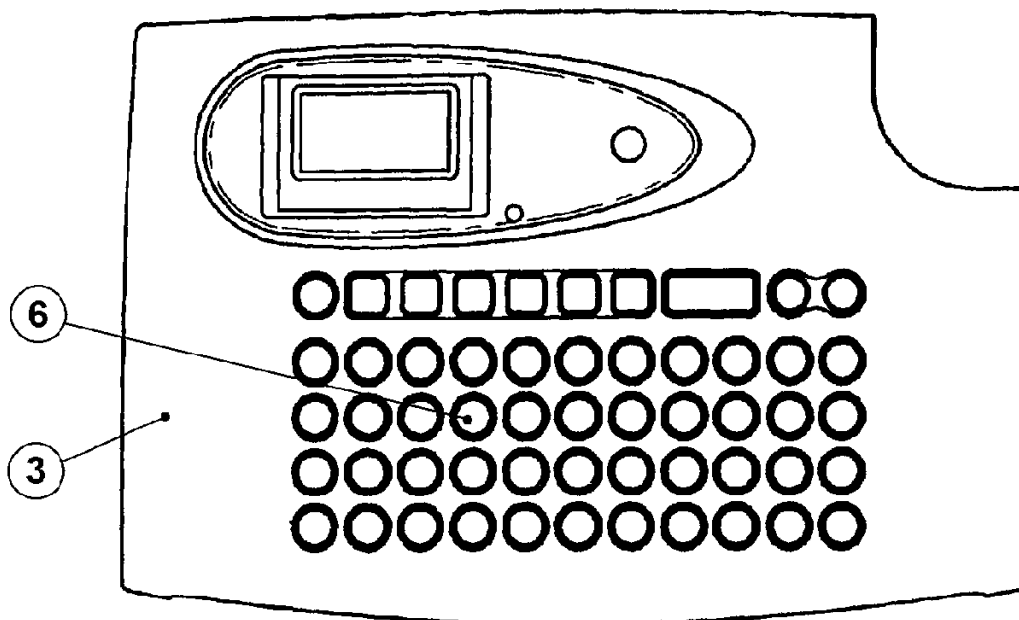
X: No stock recommended

11. EXPLODED VIEW

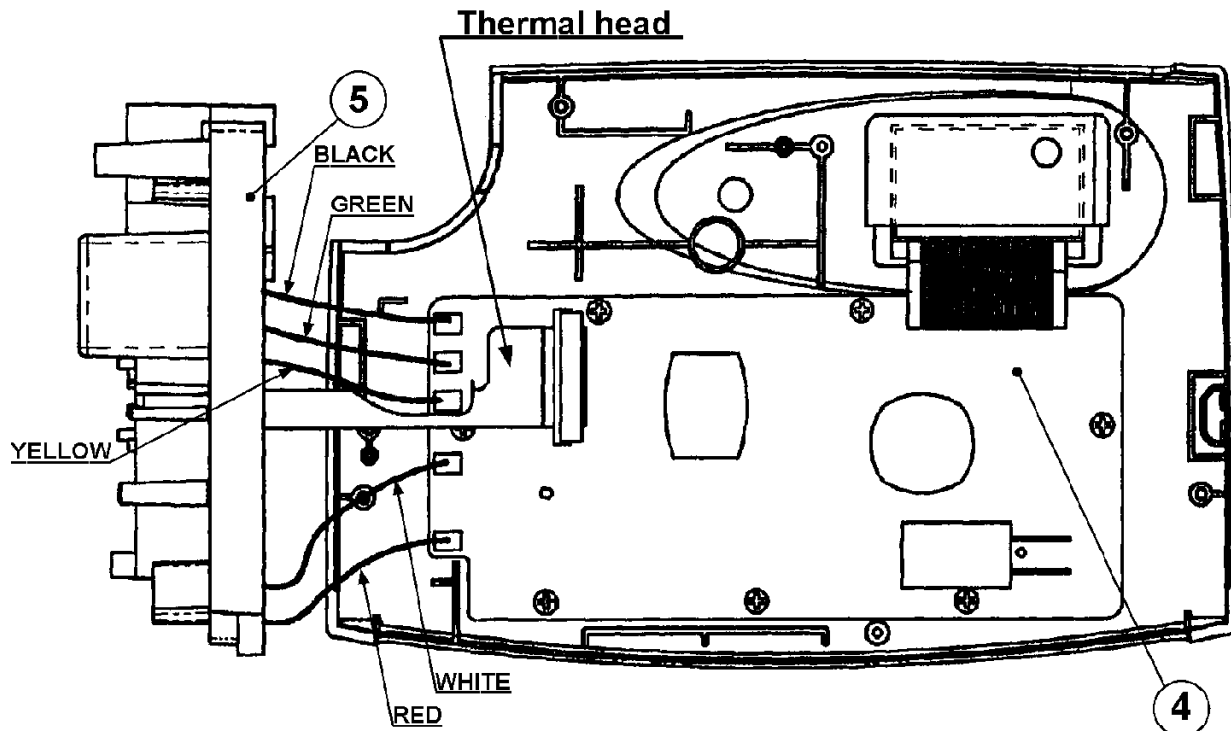
11-1. PCB ASSY/MAIN



11-2. UPPER CASE ASSY

