

Product Specifications

2 inch / 3 inch High Speed KIOSK Printer

NP-2411

NP-3411

Revision 1.00 2008.08.09 1st edition

Revision 1.80 2012.01.26 9th edition

All specifications described are subject to change without prior notice.
Though we made assurance doubly sure to write this product specifications,
Please contact us if you find any mistakes and erroneous omitting.

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Revision History

Rev.	N o	Description			Approval	Person in charge
		Page	Item	Contents of change		
1.00	1		New release		Asahina 2008.05.12	Abe 2008.05.09
1.10	2		Added functions	Added : Receive buffer remaining size auto-return (USB)	Asahina 2009.02.17	Abe 2009.02.17
1.20	3		Added functions	Added :QR Code(Model 2)	Asahina 2009.03.02	Abe 2009.03.02
1.21	4		Added functions	Added : F/W 1.20	Asahina 2009.10.25	Abe 2009.10.25
1.30	4		Added functions	Added : Rev."02A" (Added : F/W 1.20)	Asahina 2010.10.27	Abe 2009.10.26
1.40	5		Added functions	Added : F/W 1.50	Asahina 2010.09.14	Abe 2010.09.14
1.50	6		Added functions	Added: GS I n m	Ashahina 2010.10.25	Abe 2010.10.25
1.60	7		Separate volume		Asahina 2010.12.22	Abe 2010.12.22
1.70	8		Frontpage Company name change	(Old) Nichipri Industria l Inc. (New) Nippon Printer Engineering, Inc.	Gonmori 2011.04.28	Abe 2011.04.28
1.80	9	2	Feature 9)	Partial change	Gonmori 2012.01.27	Abe 2012.01.26
		4	Option	2)added base plate		
		7	Paper thickness	Modified		
		8	3)Recommended Thermal Paper	Changed paper thickness of TF50KS-E2D		
		15	Paper thickness	Modified		
		16	2)Sensor position	*Added "For prevention o f malfunction..."		
		32	How to shift to setting mode 6	Deleted the unnecessary part		
		Command Reference				
		2, 16	Printer Information Transmission (ESC s n)	Added: 14		
3, 22	GS U Dn (USB serial numbe r setting)	Addition				

PRECAUTION

Please Read Carefully Before Using the Product

Handling the product in a wrong way may decline its performance and also damage the product. Please read the notes below before handling the product. Also, please sufficiently alert the user.

[FAILURE PRECAUTIONS]

Please comply with following in order to use for many years to come and prevent troubles before happens.

STATIC-ELECTRICITY;

- Static discharge prevention or body grounding must be made for installation and removal of the product to prevent damage of heating element and IC etc. Connect it to the earth ground for ESD measures.

HANDLINGS;

- DO NOT apply excessive force to the input terminals.
- Use both hands when holding the product in order to prevent from dropping.
- Since it will cause damage of the heat elements, DO NOT scrabble or give impact to thermal head with sharp edge object or any hard materials.

INSTALLATION;

- This product is NOT protected against dust or dirt. If used in harsh environment like at dusty place, the thermal head may get damaged or paper feed may not run properly.
- When cooling the product with a fan, keep the air exhaust slit away from the printer's paper exit area so that dust or dirt may not get in the thermal head. It will be a cause for premature failure.
- This product is equipped with an infra-red reflection sensor. The product must be installed where there is NO direct sun light/infra-red light coming in, as otherwise, the sensor would not function properly.
- The product should NOT be installed where it could be exposed to static electricity easily, strong vibration, electromagnetic field, corrosive gas, rain, fog and direct sunlight.

MOVEMENT;

- Avoid printing with no paper loaded. It can damage thermal head and also shorten its life-time.
- DO NOT absolutely open the upper cover while printing and/or cutter operation. It may damage thermal head and cutter.
- DO NOT pull out the paper with the upper cover closed.
- DO NOT block the paper outlet while print operation. Also, DO NOT grab the paper while print operation.

[SAFETY PRECAUTIONS]

Please comply the follows in order to use for many years to come and prevent troubles before happens.

- Turn OFF the power before connecting or removing connectors. When disconnecting, handle with the connector body and DO NOT pull out by a cable.
- The product is NOT protected from water or dew drop. DO NOT put water to the product nor handle it with wet hand because it may cause damage, heating, firing by short circuit.
- In order to prevent excessive current, please add an electrolytic capacitor and a fuse (refer to power supply specifications for details) to external 24V power line.
- Please DO NOT disassemble or modify the product.
- In case of disposal, please follow the regulations or rules of the local authorities.
- Recommend a power supply in conformity with LPS standard.
- Turn OFF the power when not using for a long time.
- Regardless of during movement or stop of the cutter, DO NOT touch the cutter blade.

[QUALITY PRECAUTIONS]

Please comply the follows in order to use for many years to come and prevent troubles before happens.

DATA;

- Movement when sending undefined control codes and commands to the product is not guaranteed.
- Since the print feed may jumble between the first 1 – 4 dot lines with such a print program that the print and paper feed gets interrupted temporarily in state of printer's data queuing from the host device, be cautious when graphics and the like are included in the print data.

PRINT MOVEMENT;

- The print may jumble at the first 1-2 dot right after the paper cut action.
- DO NOT touch the heating element part of the thermal head, since it could degrade the print quality due to soil.
- In case of using print papers other than those specified in this document, print quality and lifetime of thermal head may not reach the level guaranteed by the manufacturer.
- DO NOT pull out the paper while the printer is in motion of printing, paper feeding or cutting. When removing the partially cut paper or perforated paper, pull it to either right or left direction without too much force.
- Continuous motor running for a long time generates heat and may affect the printer performance. To avoid the case, it is necessary to limit the continuous motor running time to 6 minutes at maximum with the same interval time for each operation.
- Motor may produce heat by continuously driving cutter motor for a long time and it may not perform necessary functions. Make sure to follow cutter tolerable frequency.
- Set the paper straightened with no slack.
- A part of this product is made from coated steel plate. It does not affect the product's quality and performance at all even if the cut face of the steel plate get rusty after a long time period.

[OTHER PRECAUTIONS]

- This product is designed to use with general electronic devices. (Computer, PC, OA etc.) This product is not designed and guaranteed to use with devices that require extremely high quality and reliability, also to use with devices that those failures may directly endanger human body and life. (Atomic power control device, aerospace aircraft device, transportation device, traffic signal device, ignition control device, medical device and various safety devices: hereafter called as "Specific application".) Users shall take full responsibility for using with such specific application.
- DO NOT conduct operation that is not suggested in this instruction. It may cause accident or failure.
- Data can not be long-term stored, permanently stored and saved since it is basically evanescent. Nippon Primex Inc is not responsible for any damages of data deletion or lost income due to breakdown, repair or inspection.
- When selecting RTS/CTS in serial flow control, make sure to connect RTS/CTS signal to the flow control signal of the host side, otherwise flow control will not function and may cause garble character or printing disarray.
- The coverage of warranty is limited within the product itself, Nippon Primex Inc is NOT responsible for anything induced by the defect of the product and DO NOT pay for any compensation that may occur.

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Appendix (Please refer to the following documents for commands and code tables.)

- Command Reference [NP-2411/NP-3411] (D-F0472)

- * Command reference includes the following code tables other than commands.

