

BIXOLON®

User's Manual

BK3-21

KIOSK PRINTER

Ver. 1.03



www.bixolon.com

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BIXOLON Co., Ltd. maintains ongoing efforts to enhance and upgrade the functions and quality of all our products.

In the following, product specifications and/or user manual content may be changed without prior notice.

Caution

Some semiconductor devices are easily damaged by static electricity. You should turn the printer "OFF", before you connect or remove the cables on the rear side, in order to guard the printer against the static electricity. If the printer is damaged by the static electricity, you should turn the printer "OFF".

Compliance information

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) This device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class A digital device pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Caution: Exposure to Radio Frequency Radiation.

To comply with FCC RF exposure compliance requirements, a separation distance of at least 20 cm must be maintained between the antenna of this device and all persons.

Caution: Any Changes or modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment.

Class A Digital Device : Wired Device

This Apparatus complies with class "A" limits for radio interference as specified in the Canadian department of communications radio interference regulations.

This Class A digital apparatus complies with Canadian ICES-003.

Appareil numérique de classe A: appareil filaire

Get appareil est conforme aux normes class "A" d'interference radio tel que specifier par ministre canadien des communications dans les reglements d'interference radio.

Cet appareil numérique de la classe A est conform à la norme NMB-003 du Canada.

Waste Electrical and Electric Equipment (WEEE)

This marking shown on the product or its literature, indicates that it should not be disposed with other household wastes at the end of its working life. To prevent possible harm to the environment or human health from uncontrolled waste disposal, please separate this from other types of wastes and recycle it responsibly to promote the sustainable reuse of material resources. Household users should contact either the retailer where they purchased this product, or their local government office, for details of where and how they can take this item for environmentally safe recycling. Business users should contact their supplier and check the terms and conditions of the purchase contract. This product should not be mixed with other commercial wastes for disposal.



WARNING & CAUTION

Is described as death, physical injuries, serious financial losses, and damage to data etc. that can be caused to the user.

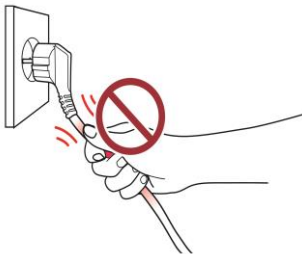
Do not connect multiple products to a single or faulty power outlet. Use only grounded power outlets that meet the industry standard. **Noncompliance may cause electric shock or fire.**



Only use authentic products from BIXOLON. The company will not provide post-sale support for damaged or other quality issues that any fake (or refurbished) products may incur.



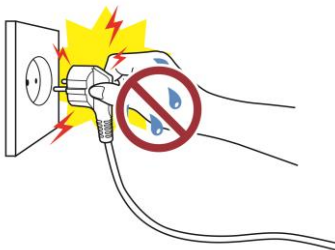
Do not excessively bend or strain the power cord. Securely push the power cord all the way into the power outlet lest it remain loose. Make sure to hold the cord tight when separating it from the power outlet. Do not remove the power cord while the product is in use. **Noncompliance may cause electric shock or fire.**



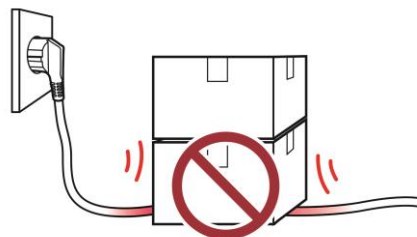
Keep small accessories or other packaging materials away from young children. Beware: choking hazard. **Mishandling the product may incur injuries which may require seeking urgent medical attention.**



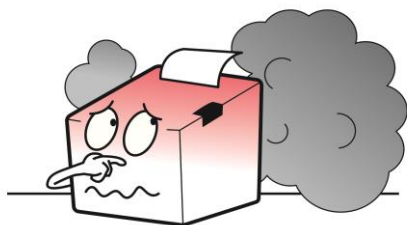
Keep excessive liquids away from the power cord and outlet. If matter is smeared onto the power cords, wipe with a dry cloth. **Noncompliance may cause electric shock or fire.**



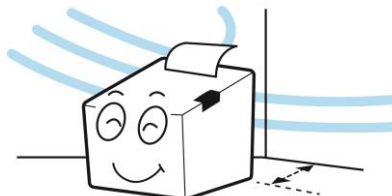
Do not allow the product to be damaged by heavy objects. **Noncompliance may cause electric shock or fire.**



If the product emits a strange sound, burning smell, or smoke, turn off the power immediately and unplug the power cord. If the product is dropped or its exterior is damaged, turn off the power immediately and unplug the power cord. Do not subject the product to shock. **It may start a fire. It may damage the product.**



Install the product in a well-ventilated area by keeping it a certain distance from the wall. The product installed in certain places such as where a lot of fine dust is generated, where the temperature is too high or too low, where there is a lot of moisture or water, and at airports or stations that are used continuously for a long time may suffer serious quality problems due to the influence of the surrounding environment. **An increase in internal temperature may start a fire. Be sure to contact the place of purchase before installing the product.**



Install the product in a fixed place preventing it from tipping over. When moving the product, turn off the power and disconnect all connected cables, including the power cord. **It may damage the product.**



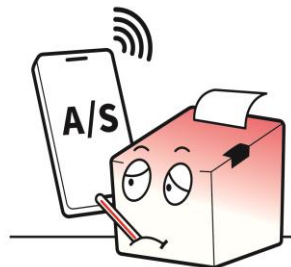
Never independently disassemble, repair, or modify the product as the warranty will become invalid. **When repair is necessary, contact the original place of purchase.**



Do not let any foreign substances enter the product. Do not place heavy objects, liquids, or metals on the product. **This could cause damage to the product or a fire.**





If there is a problem with the product, please contact the original place of purchase or through BIXOLON website's product repair page (<http://www.bixolon.com>).









Manual Introduction

This manual provides basic information on printers and provides ways to install, use, and check them. In order to protect the safety of users and prevent property damage, be fully familiar with this manual before using the product. Please use it.

Manual Symbol Introduction

	Precaution & Warning	It describes death, physical injuries, serious financial losses, and damage to data etc. that can be caused to the user.
	Note	It provides additional information on the function and performance of the product.

Product Symbol Introduction

	DC (Direct current)
	Error, Warning
	Paper Feeding
	Stand-By
	USB
	Ethernet

Printer Introduction

BK3-21 printers have been designed to be connected to various types of kiosk system.

The main features of the printer are as follows

1. KIOSK PRINTER
2. Thermal Receipt Printer
3. Maximum 250mm/s printing speed
4. External size
 - Diameter Φ 80: 109 x 130 x 91 (W x D x H)
 - Diameter Φ 102: 109 x 137 x 99 (W x D x H)
 - Diameter Φ 120: 109 x 144 x 105 (W x D x H)
5. Serial/USB communication
6. Equipped with data buffer (receives print data even while printing)
7. Can print a range of barcodes
8. Range of printing density selectable (controlled with virtual memory switch management)

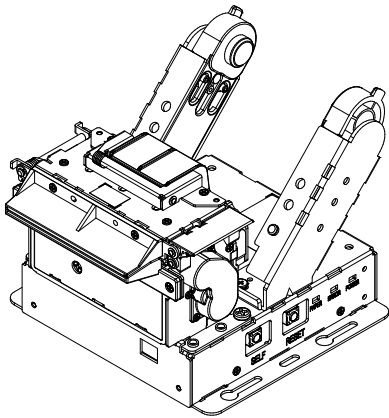
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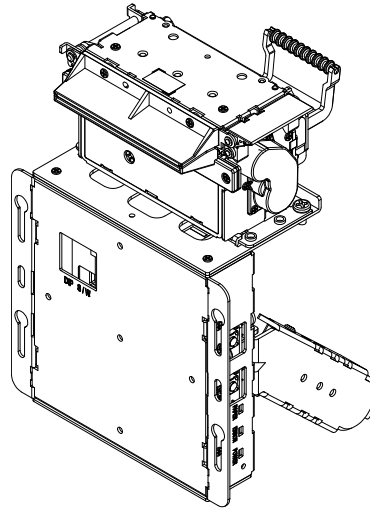
1. Installing Printer and Getting Started



- If there is any part missing, please contact the place of purchase.
- The actual part may look different from the image.

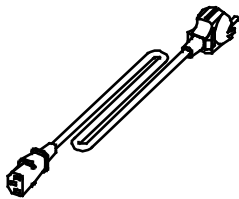


BK3-21

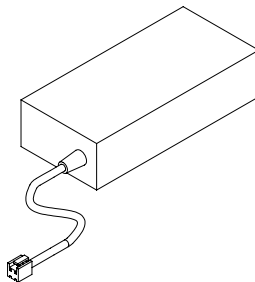


BK3-21V
(Vertical Type)

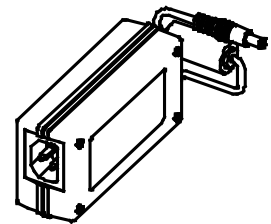
Optional Components



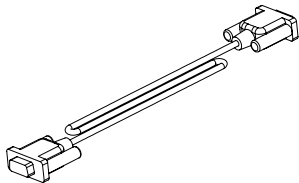
Power Cord



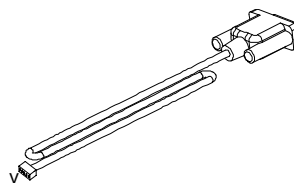
AC/DC Adaptor(2P)



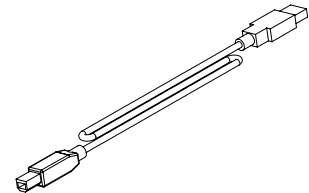
AC/DC Adaptor(DC-Jack)



Serial Cable
(9pin - 9pin)



Connector Cable
(5pin - 9pin)