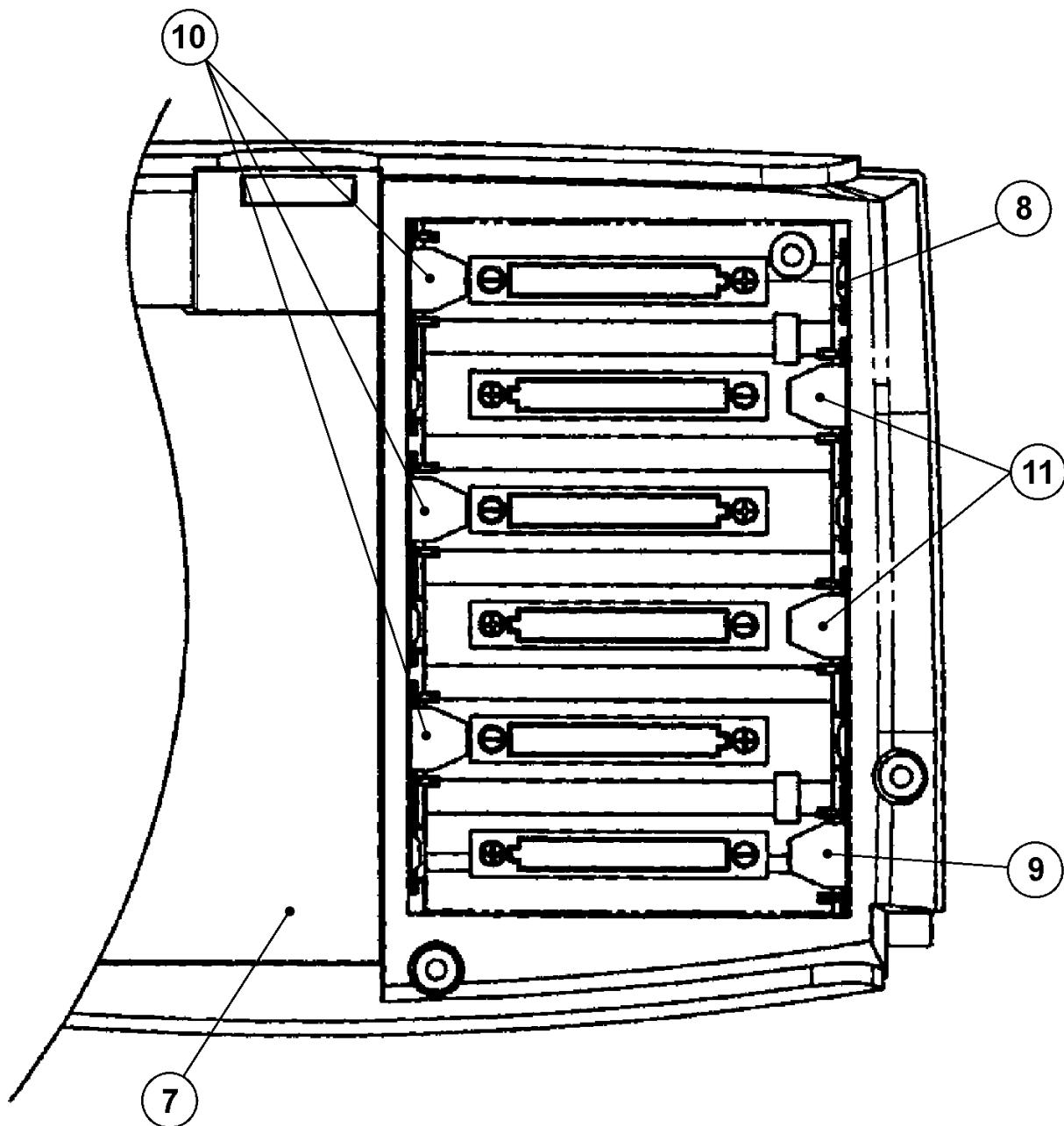


** The thermal head and below wires are assembled onto the printer assembly (item 5).*

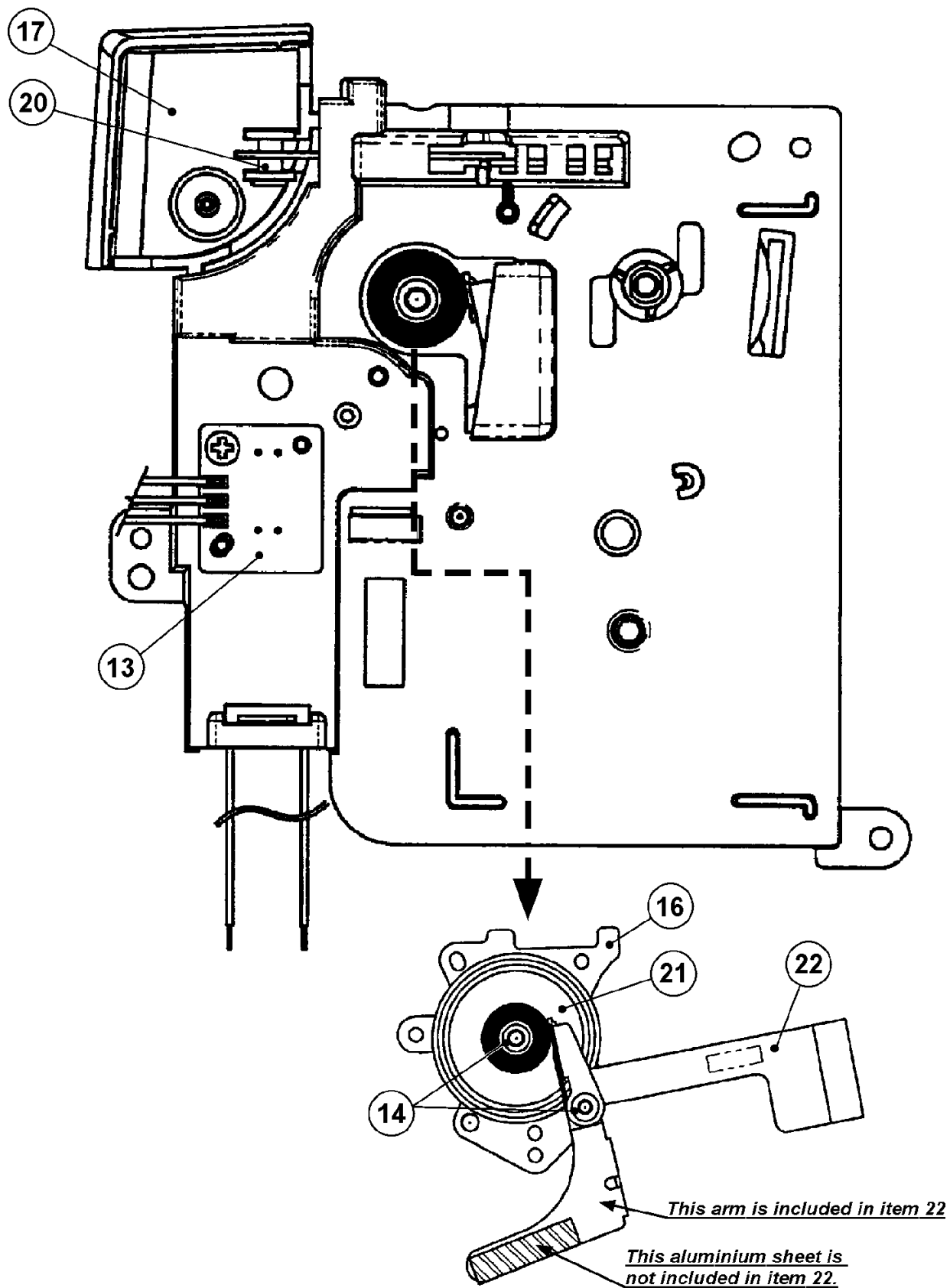