- Domestic Character Code Table, Overseas Character Code, Code Page 858, International Character Code Table, Code Page 1253, Code Page 1250, Code Page 1251, Code Page 1252, Code Page 1254

- Kanji Code Table [JIS C 6226-1983] (D-F10068)

- Chinese Code Table [GB18030-2000] (D-F10069)

- Korean Code Table [KS X1001-1992] (D-F10070)

1. Overview

1.1 Overview

This printer is categorized as follows.

N P — 3 4 1 1 D — *
(1) (2) (3)

(1) Paper size (default setting)

2 : 2 inch (standard : 58mm)

3 : 3 inch (standard : 80mm)

(2) Interface (default setting)

Standard

D : SERIAL (RS232C) ,USB (V2.0 FULL SPEED) Dual, Selection

Specification possibly considered for mass production

U : USB (V2.0 FULL SPEED) only

(3) OEM (comply with separate delivery specification)

No marking : standard model

1.2 Feature

This model mounts our printer mechanism also module printer that increases operability. The only necessary built-in action to each device to activate is power supply (DC24V) and data input also enables free retrofit of user-side.

1. Extremely small sized, light weight and especially low height offers free design for various embedded devices.
2. Wide range of Operating Environment
3. Low cost
4. Thick paper is printable.
5. High Print Speed, High Print Quality
6. Interface corresponds to SERIAL and USB.
7. Various 1D bar-codes are available.
8. Enables to apply to various kinds of applications
9. Driver(Windows) XP(32bit)/ Vista(32,64bit) / 7(32,64bit) / CE5.0 / CE6.0 Linux(Sample)
10. Easy to write/rewrite F/W (*3) by adopted flash memory. Also, 3 patterns of NV bit image can be saved and registered.
11. Multi language
12. Enable to control an optional paper feeding equipment. (Presenter)
13. Simple and easy paper loading by "Auto Paper Loading" function.
14. Easy maintenance due to a complete openable mechanism of a paper path.
Easy to remove jammed paper.
15. Mounting newly developed clamping type paper holder "PH-10"(see *NOTE1 below)
 - I. Roll paper holder with one-touch easy loading and certain near end detection.
 - II. Besides ID12mm of roll paper, it enables to use roll paper of ID25.4mm by attaching separately available paper support.
 - III. Besides ex-factory setting of near end detection is OD22mm, it enables to change to 24mm dia. by adjusting sensor position.

*NOTE1) Refer to [2. 2 Paper Specifications] for details.

16. Enable to support a large paper holder (φ200mm) by attaching optional universal paper holder
17. Enable to flash the edge part of the paper exit by attaching LED bezel
18. Selectable options*²

*1 Refer to [2. 2 Paper specifications] for details.

*2 Refer to [1. 4 Options] for details.

*3 [F/W] refers to [firmware].

1.3 Configuration

1) NP-2411D (standard)

Configuration				NP-2411D
No	Name	Specifications	Qty	
1	NP-2411D	2 inch, USB and Serial(dual), Power supply 2 pin The board equipped with Dip Switch	1	○
2	Thermal roll paper	W58xOD30(ID12)mm	1	○

2) NP-3411D (standard)

Configuration				NP-3411D
No	Name	Specifications	Qty	
1	NP-3411D	3 inch, USB and serial(dual), Power supply 2 pin The board with DIP Switch	1	○
2	Thermal roll paper	W80xOD30(ID12)mm	1	○

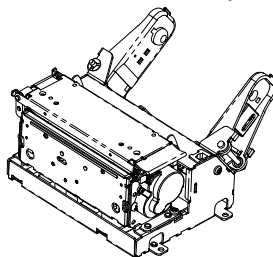
3) NP-2411U (possible specification for mass production)

Configuration				NP-2411U
No	Name	Specifications	Qty	
1	NP-2411U	2 inch, USB, Power supply 2 pin, The board with DIP switch	1	○
2	Thermal roll paper	W58xOD30 (ID12)mm	1	○

4) NP-3411U (possible specification for mass production)

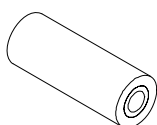
Configuration				NP-3411U
No	Name	Specifications	Qty	
1	NP-3411U	3 inch, USB, Power supply 2 pin The board with DIP switch	1	○
2	Thermal roll paper	W80xOD30(ID12)mm	1	○

Printer main body (NP-3411 or NP-2411)..... 1 unit



Accessory

* Thermal roll paper (sample)..... 1 roll



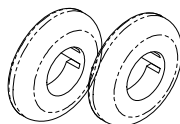
1.4 Options

1) Paper support

No	Name	Specifications	Qty
1	Paper support	Inner core dia25.4mm	2

Paper support

- Attachment for inner core diameter of 25.4mm..... 2pcs



2) Base plate

A base plate enabling to cut off the discharge paper and front operation is available.

Please refer to [Products specification D-F10102] about how to mount it.

Component parts				BasePlate_2	BasePlate_3
No	Name	Specification	Quantity		
1	P083_BasePlate_2	Base plate for NP-2411	1	○	
2	P083_BasePlate_3	Base plate for NP-3411	1		○
3	ScrewPH(ST)M3x6	Small screw S tight M3x6 (Screws for attachment to a printer)	2	○	○

This printer is ready for below options other than the above 1) and 2)

Please read carefully each product specifications because there are conditions or restrictions in order to use safely.

3) Power Supply PS8

Power Supply Adaptor is prepared

Please read carefully product specifications D-F10058 for consideration.

4) BEZ-320/330 bezel with function to emit LED light

2 inch or 3 inch LED bezel is available.

Please read carefully product specification D-F10059 for consideration.

5) Bezel BEZ-220/221/230/231

2 inch or 3 inch, bezel including paper-out sensor or not including.

Please read carefully specification D-F10056 for consideration.

- * When using bezel, make sure that paper length is not less than 55mm.
(In case paper length is less than 55mm, it is not easy to pull paper from bezel.)

6) Presenter NPT-306

Paper retraction presenter

Please read carefully specification D-F0482 for consideration to use.

7) Paper jumbo holder UPH-LA

Universal paper jumbo holder

Please read carefully specification D-F10060.

2. Specifications

2.1 Basic Specifications

No	Specifications		NP-2411	NP-3411
1	Head	1: Print method	Thermal line dot	
		2: Total dots/line	432 dots	576 dots
		3: Dot density	8dot/mm	
		4: Printing width(max)	54 mm	72 mm
2	Printing	1: Printing speed (MAX) ^{*NOTE1}	MAX.150mm / sec	
		Conditions	Head temp. at over 35°C, buffering method, optimized driving print ratio 50% or less. *except communication time	
		2: Max. print digit		
		Font A (12 × 24)	36 digits	48 digits
		Font B (9 × 17)	48 digits	64 digits
		Kanji (24 × 24)	18 digits	24 digits
		3: Line feed pitch	0.125mm	
3	Characters	1: Character size		
		Font A (12 × 24)	1.50 × 3.00mm	
		Font B (9 × 17)	1.13 × 2.13mm	
		Kanji (24 × 24)	3.00 × 3.00mm	
		2: Character types		
		Japanese	JIS C 6226 1983 (Full size) Japanese Code (Half size) Foreign Code (Half size) Code Page 858 (Half size) International character set (Half size)	
		Korean	KS X 1001:1992 (Full size) Katakana character set (Half size) ^{**NOTE2} Extended Graphic character set (Half size) ^{**NOTE2} Code Page 858 (Half size)	
		Chinese	GB18030-2000 (Half / Full size)	
		Greek	Code Page 1253 (Full size)	
		Polish	Code Page 1250 (Half size)	
		Russian	Code Page 1251 (Half size)	
		Scandinavian	Code Page 1252 (Half size)	
		Turkish	Code Page 1254 (Half size)	
		3: Character decoration	Double width Double height Quadruple Enhanced print Double strike Inverted 90°clockwise rotation Underline	
		4: Line spacing (default)	4.25mm (1/6 inch)	

*NOTE 1) Printing speed depending on condition.