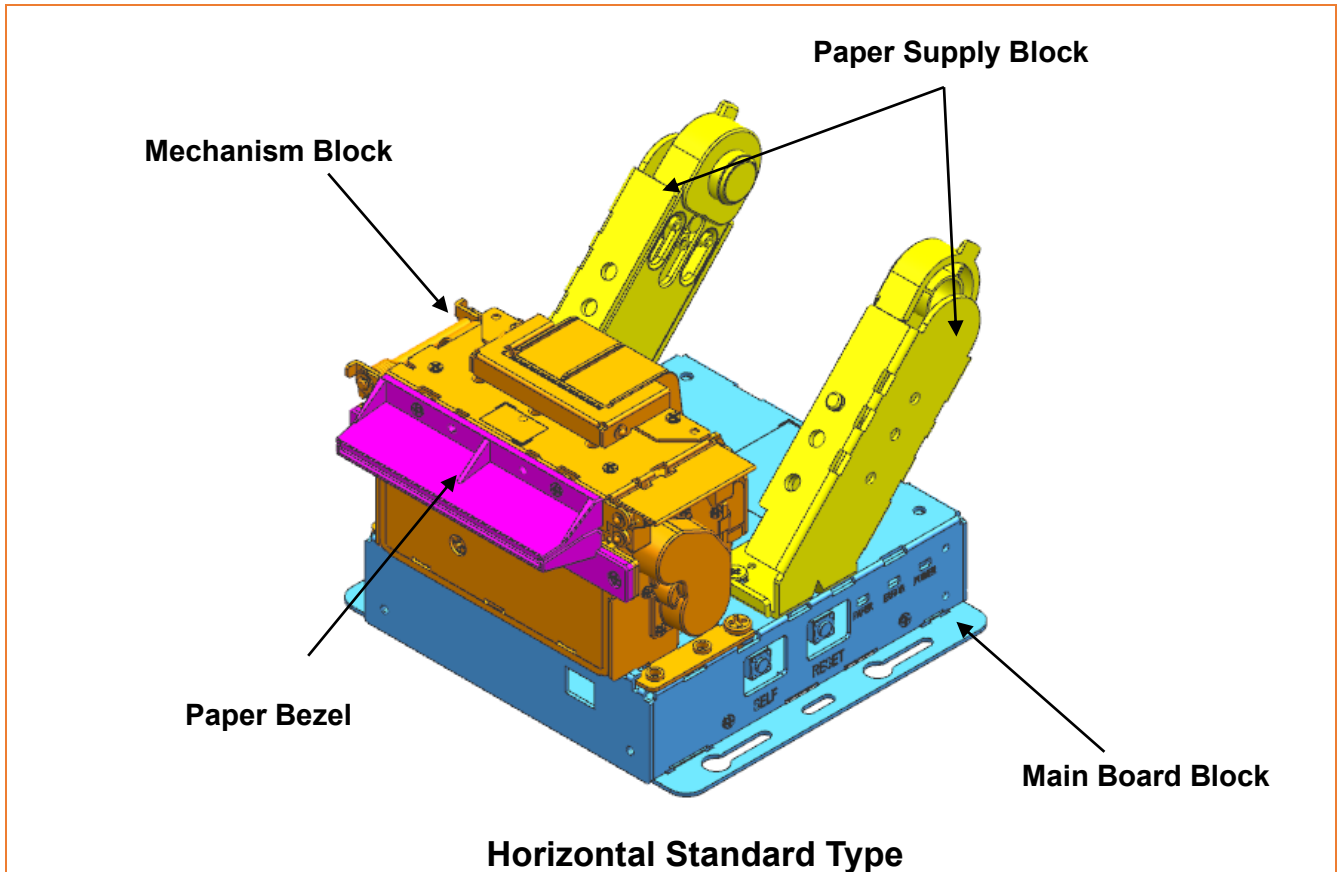


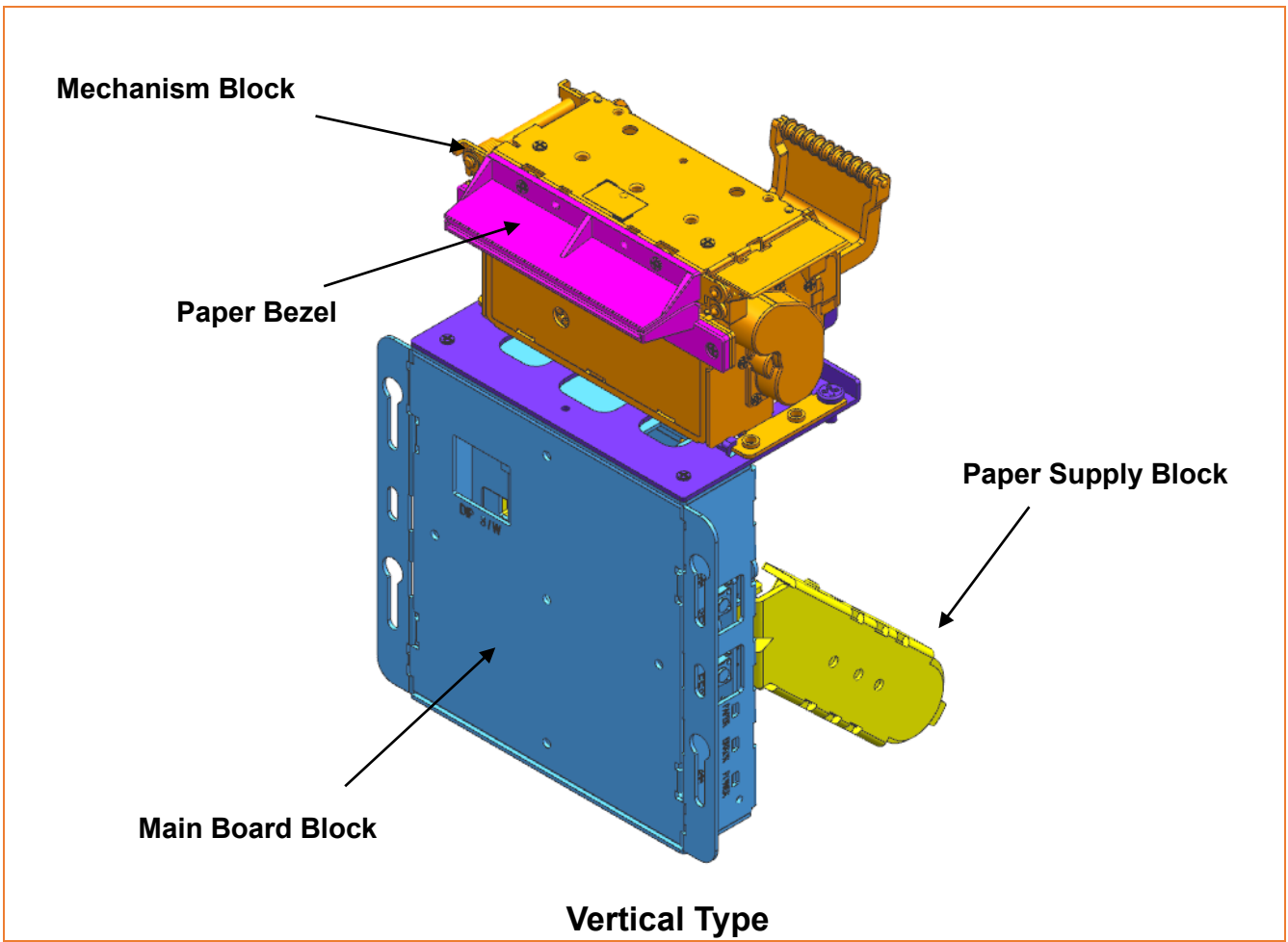
USB A-B Cable

2. Product Part Names

2-1 Printer Names

2-1-1 Part Names

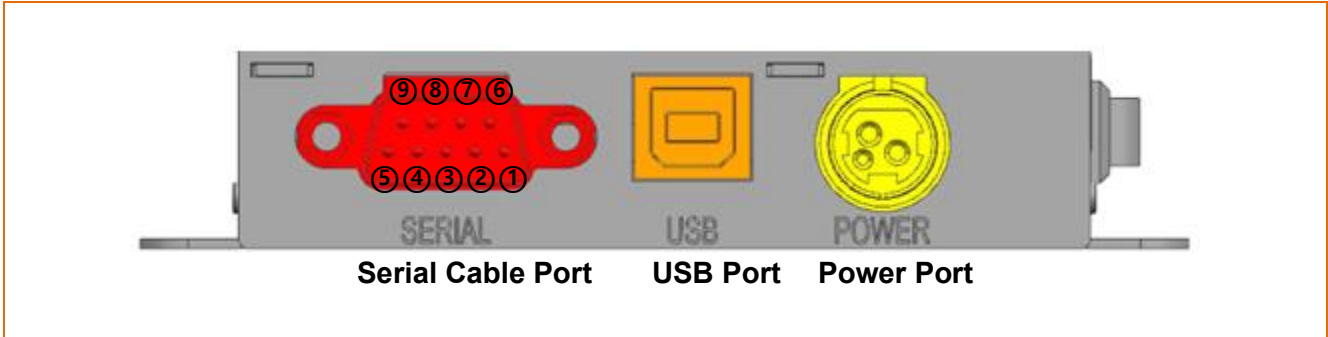




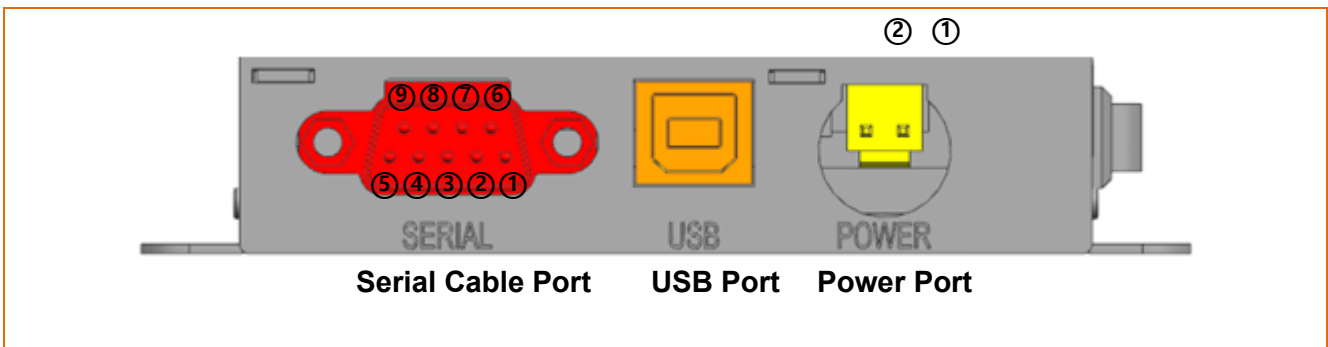
2-2 Interface Part Names

- Connect the printer to the host computer using the right interface cable that complies with the specifications of the interface

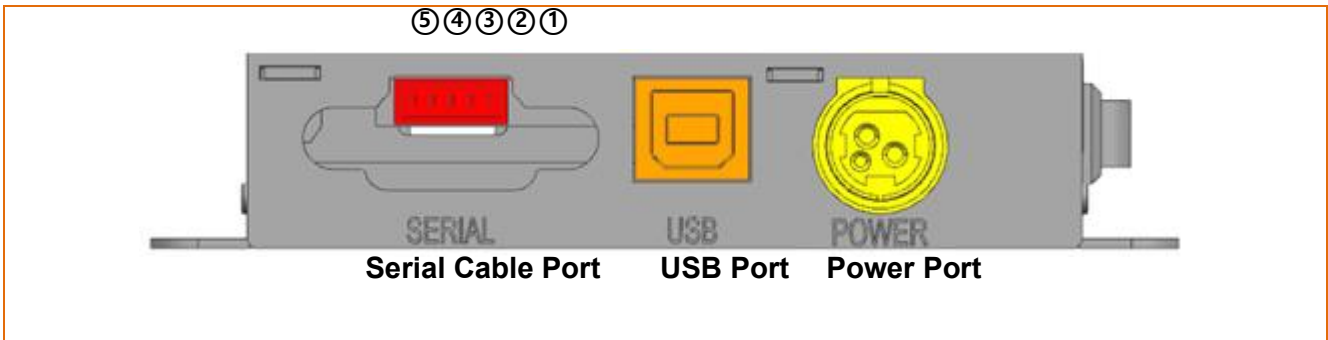
BK3-21a Model: DC Jack Power + Serial Dsub 9P + USB B