11-3. LOWER CASE ASSY

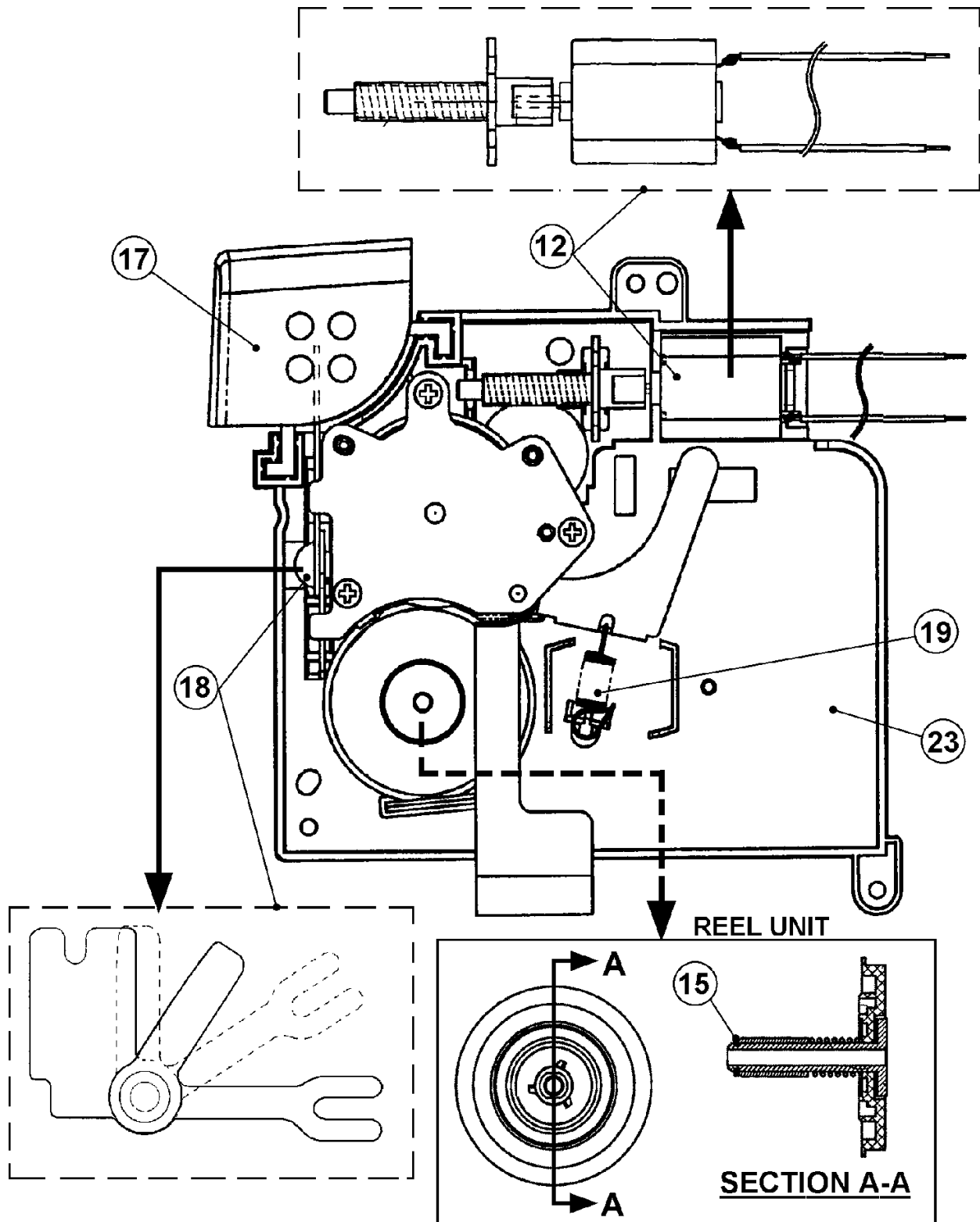
**Note: Maybe, the battery springs (item 8~11) assembled into the lower case (item 7) can not be taken out without damaging the lower case. Therefore, it is recommended to replace both the lower case and the battery spring at the same time for repair.*