**NOTE 2) KS X 1001:1992 built-in font.

No	Specifications		NP-2411	NP-3411
4	Print mode	1: Line mode	ANK mode Barcode mode Bit image mode Buffering mode	
5	Barcode	1: 1-D barcode	UPC-A UPC-E JAN-13 (EAN-13) JAN-8 (EAN-8) CODE39 ITF CODABAR CODE128	
		2: 2D barcode ^{***NOTE4}	QR code model 2	
6	Interface	1: SERIAL (dual type)	RS232C compliance	
		2: USB(dual type, U type)	V2.0 FULL SPEED compliance	
7	Auto cutter	1: Cutting mode	Full / Partial cut *selectable by command	
8	Buffer receipt		Approx. 15K bytes	
9	Alarm display		ALARM LED	
10	Operation switch		FEED switch RESET switch	
11	Outer dimensions	(w/o connector, paper)	103.6 (W) x 123.5 (D) x 77.3 (H) mm	124.6 (W) x 123.5 (D) X 77.3 (H) mm
12	Weight	(w/o paper)	Approx. 500g	Approx. 560g
13	Mounting ^{***NOTE3}		Horizontal	Horizontal
14	Package	1: Individual carton size	224 (W) x 169 (D) X 168 (H) mm	224 (W) x 189 (D) x 168 (H) mm
		2: Individual carton weight	800g	900g
		3: Master carton size	531 (W) x 472 (D) x 375 (H) mm	591 (W) x 472 (D) x 375 (H) mm
		4: Master carton weight	11.6kg	13.0kg
			(includes 12pcs)	(includes 12pcs)

***NOTE 3) Mounting shall be placed horizontally. Please contact us for different mounting.

****NOTE 4) Only available for F/W Ver.1.30 or later.

2.2 Paper Specifications

1) Paper width / thickness

	2 inch	3 inch
Paper width	58/60 ⁻¹ mm	76/80 ⁻¹ mm
Paper thickness	59~150μm	

[Caution]

- * DO NOT change paper width from narrow to wide during operation.
(There is possibility of thermal head damage when scraping against platen directly.)
- * Please consult with us when using paper width of 60 and 76mm .
(All of the paper width is set as default setting.)

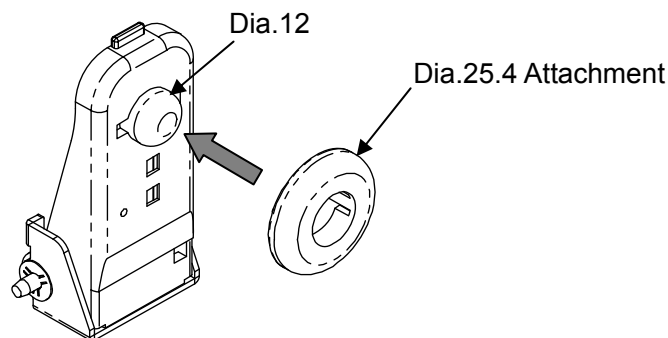
2) Paper shape

* Roll paper shape

Roll size (Max.)	Thickness	Inner core	Outer core
83mm dia	65~85μm	12.0mm dia	18.0mm dia
83mm dia	100~150μm	25.4mm dia	φ33.4mm

[CAUTION]

- * Use standard paper holder PH-10.
(Please ask us when you use more than diameter 84mm.)
- * Core width is the same as paper width.
- * Use an optional paper support for roll paper of axis inner core DIA25.4mm. (Figure)



[Conditions of using thermal paper]

- Use thermal paper
- Do not stick end of paper with glue and scotch tape.
- The core of paper roll should not be deformed.
- The core should not be stuck out over the side of the paper roll.
- DO NOT use paper rolls stored on condition of high temperature and humidity.
- Paper roll is not loosened.
- Printing surface shall be outer surface. Involute paper is not applicable.
- Sufficiently confirm when using preprinted paper. Especially, beware of the print side surface because there is a paper sensor equipped.
- DO NOT use long-term stored paper roll because it may not perform satisfactory print quality.

3) Recommended Thermal Paper

P/N	Thickness	Maker
PD160R	0.075mm	OJI Paper Co.
PD450-145	0.145mm	OJI Paper Co.
PD150R	0.075mm	OJI Paper Co.
PDC600-145	0.145mm	OJI Paper Co.
TF50KS-E2D	0.059mm	NIHON Paper Co.

[CAUTION]

*Since printing quality will degrade effecting by circumstances of temperature and humidity etc., confirm printing quality before setting printing density. Printing density can be set by switching memory switch MS2-8 or using command of [Print Density Setting] «GS ~ n»

*Printing at high print ratio under low temperature or high humidity environment cause printed paper to be tainted or dew drop due to vapor occurred from the roll paper. Beware water not to drop to the thermal head part. This may lead thermal head's electrolytic corrosion.

In case of dew drop, turn OFF and wait until the dew disappears.

*Select thermal paper which has a low level of Na⁺ ion, K⁺ ion and Cl⁻ ion when using non-recommended thermal paper and should be well evaluated in reliability.

4) Paper Holder (Standard : PH-10)

Name	Paper width	MAX OD	Axis core	OD to NE sensor
PH-10	—	DIA83mm	ID12.0mm OD18.0mm	DIA22.0±2.5mm
			I D25.4mm ^{*NOTE1} OD33.4mm	DIA37.0±2.5mm ^{**NOTE2}

*NOTE1) *Use an optional paper support for roll paper of axis inner core DIA25.4mm.

**NOTE2) Change position of near end sensor with using roll paper of inner core DIA25.4mm.
(see figure below)

1) Change of NE (near end) setting

Replace or loosen M2 screw and move near end sensor.