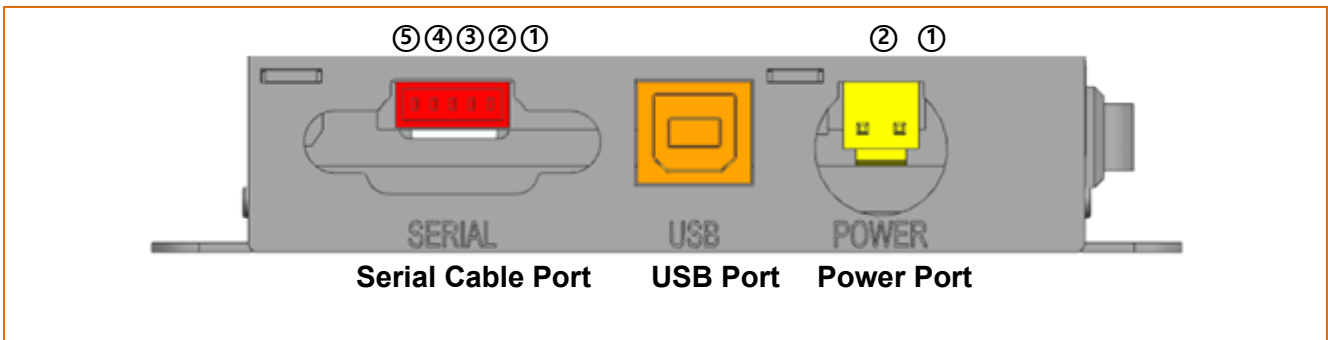
BK3-21b Model: 2P Connector Power + Serial Dsub 9P + USB B



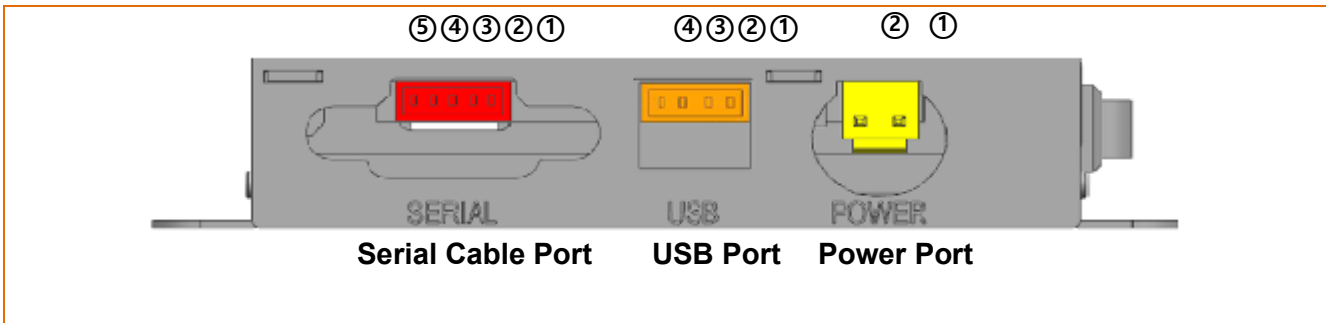
BK3-21c Model: DC Jack Power + Serial 5P Connector + USB B



BK3-21d Model: 2P Connector Power+ Serial 5P Connector + USB B



BK3-21e Model: 2P connector Power + Serial 5P Connector + USB 4P Connector



2-2-1 Serial Interface Signal Description(DSUB 9P Type)

Pin No	Signal	Direction	Function
1	NC	-	-
2	RxD	Input	Receive Data
3	TxD	Output	Transmit Data
4	DTR	Output	Data Terminal Ready
5	GND	-	Signal Ground
6	DSR	Input	Data Set Ready
7	RTS	Output	Ready To Send
8	CTS	Input	Clear To Send
9	NC	-	-

2-2-2 Serial Interface Signal Description(Connector 5P Type)

(Connector Part Number: 20017WR-05A00, Manufacturer: Yeonho Electronics)

Pin No	Signal	Direction	Function
1	CTS	Input	Clear To Send
2	RxD	Input	Receive Data
3	TxD	Output	Transmit Data
4	RTS	Output	Ready To Send
5	GND	-	Signal Ground

2-2-3 USB Interface Signal Description(Connector 4P Type)

(Connector Part Number: 20017WR-04, Manufacturer: Yeonho Electronics)

Pin No	Signal	Function
1	D-	Differential Data Line
2	D+	Differential Data Line
3	GND	Signal Ground
4	VBUS	Host Power: DC5[V] / 500[mA]

2-2-4 Power Signal Description(Connector 2P Type)

(Connector Part Number: YH396-02, Manufacturer: Yeonho Electronics)

Pin No	Signal	Function
1	VCC	Power(24Vdc)
2	GND	Frame Ground



Connect or disconnect the communication cable while the printer power is off. If power is on, your data may be lost.

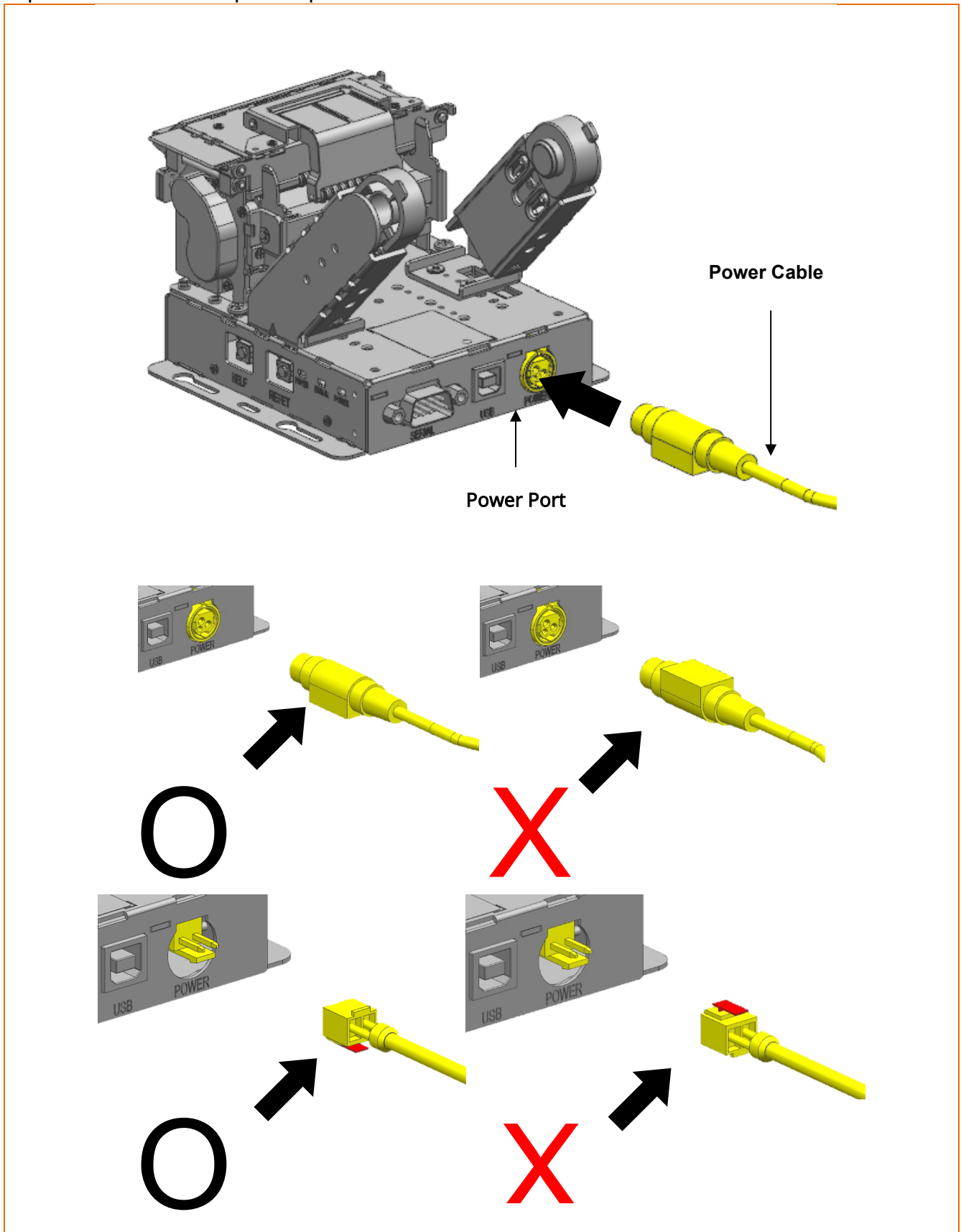
3. Installation & Usage

3-1 Printer Installation Placings

- Allow sufficient space around the printer for proper ventilation.
- Do not place objects close to the back or bottom of the printer, which may hinder the air circulation.
- Install the printer on a flat and level surface.
- Avoid humid environment.
- Install in a place that does not exceed the protocol standard of the wireless communication or the specified maximum distance.
- For stable wireless communication, install in a place where there is no physical obstacle (wall, object, etc.).

3-2 Power Supply Port and Connecting Power Supply

- Face the flat side of the power cable to the bottom of the printer and connect the power cable to the power port.

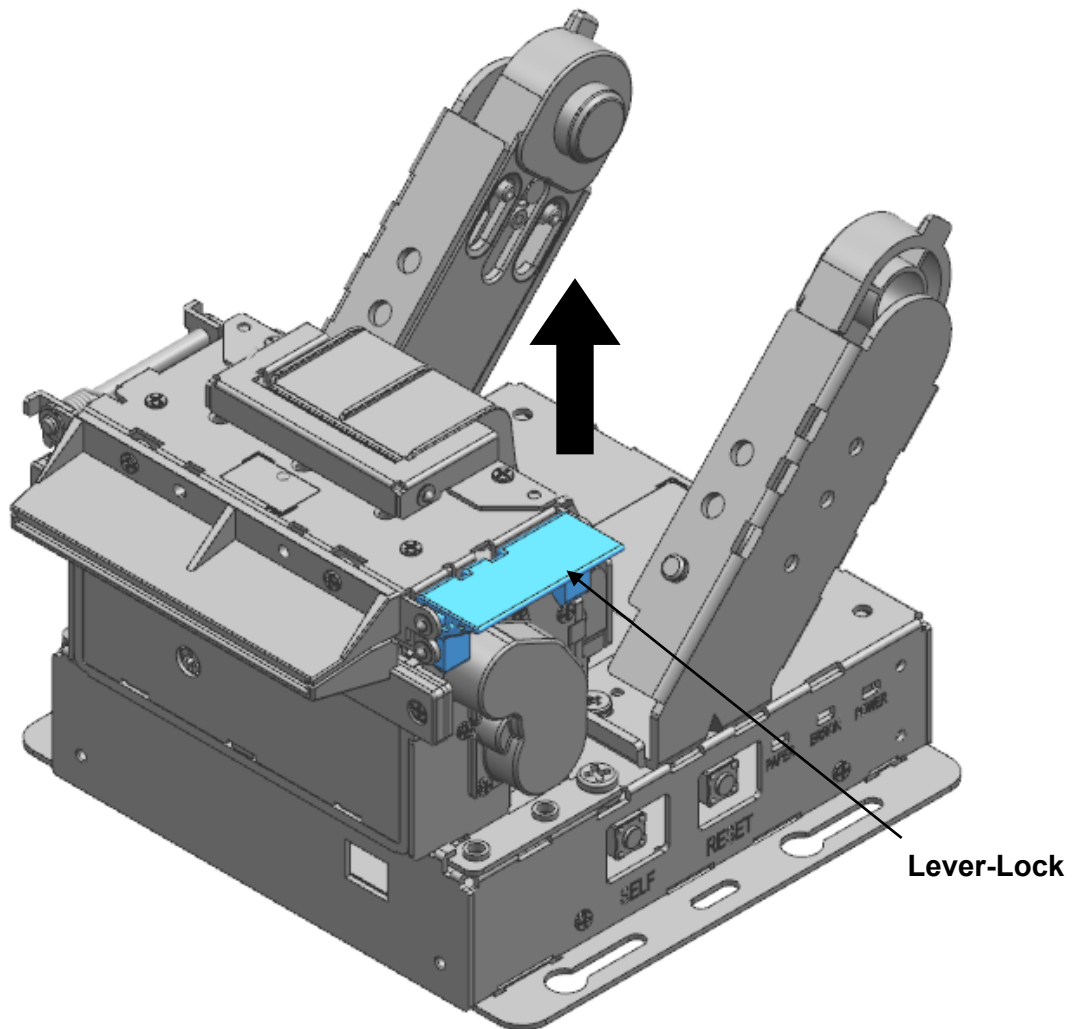




- Only use a power supply provided by Bixelon. Bixelon shall bear no responsibility for damage caused by using a third-party power supply.
- Check the power supply's label to check its electronic specs.
- When removing the power supply, make sure you have a firm grasp of the plug terminal of the power cable and the printer and pull horizontally.
- When connecting or disconnecting power, make sure to remove the power supply from the power outlet before removing.
- Pay attention to the direction in which you insert the power cord.
- Do not connect a voltage out of the specifications of the power supply. It can cause damage to the product or a fire.