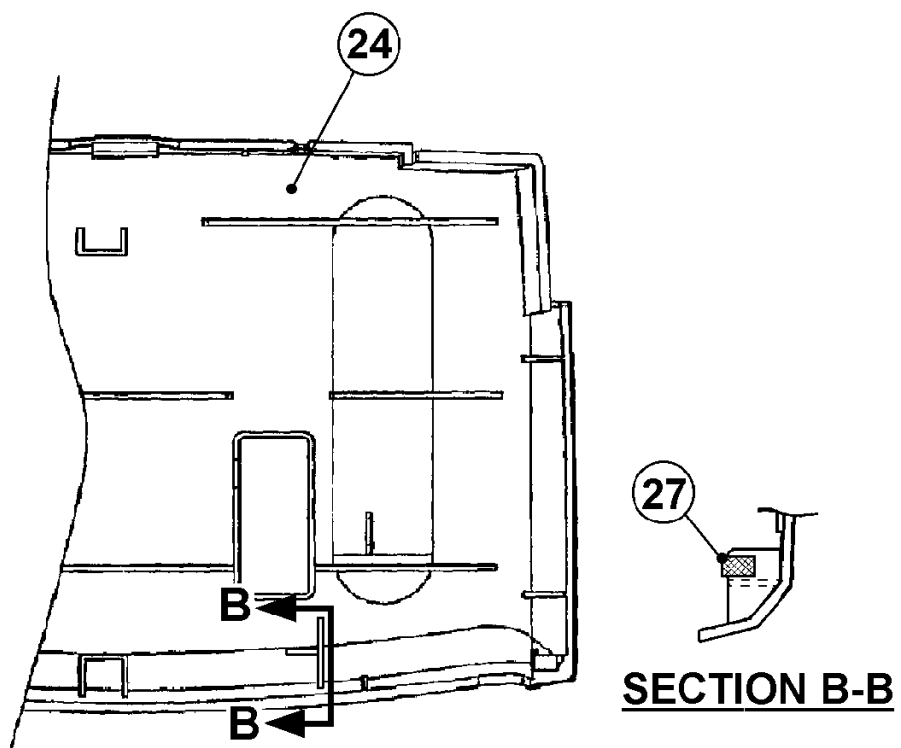
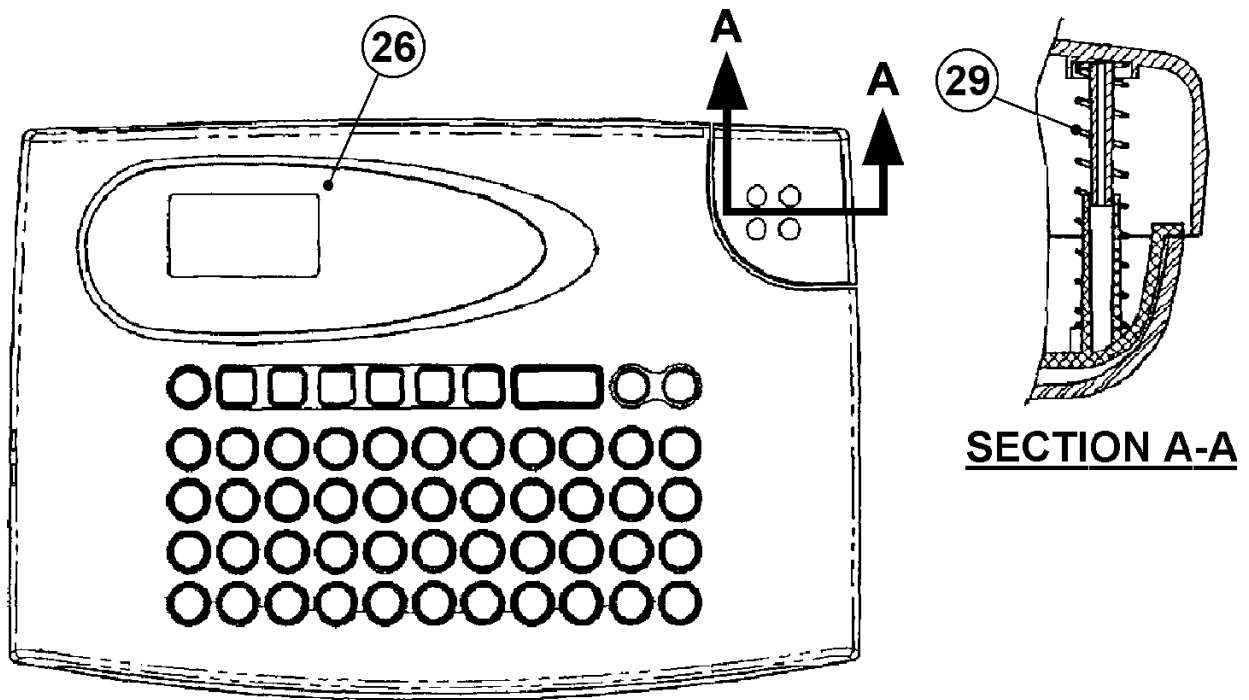
11-4. PRINTER ASSY (1/2)