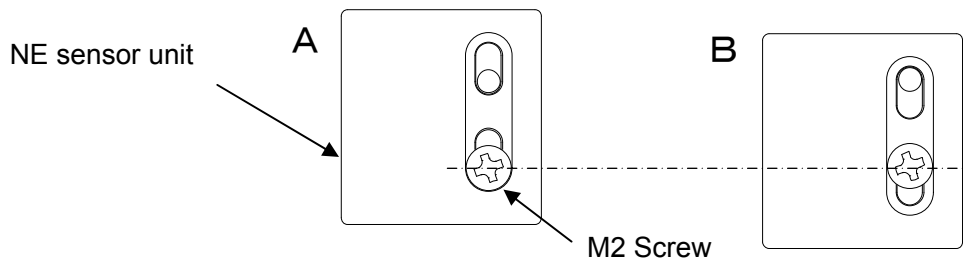
* Loosen M2 screw and slide near end sensor unit.
(A <-> B, C <-> D)

* Remove M2 screw and move near end sensor unit.
(A or B <-> C or D)

a) Axis inner core diameter 12.0mm

A position: Remaining OD22.0±2.5mm (default)

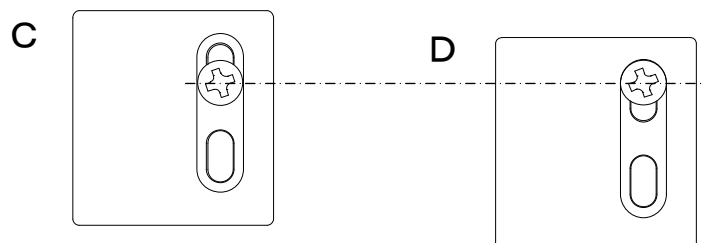
B position: Remaining OD24.0±2.5mm



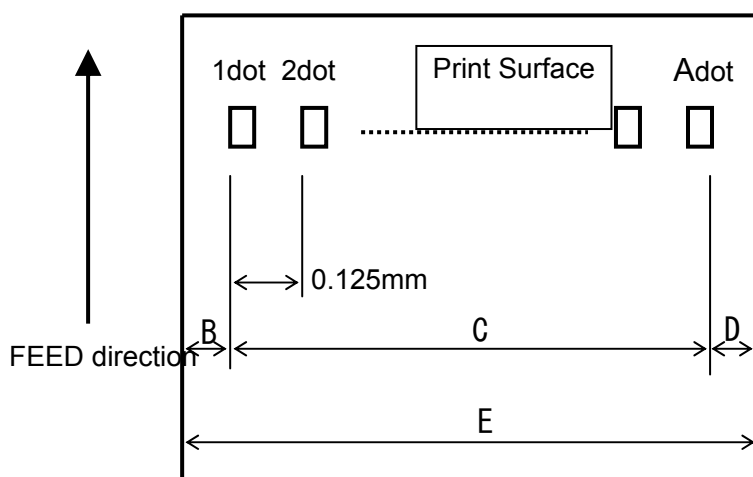
b) Axis inner core diameter 25.4mm

C position : Remaining OD34.0±2.5mm

D position : Remaining OD37.0±2.5mm (Recommended position for OD33.4mm)



2.3 Printing Area



1) Code name

Code	Name
A	Print dot No
B	Left margin
C	Print area
D	Right margin
E	Paper width

2) Paper width and print area

	A(dot)	B(± 1 mm)	C(± 0.2 mm)	D(± 1 mm)	E(± 1 mm)	Default
2 inch	416 dots	3 mm	52 mm	3 mm	58 mm	○
	432 dots	3 mm	54 mm	1 mm	58 mm	— *1
	432 dots	3 mm	54 mm	3 mm	60mm *2	—
3 inch	560 dots	4 mm	69 mm	3 mm	76 mm*3	— *1
	576 dots	4 mm	72 mm	4 mm	80 mm	○

*1: It is possible to set by turning on memory switch MS2-7 (refer to 4.1.1. Memory Switch), however the right margin (D) will be 1mm, so that printing may be out of range due to paper bias.

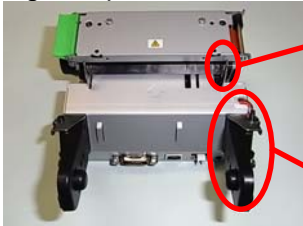
*2 : When change paper width, Refer to [NP-2411 Change paper width 58mm→60mm]

*3 : When change paper width, Refer to [NP-3411 Change paper width 80mm→76mm]

3) How to change paper width

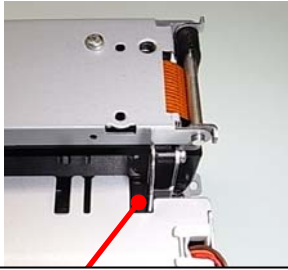
[NP-3411 Change paper width 80mm→76mm]

Before change. Paper width 80mm(Default)

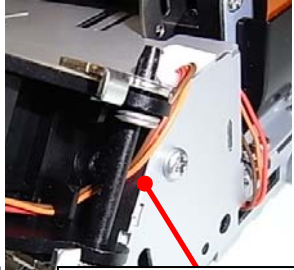


Guide

Paper holder



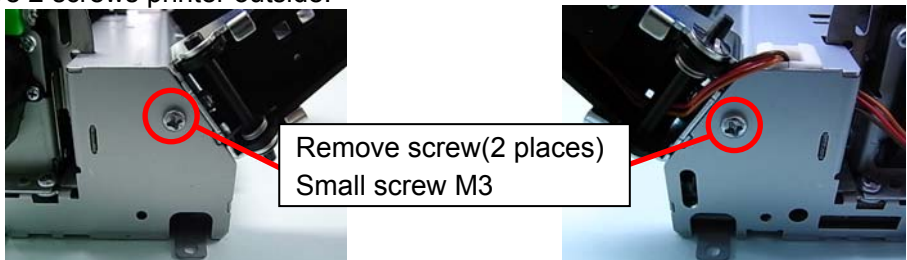
Interspace inside Guide



No interspace between Paper holder and Guide.

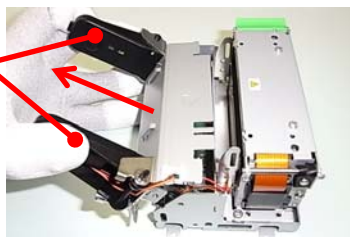
Move Guide and Paper holder.
* Power is OFF.

(1) Remove 2 screws printer outside.

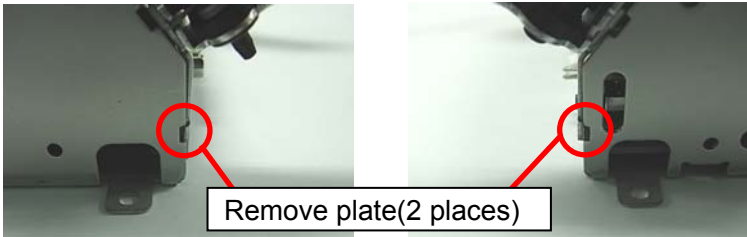


Remove screw(2 places)
Small screw M3

(2) Pull PH-10 to arrow direction and remove plate.



PH-10



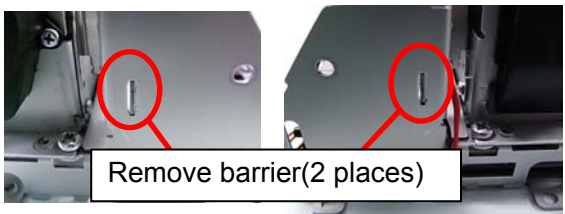
Remove plate(2 places)

* Do not bend plate.

(3) Remove barrier.