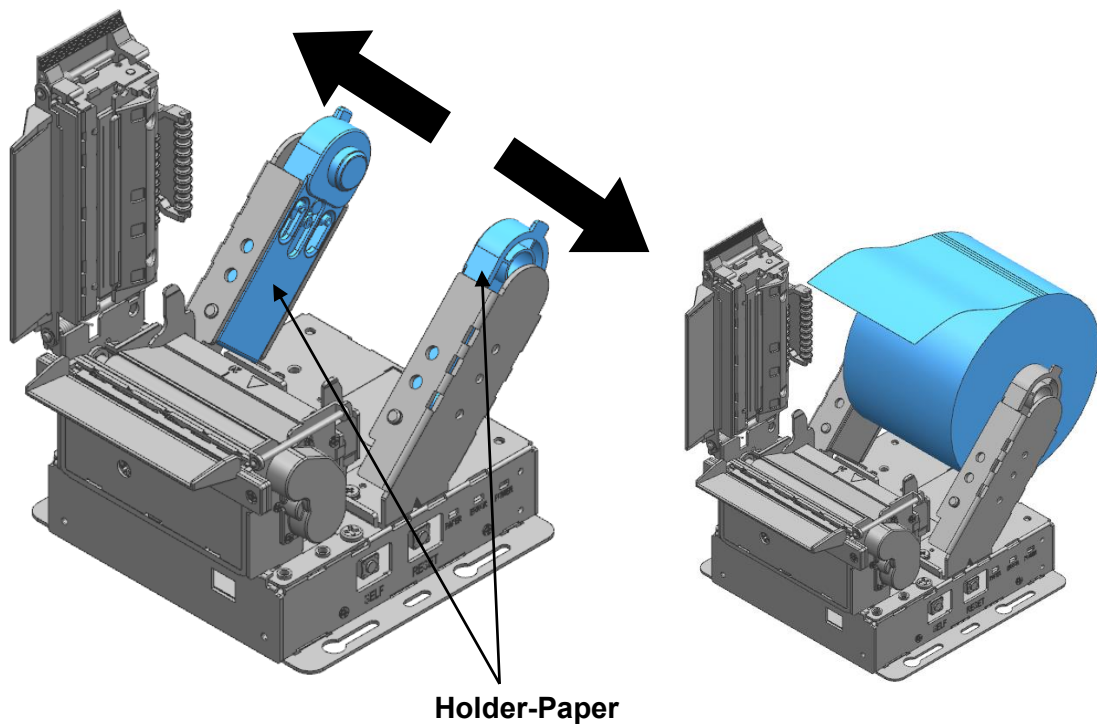
3-3 Installing & Replacing Paper

1) Open the print cover by pulling the Lever-Lock.

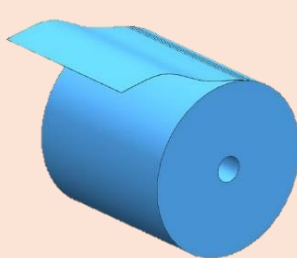


Do not open the print cover while the printer is operating, otherwise, the printer may be damaged.

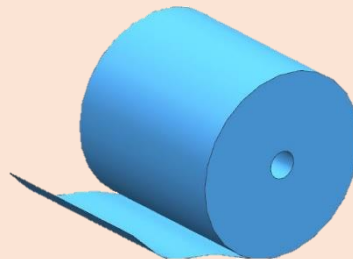
2) Install and change paper by adjusting the holder-paper as shown below.



Check the orientation of the roll paper when inserting it into the printer.

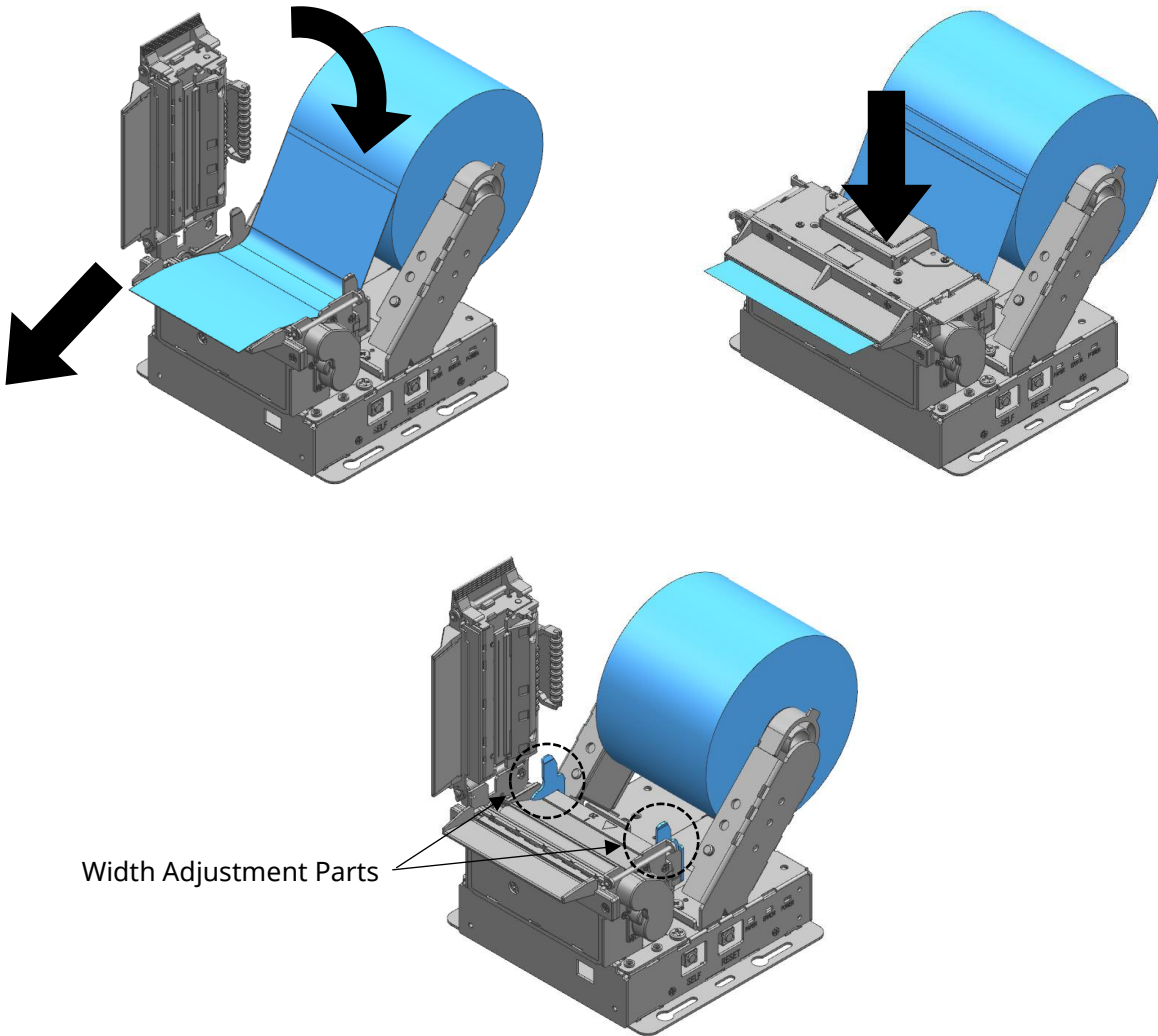


O



X

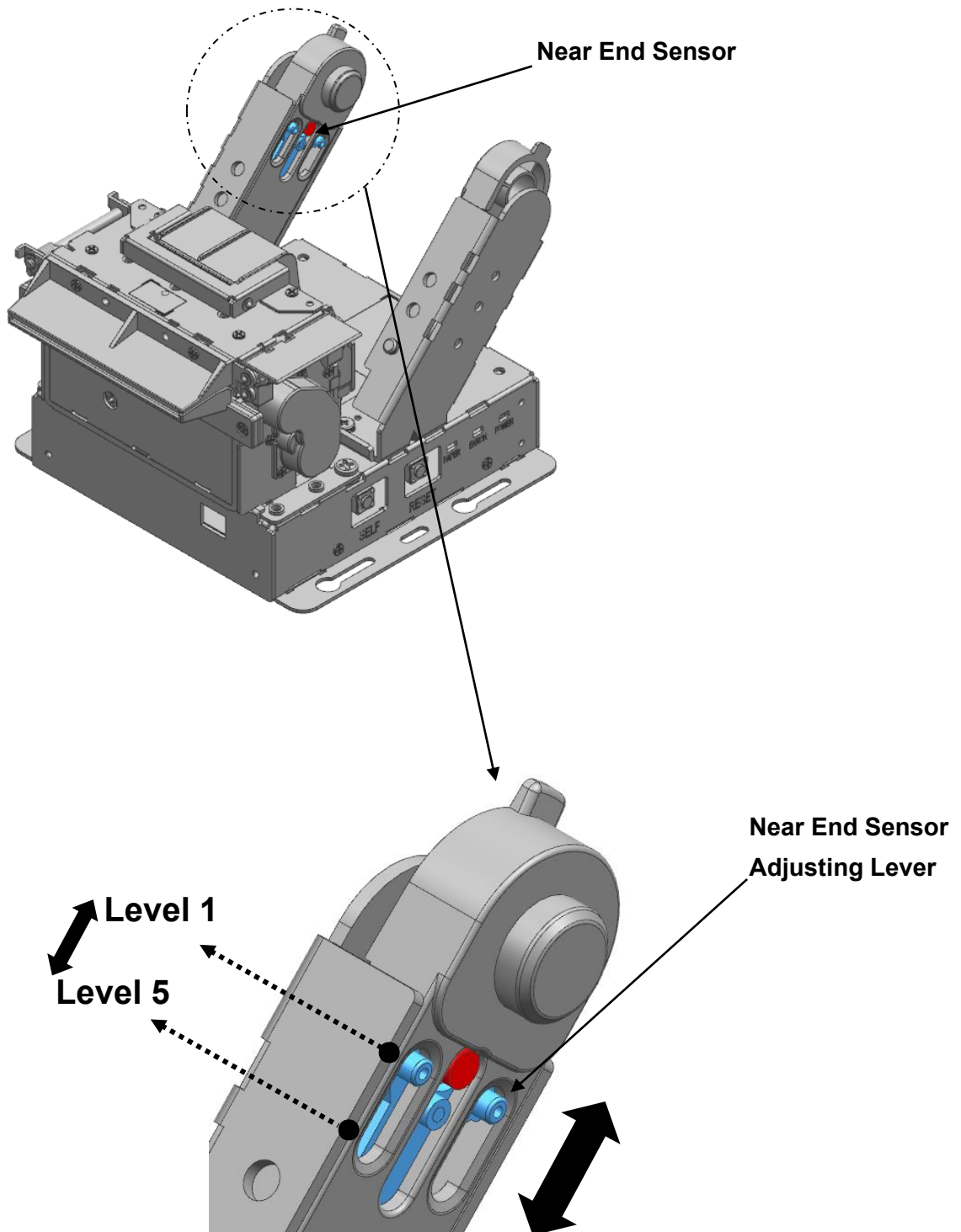
3) Pull out a small amount of paper as shown in the picture, and close the cover.