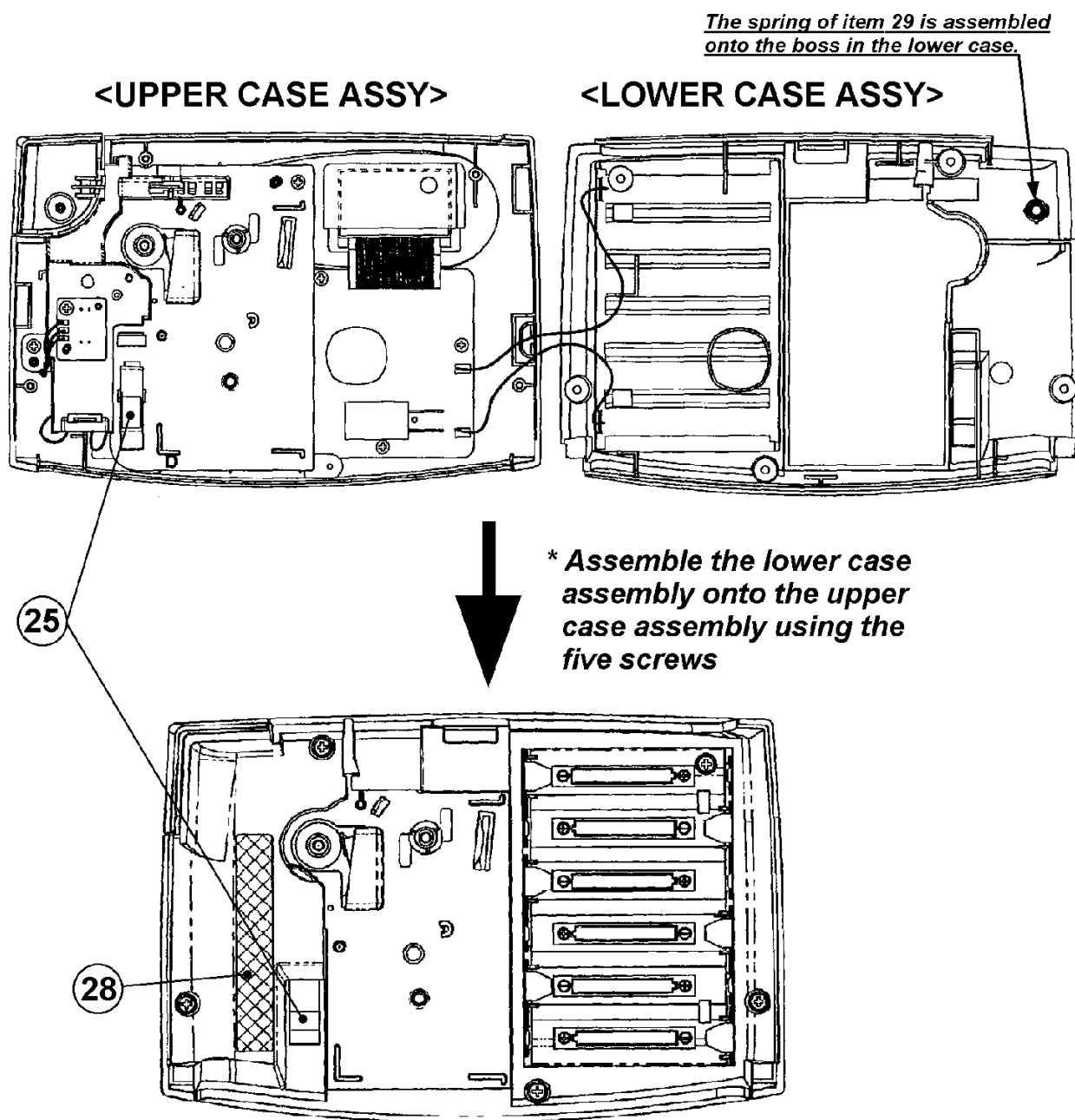
11-4. PRINTER ASSY (2/2)



11-5. COMPONENTS (1/2)



11-5. COMPONENTS (2/2)



CASIO TECHNO CO.,LTD.
Overseas Service Division

Nishi-Shinjuku Kimuraya Bldg. 1F
5-25, Nishi-Shinjuku 7-Chome
Shinjuku-ku, Tokyo 160-0023, Japan