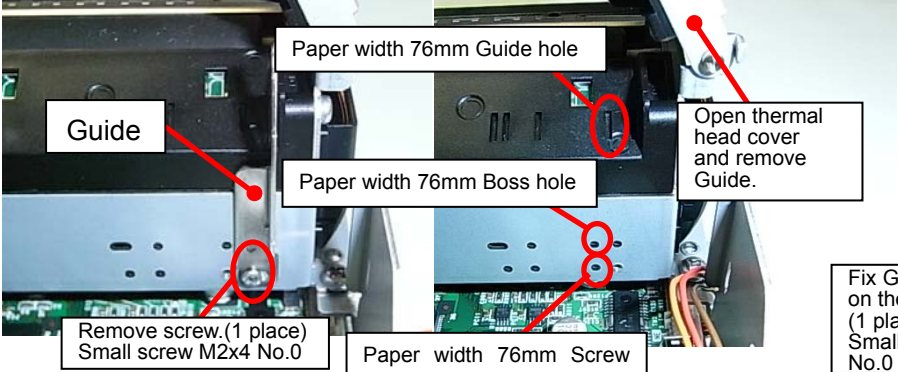
Barrier



Remove barrier(2 places)

Push plate outside lightly and remove barrier.

(4) Move Guide.



Guide

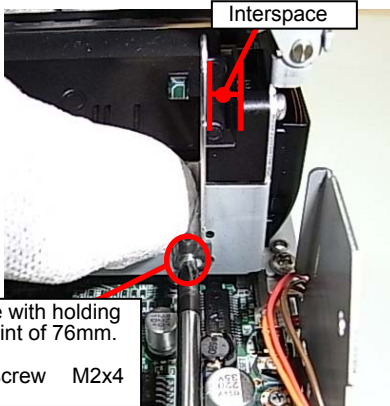
Paper width 76mm Guide hole

Paper width 76mm Boss hole

Remove screw.(1 place)
Small screw M2x4 No.0

Paper width 76mm Screw

Open thermal head cover and remove Guide.

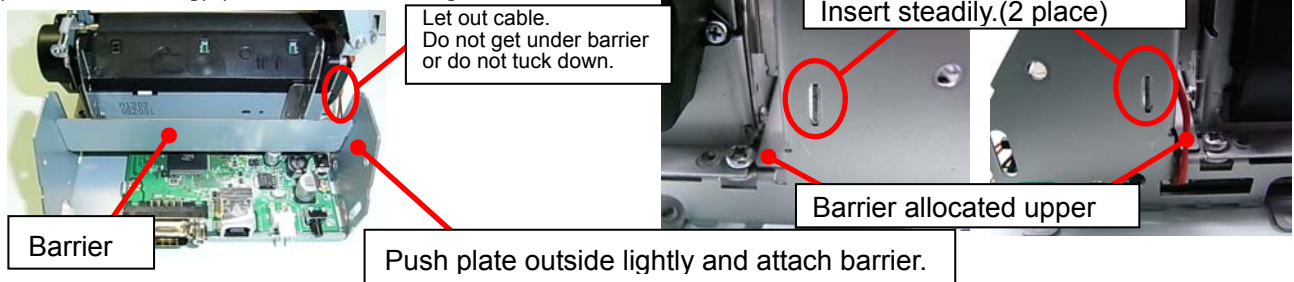


Interspace

Fix Guide with holding on the point of 76mm.
(1 place)
Small screw M2x4 No.0

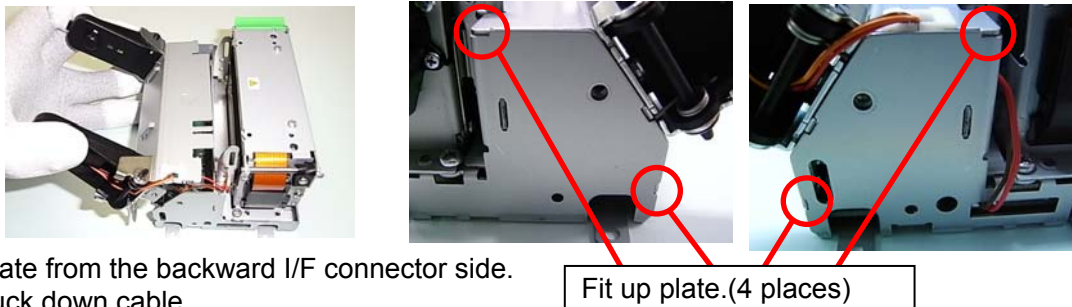
* Note : DO NOT float or bend of Guide, and DO NOT loose screw.

(5) Attach barrier. [(3) Removed barrier]



* Note the direction of barrier.

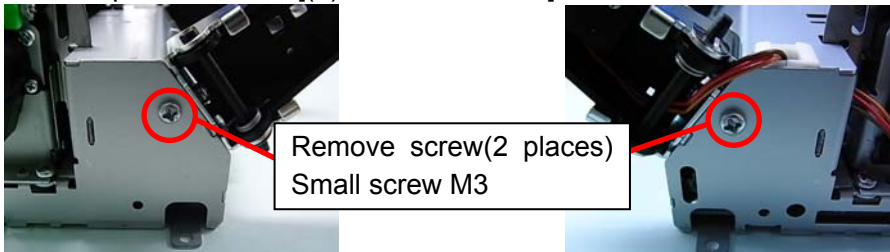
(6) Attach plate. [(2) Removed plate]



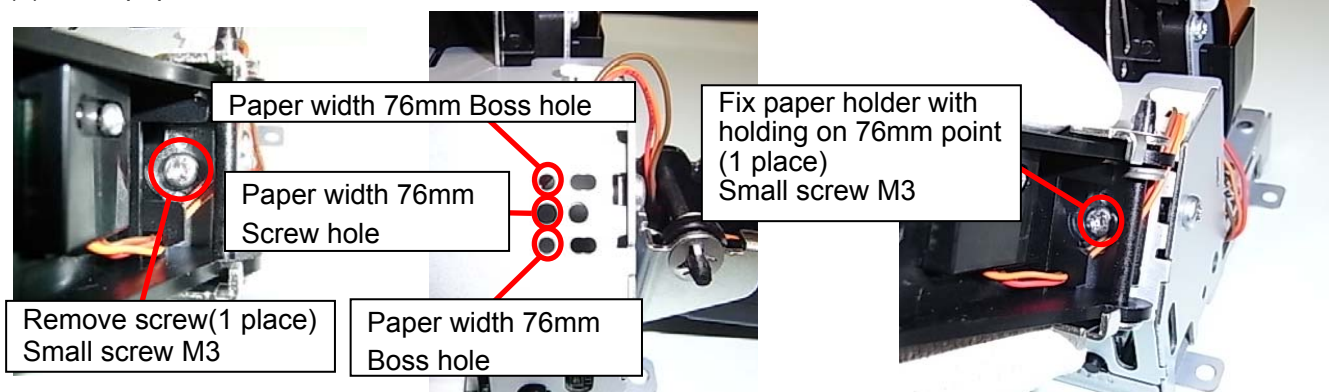
* Attach plate from the backward I/F connector side.

* Do not tuck down cable.