- When closing the cover, hold down the center of printer cover firmly so that paper roll is loaded correctly.
- Use paper suitable for the standards.
- Change paper when the printer does not receive data. Otherwise, data loss can be caused.
- If printing on the side does not work, adjust the Width Adjustment Parts to the left or right.

3-4 Adjusting Near End Sensor

- As each paper tube has a different point of detecting near end sensor, use the printer by adjusting the near end level. When adjusting the position of near end sensor, move the lever in the direction of the arrow. The adjustment level is composed of five levels; adjust the level to level 5 for a bigger outer diameter, while moving to level 1 for a smaller outer diameter (Refer to the figure below).

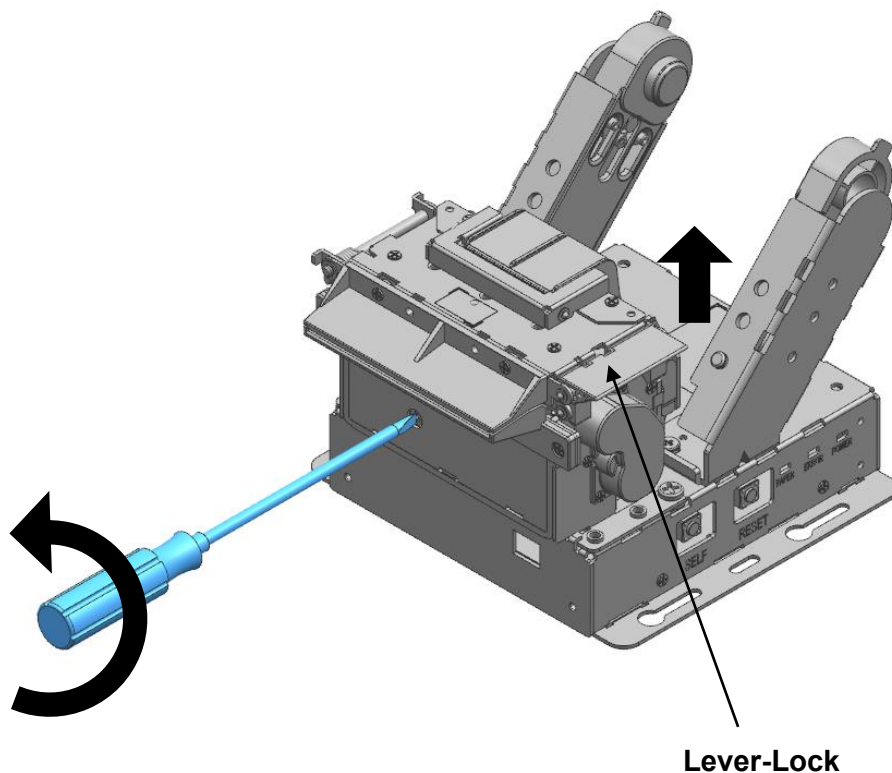


3-5 Removing Paper Jam

- 1) If paper jam is occurred, power off the printer, open the cover using the lever-lock and remove jammed paper. If cutter does not return to original position, act as follows.
- 2) Turn the printer off.
- 3) As shown in the figure below, turn the gear part by using a screwdriver and add a projected blade.
- 4) Turn the printer on and use it.



- Placing your hand over the outlet can cause a paper jam.
- If the cover will not open due to a minor paper jam, turning the power OFF → ON will automatically return the blade to its original position.
- If the cover does not open, do not forcibly open it. It may result in poor paper cutting or printer damage.



3-6 Using Printer Functions



조작부	설명
SELF	셀프 테스트 인쇄를 하기 위해서는 SELF 버튼을 한번 눌러주세요. 셀프 테스트 인쇄 내용을 확인 후 필요 시 SELF 버튼을 눌러 가상메모리 설정 또는 Hexadecimal Dump mode를 진행해주세요.
RESET	프린터의 전원을 재가동하기 위해서는 RESET 버튼을 한 번 눌러주세요.
POWER	전원 표시등은 프린터에 전원이 켜져 있을 경우 켜집니다.
ERROR	에러가 발생하였을 때 켜집니다.
PAPER	이 표시등이 켜지면 용지가 거의 다 소모되었거나 용지가 없음을 나타냅니다. 새 용지로 교환하거나 용지를 넣어주세요. 이 표시등이 깜박거리면 SELF TEST 대기 상태이거나 매크로 실행 대기중임을 나타냅니다.

4. Printer Setting Change

4-1 Reconfiguration of Printer

- This product supports dip switch. In order to change the product settings, change the dip switch setting or use the virtual memory switch utility. Use virtual memory switch management function for self-diagnosis.

4-1-1 DIP Switch 1

Switch	Function	ON	OFF	Default
1-1	Baud rate selection (bps)	* Refer to following Table 1		OFF
1-2				OFF
1-3	-	-	-	OFF
1-4	Black mark mode	Enable	Disable	OFF

* Table 1 – Baud rate (bps) selection

Baud rate (bps)	1-2	1-1	Default
115,200	OFF	OFF	115,200
38,400	OFF	ON	
19,200	ON	OFF	
9,600	ON	ON	

- * Flow control, data length, and parity bits can be changed via virtual memory switch settings (Refer to MSW 8).

4-2 MSW (Memory Switch)

1) MSW 1

Switch	Function	ON	OFF	Default
1-1	Select print speed	* Refer to following Table 2		OFF
1-2				OFF
1-3				OFF
1-4	-	-	-	OFF
1-5	-	-	-	OFF
1-6	Select print density	* Refer to following Table 3		OFF
1-7				OFF
1-8				OFF

* Table 2 – Print speed selection

Print speed	1-3	1-2	1-1	Default
250mm/s	OFF	ON	OFF	200mm/s
230mm/s	OFF	OFF	ON	
200mm/s	OFF	OFF	OFF	
170mm/s	OFF	ON	ON	
150mm/s	ON	OFF	OFF	
130mm/s	ON	OFF	ON	
120mm/s	ON	ON	OFF	
100mm/s	ON	ON	ON	

* Table 3 – Print Density Selection

Print Density	1-8	1-7	1-6	Remark
Density Level 5	ON	OFF	ON	Dark
Density Level 4	ON	OFF	OFF	
Density Level 3	OFF	OFF	OFF	Default
Density Level 2	OFF	OFF	ON	
Density Level 1	OFF	ON	OFF	Light

2) MSW 2

Switch	Function	ON	OFF	Default
2-1	Specification for destination	Double byte country	Single byte country	OFF
2-2	-	-	-	OFF
2-3	Code page selection	* Refer to following Table 4		OFF
2-4				OFF
2-5				OFF
2-6				OFF
2-7				OFF
2-8				OFF

* Table 4 - Code page selection

2-8	2-7	2-6	2-5	2-4	2-3	Character Table	
OFF	OFF	OFF	OFF	OFF	OFF	Page 0	437 (USA, Standard Europe)
OFF	OFF	OFF	OFF	ON	OFF	Page 1	Katakana
OFF	OFF	OFF	ON	OFF	OFF	Page 2	850 (Multilingual)
OFF	OFF	OFF	ON	ON	OFF	Page 3	860 (Portuguese)
OFF	OFF	ON	OFF	OFF	OFF	Page 4	863 (Canadian-French)
OFF	OFF	ON	OFF	ON	OFF	Page 5	865 (Nordic)
OFF	OFF	ON	ON	OFF	OFF	Page 16	1252 (Latin I)
OFF	OFF	ON	ON	ON	OFF	Page 17	866 (Cyrillic #2)
OFF	ON	OFF	OFF	OFF	OFF	Page 18	852 (Latin 2)
OFF	ON	OFF	OFF	ON	OFF	Page 19	858 (Euro)
OFF	ON	OFF	ON	OFF	OFF	Page 21	862 (Hebrew DOS code)
OFF	ON	OFF	ON	ON	OFF	Page 22	864 (Arabic)
OFF	ON	ON	OFF	OFF	OFF	Page 23	Thai42
OFF	ON	ON	OFF	ON	OFF	Page 24	1253 (Greek)
OFF	ON	ON	ON	OFF	OFF	Page 25	1254 (Turkish)
OFF	ON	ON	ON	ON	OFF	Page 26	1257 (Baltic)
ON	OFF	OFF	OFF	OFF	OFF	Page 27	Farsi
ON	OFF	OFF	OFF	ON	OFF	Page 28	1251 (Cyrillic)
ON	OFF	OFF	ON	OFF	OFF	Page 29	737 (Greek)
ON	OFF	OFF	ON	ON	OFF	Page 30	775 (Baltic)
ON	OFF	ON	OFF	OFF	OFF	Page 31	Thai14
ON	OFF	ON	OFF	ON	OFF	Page 32	Hebrew Old code
ON	OFF	ON	ON	OFF	OFF	Page 33	1255 (Hebrew New code)
ON	OFF	ON	ON	ON	OFF	Page 34	Thai11
ON	ON	OFF	OFF	OFF	OFF	Page 35	Thai18
ON	ON	OFF	OFF	ON	OFF	Page 36	855 (Cyrillic)
ON	ON	OFF	ON	OFF	OFF	Page 37	857 (Turkish)
ON	ON	OFF	ON	ON	OFF	Page 38	928 (Greek)
ON	ON	ON	OFF	OFF	OFF	Page 39	Thai16

ON	ON	ON	OFF	ON	OFF	Page 40	1256 (Arabic)
ON	ON	ON	ON	OFF	OFF	Page 41	1258 (Vietnam)
ON	ON	ON	ON	ON	OFF	Page 42	Khmer (Cambodia)
OFF	OFF	ON	OFF	OFF	ON	Page 47	1250 (Czech)
OFF	OFF	ON	ON	ON	ON	Page 49	TCVN-3
OFF	ON	OFF	OFF	OFF	ON	Page 50	TCVN-3 (Capital)
OFF	ON	OFF	OFF	ON	ON	Page 51	VISCII

3) MSW 3

Switch	Function	ON	OFF	Default
1	Select emulation	* Refer to following Table 5		OFF
2				OFF
3				OFF
4	-	-	-	OFF
5	Printing mode for Thai character	3 PASS	1 PASS	OFF
6~8	-	-	-	OFF

* Table 5 - Emulation selection

Emulation	3-3	3-2	3-1	Remark
Emulation 1	OFF	OFF	OFF	
Emulation 2	OFF	OFF	ON	BXL / POS
Emulation 3	OFF	ON	OFF	
Emulation 4	OFF	ON	ON	
Emulation 5	ON	OFF	OFF	

* Supports all BIXOLON software only when set to Emulation 2 (BXL / POS).