(7) Attach screw of printer outside. [(1) Removed screw]

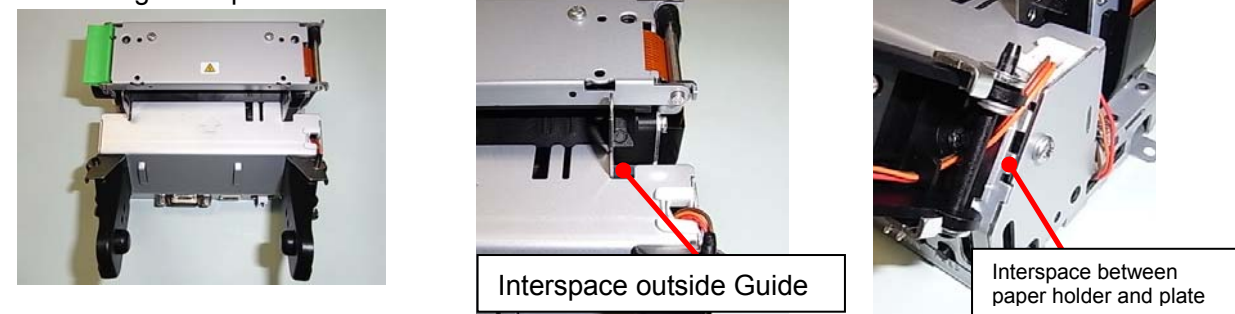


(8) Move paper holder.



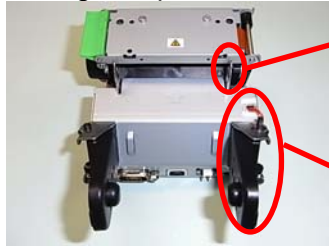
* DO NOT float or bend of paper holder, and DO NOT loose screw.

After changed. Paper width 76mm



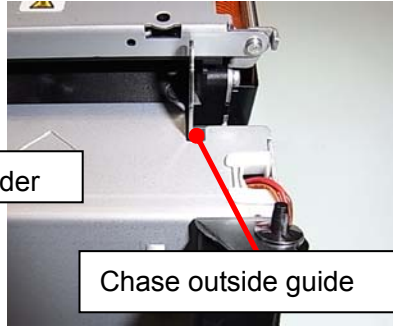
[NP-2411 Change paper width 58mm to 60mm]

Before change. Paper width 58mm(Default)

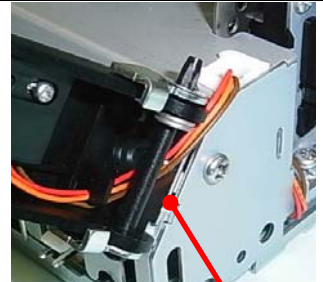


Guide

Paper Holder



Chase outside guide

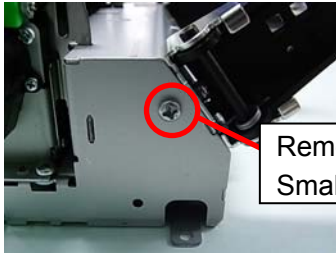


Interspace between plate and paper holder

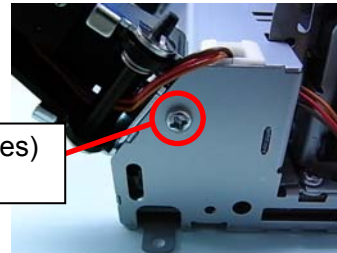
Move Guide and Paper holder.

* Power is OFF.

(1) Remove 2 screws printer outside.

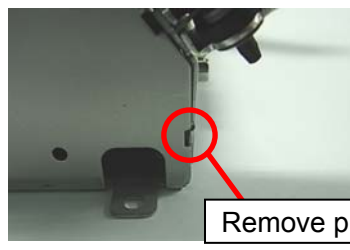


Remove screw (2 places)
Small screw M3

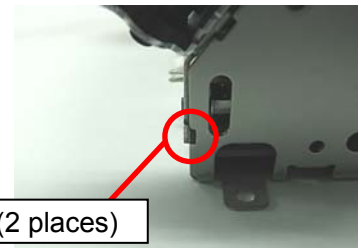


(2) Pull PH-10 to arrow direction and remove plate.

PH-10



Remove plate(2 places)



* Note : do not bend plate.

(3) Remove barrier.



Barrier

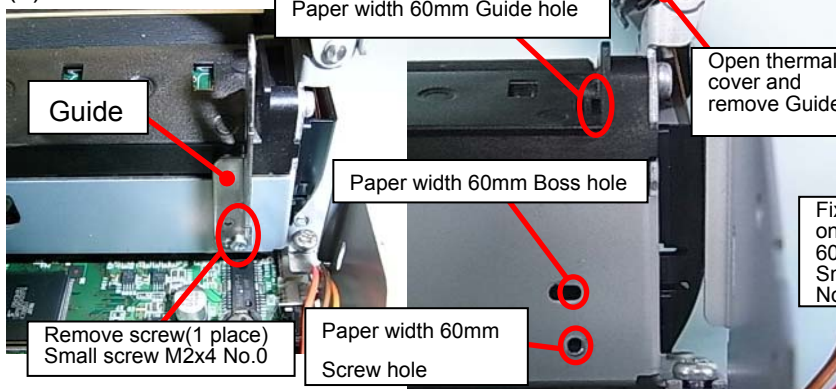


Remove barrier(2 places)



Push plate outside lightly and remove barrier.

(4) Move Guide.



Guide

Paper width 60mm Guide hole

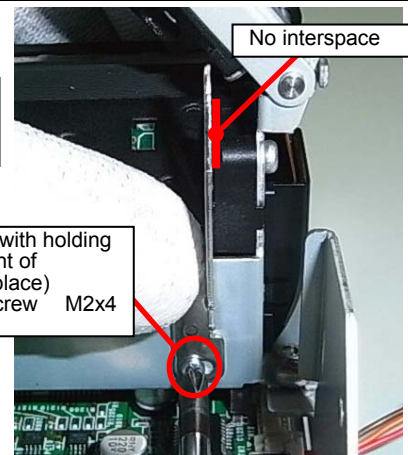
Paper width 60mm Boss hole

Remove screw(1 place)
Small screw M2x4 No.0

Paper width 60mm
Screw hole

Open thermal head
cover and
remove Guide

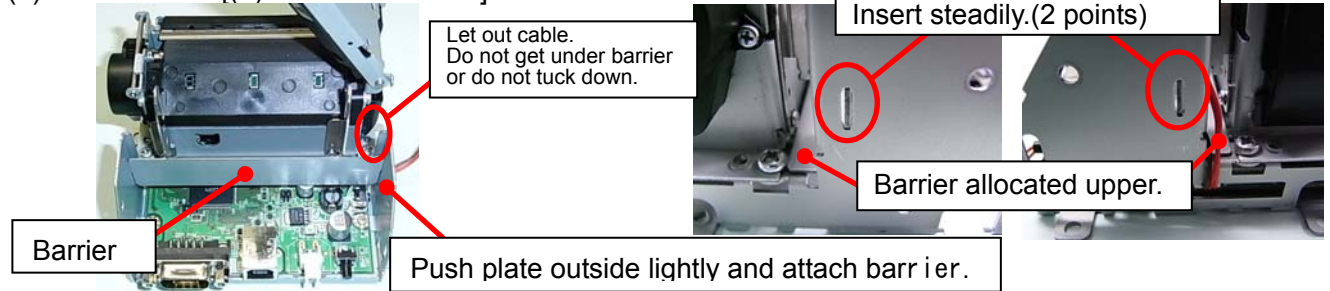
Fix Guide with holding
on the point of
60mm.(1 place)
Small screw M2x4
No.0



No interspace

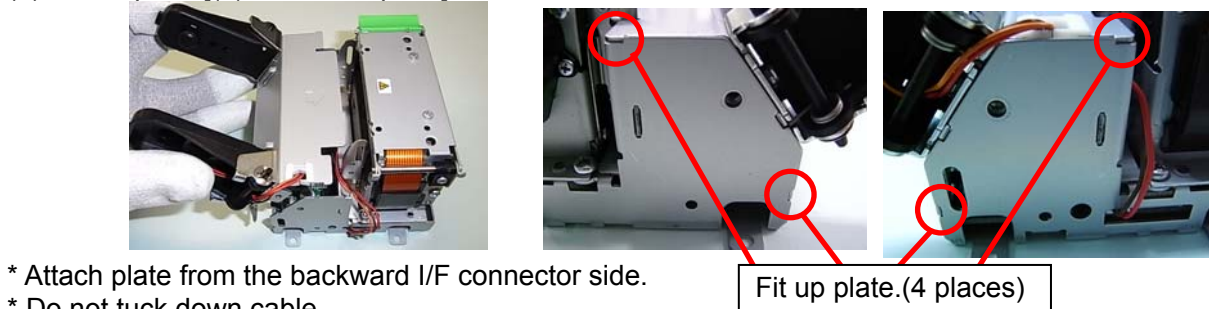
* Note : DO NOT float or bend of Guide, and DO NOT loose screw.

(5) Attach barrier. [(3) Removed barrier]



* Note the direction of barrier.

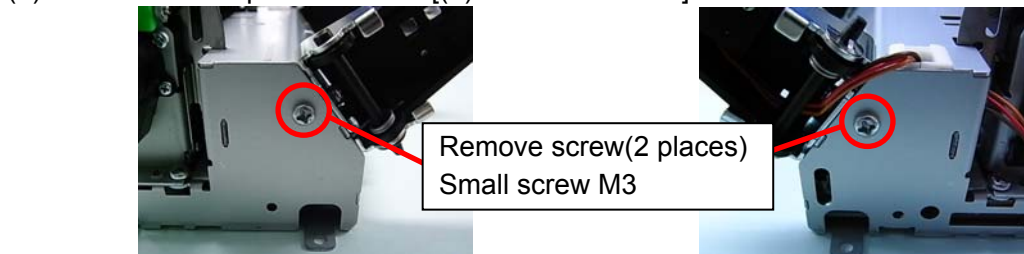
(6) Attach plate. [(2) Removed plate]



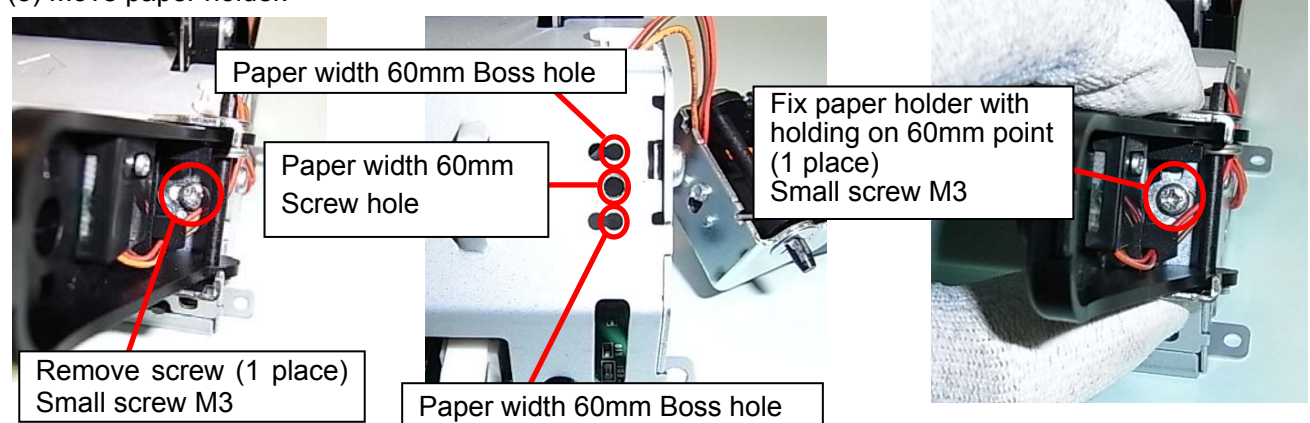
* Attach plate from the backward I/F connector side.

* Do not tuck down cable.

(7) Attach screw of printer outside. [(1) Removed screw]

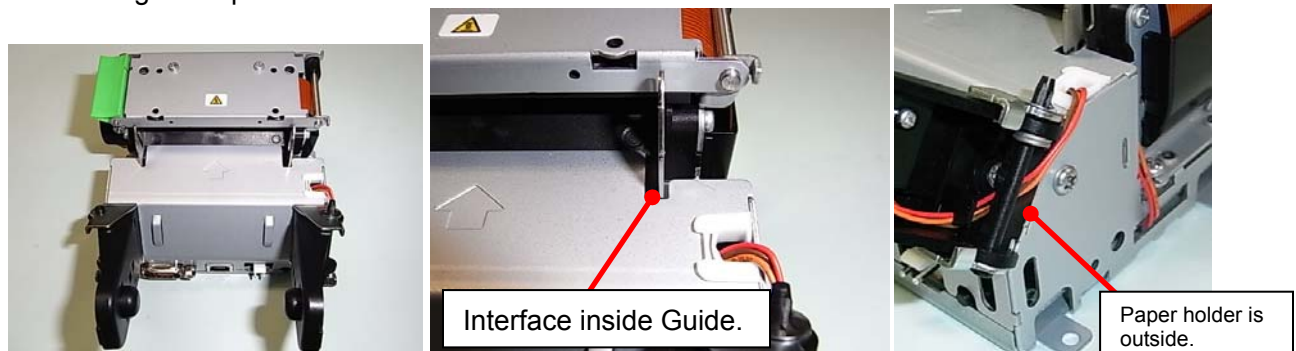


(8) Move paper holder.

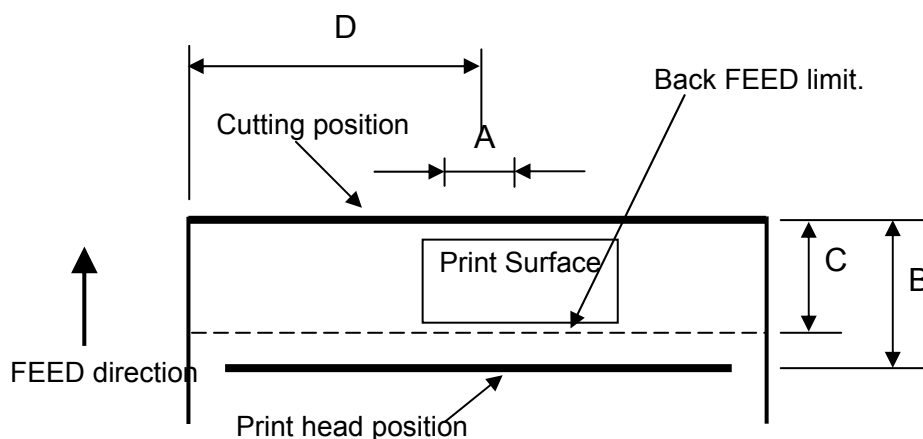


* DO NOT float or bend of paper holder, and DO NOT loose screw.