4) MSW 4

Switch	Function	ON	OFF	Default
1	Swap font B and C	Enable	Disable	OFF
2	Printer buffer initialization	Enable	Disable	OFF
3	Single byte font selection (Default font)	* Refer to following Table 6		OFF
4				OFF
5~8	-	-	-	OFF

* Table 6 – Single byte Font Selection

Single byte font selection	4-4	4-3	Default
Font A (12 x 24)	OFF	OFF	Font A
Font B (9 x 17)	OFF	ON	
Font C (9 x 24)	ON	OFF	
-	ON	ON	

* The printer buffer initialization function works when the printer cover is opened and closed.

5) MSW 5

Switch	Function	ON	OFF	Default
1	Auto cutter selection	* Refer to following Table 7		OFF
2				OFF
3	Paper save mode	* Refer to following Table 8		OFF
4				OFF
5	Paper save mode cutting correction	Enable	Disable	OFF
6	Auto line feed (CR mode)	Enable (LF)	Disable (Ignore)	OFF
7	-	-	-	OFF
8	Near-end sensor	Disable	Enable	OFF

* Table 7 – Auto Cutter Selection

Auto Cutter Selection	5-2	5-1	Remark
Full cut	OFF	OFF	Default
Partial cut	OFF	ON	
Programmable cut	ON	OFF	
No cut	ON	ON	

* Programmable cut is operated according to the parameters of GS V command, while others operate as partial cut.

* Table 8 – Paper save mode

Paper save mode	5-4	5-3	Remark
Disable	OFF	OFF	Default
Level 1	OFF	ON	-
Level 2	ON	OFF	-
Level 3	ON	ON	-

6) MSW 6

Switch	Function	ON	OFF	Default
1~8	-	-	-	OFF

7) MSW 7

Switch	Function	ON	OFF	Default
1	Print width selection	* Refer to following Table 9		OFF
2				OFF
3	-	-	-	OFF
4	-	-	-	OFF
5	-	-	-	OFF
6	-	-	-	OFF
7	black mark sensor selection	Right	Left	OFF
8	-	-	-	OFF

* Black mark sensor selection applies only when DIP switches 1-4 are ON.

* Select sensor from paper exit as standard.

* Table 9 – Print width selection

Print width	7-2	7-1	Default
54mm (432dot)	OFF	OFF	54mm
48mm (384dot)	OFF	ON	
12mm (96dot)	ON	OFF	

8) MSW 8

Switch	Function	ON	OFF	Default
1	Data length	7 bit	8 bit	OFF
2	Parity check	YES	NO	OFF
3	Parity selection	EVEN	ODD	OFF
4	Data receive error	Ignore	Print “?”	OFF
5	Baud rate selection	* Refer to following Table 10		OFF
6				OFF
7				OFF
8	Serial interface selection	Memory Switch	DIP Switch	OFF

* The memory switch setting for 8-5 to 7 (Baud rate selection) applies only when memory switch 8-8 is ON.

* The setting for DIP switch is not considered when memory switch 8-8 is ON.

* Table 10 - Baud rate selection

Baud rate	8-7	8-6	8-5	Default
115,200bps	OFF	OFF	OFF	115,200bps
57,600bps	OFF	OFF	ON	
38,400bps	OFF	ON	OFF	
19,200bps	OFF	ON	ON	
9,600bps	ON	OFF	OFF	
4,800bps	ON	OFF	ON	
2,400bps	ON	ON	OFF	
115,200bps	ON	ON	ON	

9) MSW 9

Switch	Function	ON	OFF	Default
1	Serial communication flow control	* Refer to following Table 11		OFF
2				OFF
3~8	-	-	-	OFF

* Table 11 - Serial communication flow control

Serial communication flow control	9-2	9-1	Default
Hardware(DTR/DSR)	OFF	OFF	Hardware (DTR/DSR)
Software(XON/XOFF)	OFF	ON	
None	ON	OFF	
Hardware(DTR/DSR)	ON	ON	

10) MSW 10

Switch	Function	ON	OFF	Default
1~8	-	-	-	OFF

11) MSW 11

Switch	Function	ON	OFF	Default
1~8	-	-	-	OFF

12) MSW 12

Switch	Function	ON	OFF	Default
1	Select double byte country	* Refer to following Table 12		OFF
2				OFF
3				OFF
4~8	-	-	-	OFF

* Table 12 - Select double byte country

Select double byte country	12-3	12-2	12-1	Remark
STD	OFF	OFF	OFF	Single byte font
KOR	OFF	OFF	ON	KS5601
CHN	OFF	ON	OFF	BIG5 or GB2312
JPN	OFF	ON	ON	SHIFT-JIG

13) MSW 13

Switch	Function	ON	OFF	Default
1~8	-	-	-	OFF

14) MSW 14

Switch	Function	ON	OFF	Default
1~8	-	-	-	OFF



- Use unified utility or self-test mode to change the virtual memory switch setting.
- Refer to the utility and service manual for more information.



- Make sure to turn the printer off and on again after using the virtual memory switch utility to adjust the settings of the product.
- To change the DIP switch setting, turn off the printer power. Changing the DIP switch setting while the power is on may cause a short circuit and result in printer malfunction.
- Supports all BIXOLON software only when set to Emulation 2 (BXL /POS).

5. Self-Test

• The self-test checks whether the printer has any problems. If the printer does not function properly, contact your dealer. The self-test procedure is as follows:

- 1) Make sure paper roll has been installed properly.
- 2) Turn on the power while holding down the SELF button and the self-test begins.
- 3) The self-test prints the current status of the printer including control ROM version.
- 4) After printing the current printer status, the printer wait for the next step after printing the following lines. (The paper signal light keeps blinking.)

**Press the button continuously with below number,
You can enter the mode what you want.
(Procedure off If no touching over 2 sec)**

- 1: Memory switch configuration mode**
- 2: Hexadecimal dump mode**
- 3 or more: End**

- 5) Press the SELF button once for the memory switch configuration mode and twice for the hexadecimal dump mode.
 - The self-test ends by pressing the SELF button three times.
 - The self-test automatically ends two seconds after self-test printing without the need for pressing the SELF button

(1) If you select "VMSM Selection"

- ① When entering the memory switch configuration mode, the following message is printed.

**** VMSM Selection ****
0: Exit and reboot printer
1: Print current settings
2: Set Serial Interface
3: Set Print Density
4: Set Print Speed
5: Set Cutting mode
6: Set Print width
7: Factory Reset
8 or more: None

- ② To execute the above function, operate the SELF button as follows.
 - Step 1 (selecting desired item): Press the button as many times as the number displayed before each menu to select the desired setting menu.
 - Step 2 (entering setting item): Press and hold the button for 1 second to apply the selected item.
- ③ Execute the "0: Save settings and exit" function to apply the changed settings. When "Save settings and exit" mode is active, the above message will be displayed and the printer will reboot.

***** COMPLETED *****

(2) If you select “hexadecimal dump mode”

① When entering the hexadecimal dump mode, the following message is printed.

Hexadecimal dumping
To terminate hexadecimal dump
press SELF button three times

② Execute the program to send data to the printer.

Printing is conducted by dividing all data into two rows.

The first row indicates hexadecimal code.

The second row indicates ASCII characters corresponding to the hexadecimal code.

```

1B 21 00 1B 26 02 40 40 40 40    . ! . . & . @ @ @ @
02 0D 1B 44 0A 14 1E 28 28 28    . . . D . . . ( ( (
00 01 0A 41 0D 42 0A 43 43 43    . . . A . B . C C C
    
```

- When there is no corresponding ASCII code, a period (.) is printed.
- All commands cannot be used in the state of hexadecimal printing mode.

③ When the hexadecimal dump completes, press SELF button three times.

④ As the hexadecimal dump code ends, the following message is printed.

Hexadecimal Dump Completed.



With self-test, you can check that the printer is operating normally, the print quality, ROM version, and memory switch setting.



- The self-test automatically ends two seconds after self-test printing without the need for pressing the SELF button.
- When the “0: Save settings and exit” function is not executed in the memory switch configuration mode, setting information is not saved in the printer.
- When it is impossible to enter the hexadecimal dump mode, please contact the customer center.
- **If you are unable to enter the hexadecimal dump mode, please contact the Customer Support.**

6. Automatic calibration of Black-mark sensor

A printer is designed to detect most of Black-mark types. However it might fail to detect few special cases. In the event of such a failure, we would like you to do as follows

- 1) Turn off the printer and remove a paper roll.
- 2) Press 'Self button', while turning on the printer.
 - Hold down 'Self button' till both Paper LED and Error LED are blinking.
 - Both LED blinking indicates that 'Automatic Black-mark recognition mode' is on.
- 3) Open the cover and load a paper roll then close the cover.
- 4) Black-mark calibration commences.
 - A printer begins with recognizing the gap of each black-mark.
- 5) A printer will be rebooted, after the calibration is successfully done.

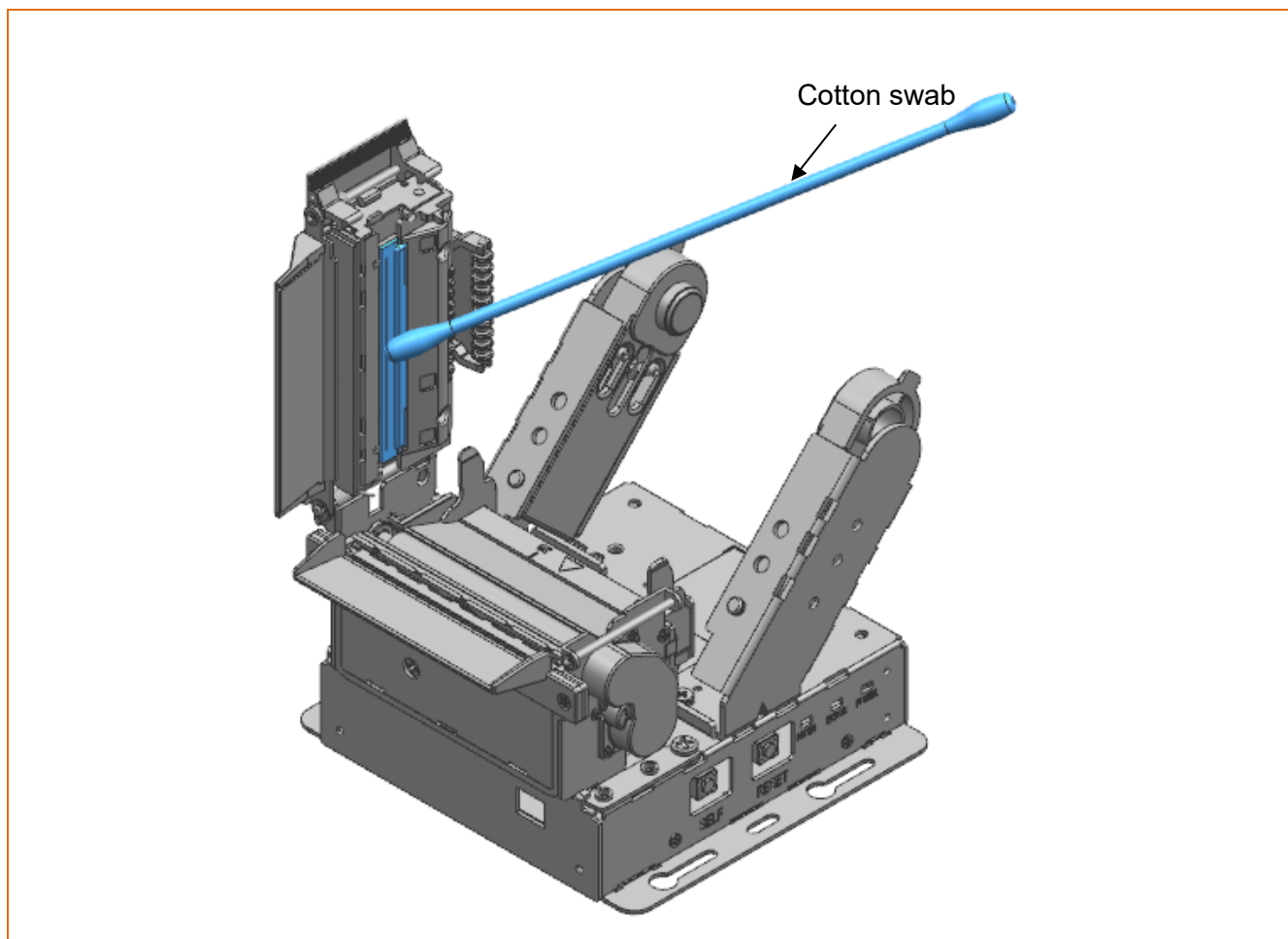


- Automatic calibration mode works, provided that Black-mark mode is on.
- Necessary conditions for Automatic Black-mark recognition.
 1. Initial Installation
 2. Changing with new paper rolls
 3. In the event, a printer does not stop at the point of a black-mark

7. Cleaning Printer

Paper dust inside the printer may lower the print quality.
In this case clean the printer as follows.

- 1) Open the printer cover and remove the paper currently in use.
- 2) Residue or contamination of printer head should be wiped out by ethanol or IPA.



- 3) Clean the paper sensor and paper roller with a cotton swab or a dry cloth.
- 4) Insert a paper roll and close the printer cover.



- When cleaning the printer head, make sure that cleaning solutions such as ethanol or IPA do not penetrate the printer..
- **While the printer is operating, the print-head gets very hot, so turn off the power and let it cool down completely.**
The hot print-head can cause serious burns.

8. Specifications

8-1 Specifications

8-1-1 Normal Specifications

Printing Method		Thermal printing		
Dot Density		203 dpi (8dots/mm)		
Paper Width		60mm	58mm	20mm
Printing Width		54mm	48mm	12mm
Printing Speed (Max)		250mm/s	250mm/s	100mm/s
No. of Characters per Line (Default Value)	Font A (12x24)	36characters	32characters	8characters
	Font B (9x17)	48characters	42characters	10characters
	Font C (9x24)	48characters	42characters	10characters
Font Size	Font A(12x24)	1.50 x 3.00mm		
	Font A (9x17)	1.13 x 2.13mm		
	Font A (9x24)	1.13 x 3.00mm		
Number of Character		Alphanumeric Characters: 95		
		Extended Characters: 128 x 37 Page (Including one space page)		
		International Characters: 32		
Barcode	1 Dimension	UPC-A, UPC-E, JAN13(EAN), JAN8(EAN), CODE39, ITF, CODABAR, CODE93, CODE128, GS1-128, GS1 DataBar Omni-direction, Truncated, Limited		
	2 Dimension	PDF417, QR code(model 1/2), Data Matrix , GS1 Databar Stacked, Stacked Omni-directional		
Auto cutter		Full / Partial cut (selectable by command)		
Interface	SERIAL	RS232C compliance		
	USB	V2.0 Full speed compliance		
Receiving Buffer Size		30K bytes		
SMPS Specification	Input Voltage	100~240 VAC		
	Frequency	50/60 Hz		
	Output Voltage	24 VDC		
	Output Current	Continuous: 2.5A, Peak: 11A(@ Min. 0.1ms)		
Environment Condition	Temperature	Operating: -20 ~ 60 °C (*1) Storage: -20 ~ 60 °C		
	Humidity	Operating: 10 ~ 95 % RH Storage: 10 ~ 95 % RH (non-condensing) excluding paper		
Life Span	Printer Head(*2)	100 Km		

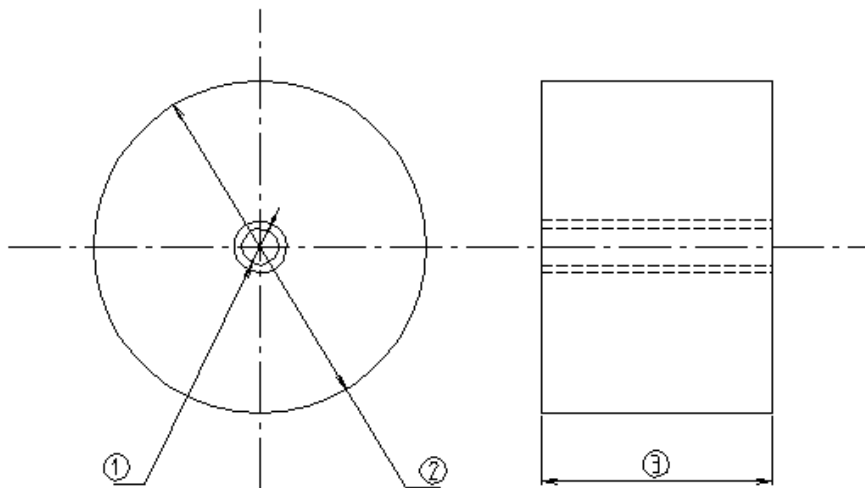
	Auto Cutter	1,500,000 cuts
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- *1) Printing quality and product life are only guaranteed temperature ranging from 0°C to 40°C. Long-term operation out of range between 0 and 40°C can shorten printer life span.
- *2) The specifications were determined based on operation at normal temperature using designated paper on default settings. They are subject to change depending on temperature or printing level.



- Printing speed may become slightly slower depending on the data transmission speed and the combination of commands.
- If you do not use an SMPS that meets the above ratings, problems may occur with the product and quality, and we are not responsible for any problems that occur.

8-1-2 Paper Specifications



1. Roll Core Inside Diameter (mm)	$\Phi 11_{+3,-0}$ ※ Holder Paper Phi25 (Option Parts) applied: $\Phi 25_{+3,0}$
2. Roll Core Outside Diameter(mm)	$\Phi 18$ (Min)
3. Outer Diameter (mm)	$\Phi 120$ (Max)
4. Width (mm)	$60_{+0,-1}$ / $58_{+0,-1}$ / $20_{+0,-1}$
5. Thickness (mm)	0.05 ~ 0.12

Recommended Papers

- TF50KS-E (Paper Thickness: 65 μ m): Nippon Paper Industries Co., Ltd.
- PD 150R (Paper Thickness: 75 μ m): New Oji Paper Mfg, Co., Ltd.
- PD 160R (Paper Thickness: 75 μ m): New Oji Paper Mfg, Co., Ltd.
- P350 (Paper Thickness: 62 μ m): Kansaki Specialty Paper, Inc. (USA)
- P220AG (Paper Thickness: 65 μ m): Mitsubishi Paper Mills Limited
- P220A (Paper Thickness: 65 μ m): Mitsubishi Paper Mills Limited
- F5041 (Paper Thickness: 65 μ m): Mitsubishi HitecPaper Flensburg Gmbh
- P5047 (Paper Thickness: 60 μ m): Mitsubishi Paper Mills Limited

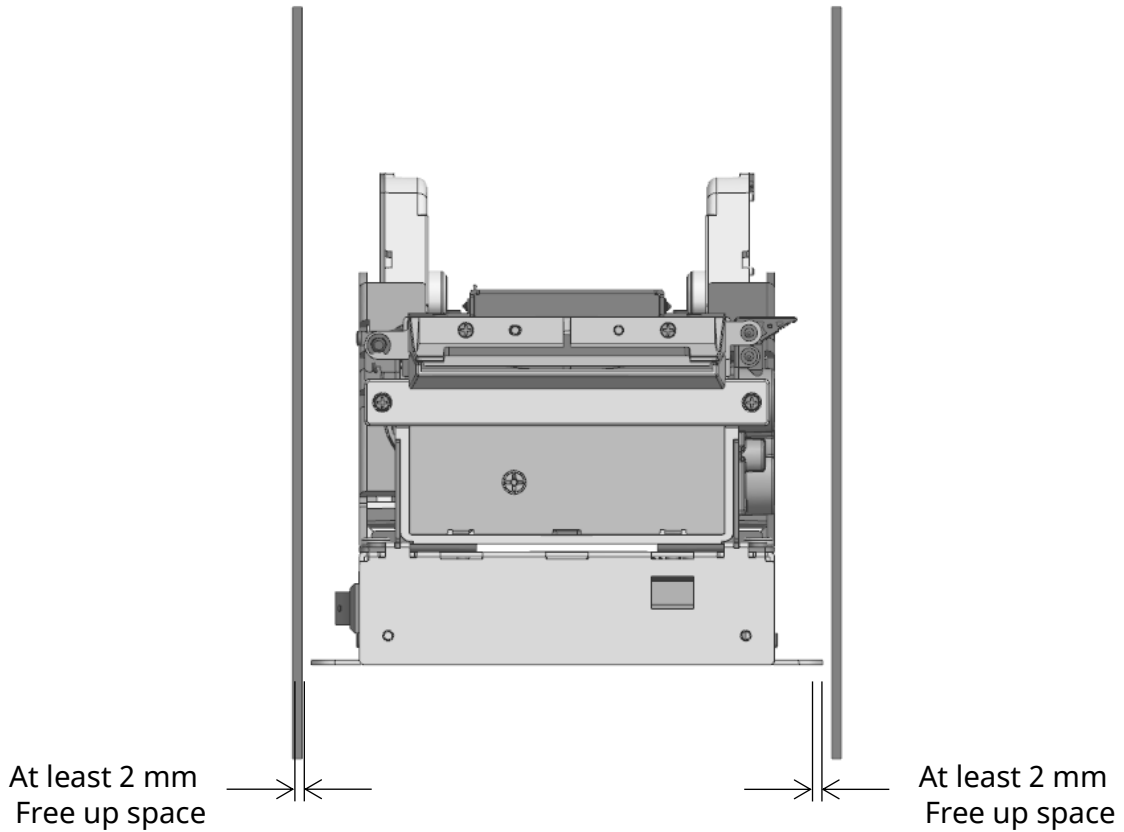


- Use of papers other than those recommended above may damage TPH or degrade the printing quality and our company is not responsible for the damage caused by non-recommended papers.
- If you have to use other products, we recommend that you Use papers with a similar level of quality to the recommended ones.
- If a sticking phenomenon (a phenomenon where feeding with TPH and paper does not occur) occurs due to the characteristics of the paper, be sure to adjust the printing density and speed.

8-2 Kiosk system specifications

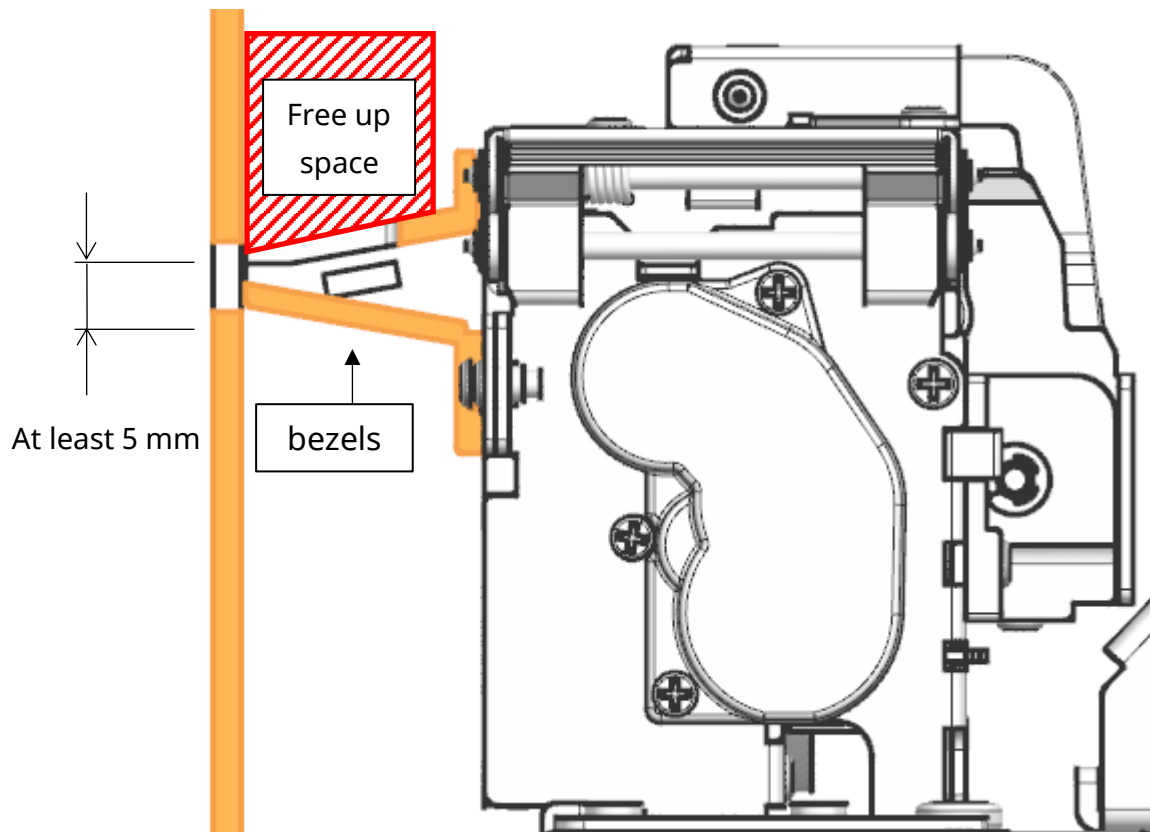
When designing your kiosk system, keep the following in mind.

- Common across all models



- Allow at least 2 mm of printer and assembly tolerance.
- Problems with products and quality may occur, and we cannot be held not be held responsible.

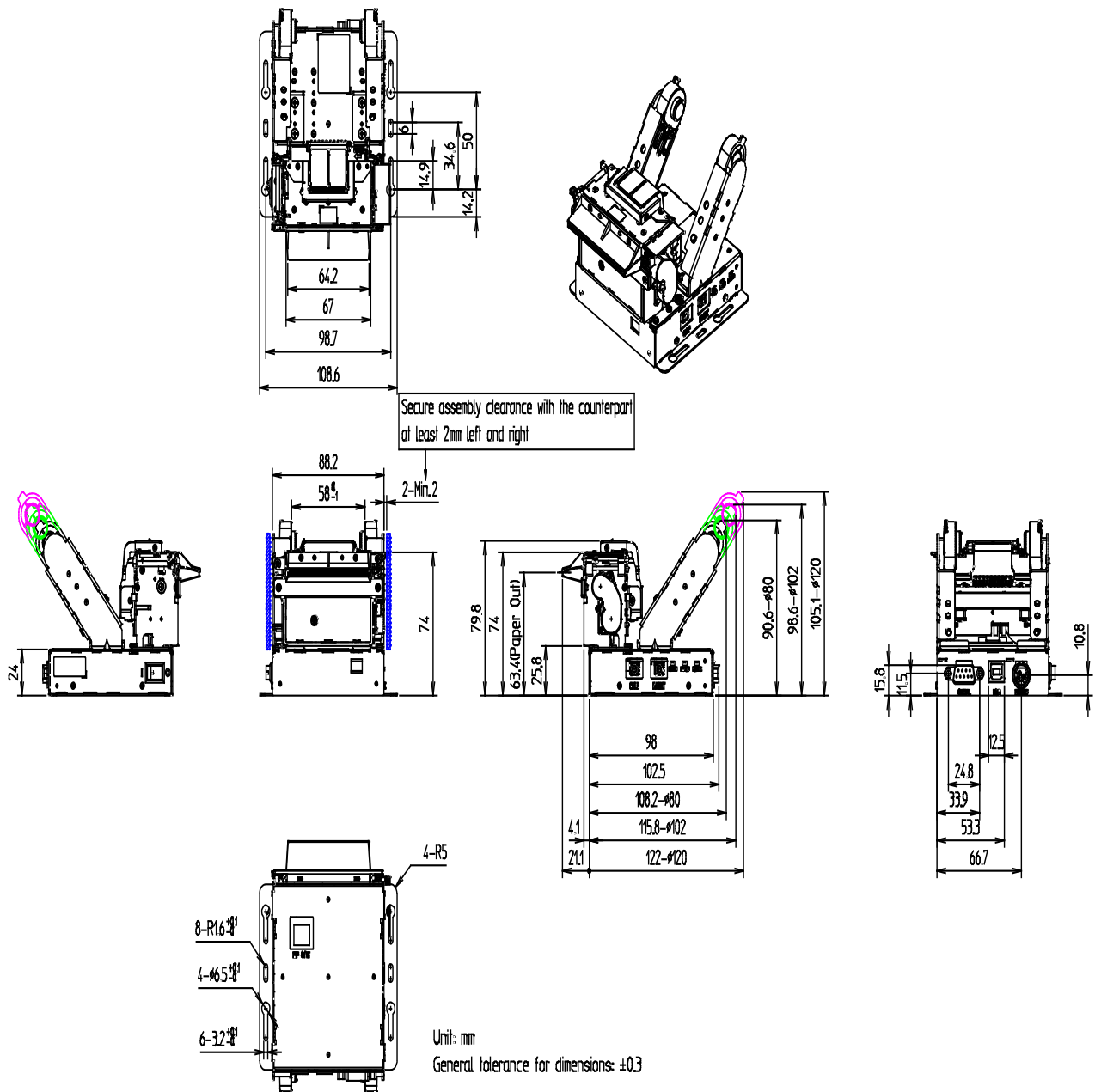
- Models with bezels



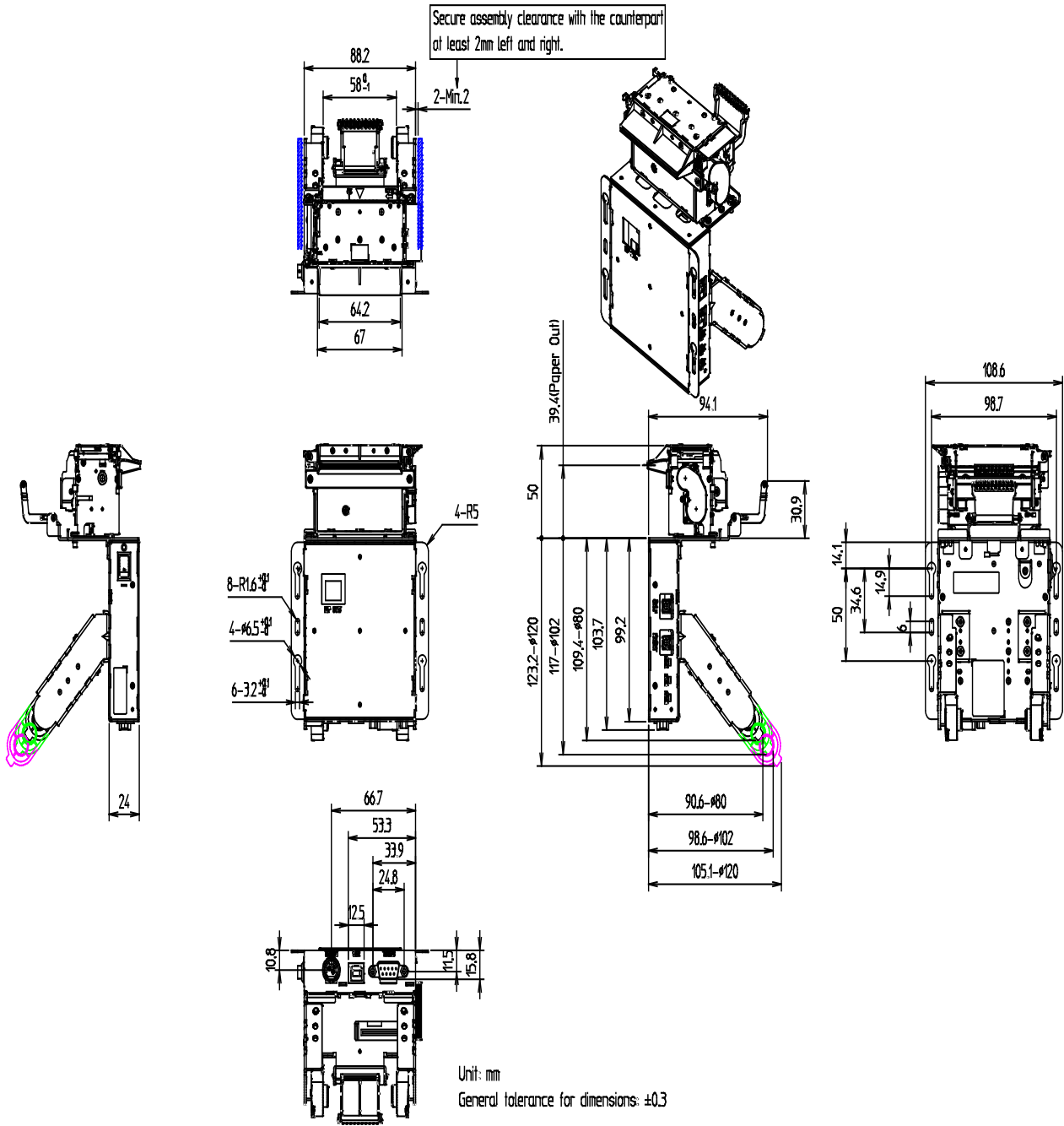
- Ensure that the paper exit is at least 5 mm wide at the top and bottom. Provide clearance for the comb.
- If this space is not available, you may be vulnerable to paper jams..
- Product and quality issues may arise and we cannot be held not responsible for any problems.

External Size

(1) BK3-21 (Horizontal Type)



(2) BK3-21V (Vertical Type)



Revision history

Table with 3 columns: Ver., Date, and Description. It lists revisions from 1.00 to 1.03, including dates and descriptions of changes such as 'Added the dimension of counterpart assembly space' and 'Added kiosk specification verbiage'.