After changed. Paper width 60mm



2.4 Cutter Specifications



Code	Description	Size
A	Tab width (in partial cut)	1.0~2.5mm
B	Cut~print head position	9.5±1mm
C	Back feed limit	6.5mm
D	Paper edge(from 1 st dot) to partial cut distance	About 30mm(NP-2411) About 40mm(NP-3411)

* D is not changed even if paper width is changed to 76mm or 60mm.

(1) Cutting method : Slide type

(2) Cutting mode : Full cut / Partial cut A / Partial cut B

*Selectable by command

*Partial cut A: narrow margin

*Partial cut B: wide margin

(3) Allowable cut frequency : 30 cuts / minute

(4) Paper thickness : 59 ~ 150μm

*If partial cut B is activated with paper thickness of 75μm or more, the paper located at mechanism side may be haled when cutting off the printed paper.

(5) Minimum cut length : 30mm

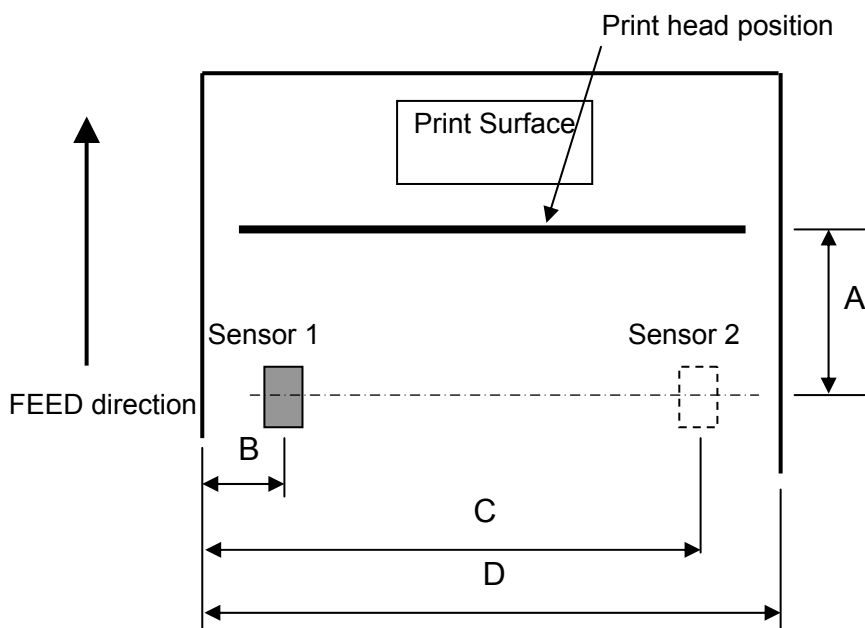
[Caution]

- When platen is given under heavy load such as pulling out printed paper strongly after partial cut, note that next line head may garble.
- * Feed paper for more than approx. 1mm (8 dot line) for a head of line garble when printing after partial cutting operation.
- * Make sure to tear off paper after the partial cut by pinching either right or left side of the printed paper to avoid applying load to the platen and pull in a transverse direction toward a hand holding the paper. ▪
- * Since there is automatic paper feed of approx. 2mm for a paper jam protection after paper cut, the above B size cutting margin will be 11.5±1mm
- * Do not operate such as paper strip occurs by cutting. It may cause paper jam.
- * When selecting “Movable blade : Full cut”, DO NOT use any other cut mode except full cut.

2.5 Sensor Position

Black mark sensor is ex-factory option.

Please ask us for sensor specification when you use black mark sensor.



1) Code name

Code	Description
A	Print head ~ sensor position
B	Sensor 1 position (standard, however can not use when selecting Sensor 2)
C	Sensor 2 position ^{*NOTE1}
D	Paper width

* NOTE1 : (Specification possibly to be considered in mass production : OEM)

2) Sensor Position (Paper sensor and black mark sensor are in common use)

	A(±1mm)	B(±0.5mm)	C(±0.5mm)	D(-1mm)
2 inch	11.5mm	8.0mm	52mm	58
				60
3 inch	11.5mm	7.5mm	72.5mm	76
				80

* Take off or wipe out and clean the sensor periodically.

* Do not preprint within 5.0mm on both sides of basic position by deep color.
Sufficiently confirm when using preprinted paper.

* For prevention of sensor malfunction, do not pre-print vertical and horizontal direction on a black mark sensor when you print black mark.

2.6 Power supply Specification

(1) Power supply input connector

* After "02A" as product revision, 2 PIN connector is standard.

(Round shape connector is "Specification possibly to be considered in mass production" as OEM)

2 pin connector (Standard)

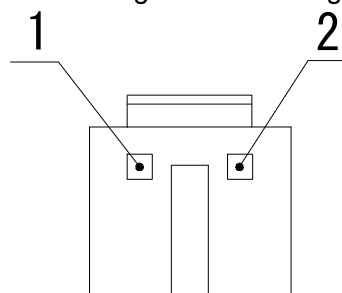
Connector below will be connected to this connector. (Power supplied externally)

Printer side connector : S2P-VH(LF)(SN) JST or equivalent

Adaptor side connector : VHR-2N JST or equivalent

No	function
1	+24V
2	GND

Connector Fig. (From mating surface)



Round shape connector (Specification possibly to be considered in mass production : OEM)

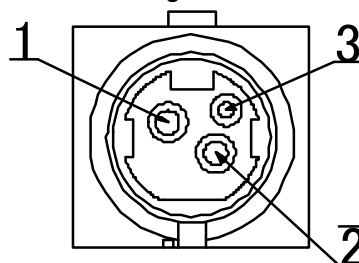
Dedicated A/C adaptor will be connected.(Power supplied externally.)

Printer side connector : TCS7960-5320177(Hoshiden) or equivalent

Adaptor side connector : TCP8927-531167,TCP8927-631167,TCP8935-531167 (Hoshiden) or equivalent

No	Function
1	+24V
2	GND
3	N.C
Shell	FG

Connector Fig. (From mating surface)



(2) Power Supply Voltage : DC24V±5%

(3) Current Consumption

Power Supply Voltage	Current Consumption (Estimation)	
	2inch model	3inch model
	+24V±5%	+24V±5%
Standby	Approx 80mA(typ)	Approx 80mA(typ)
Print average 25%	MAX. Approx 3.0A	MAX. Approx 3.0A
Print average 100%	MAX. Approx 10.0A	MAX. Approx 10.0A

Condition : Printer initial condition.(Dual partition print, print density 100%)

[CAUTION]

*There may be a large peak current depending on printing contents. Use enough power supply capacity in order to secure print quality.

*There may be a case of unstable movement, when power supply cable is too long.

To solve with, shorten power supply cable as short as possible.

Should it is not conductable, connect cables near by the printer and place an electrolysis condenser of approx. 2200u between PS and GND. Rated voltage should be higher than 35V.

*Recommend to use LPS power supply.

2.7 Reliability Specifications

(1) Life duration

1) Thermal head

Pulse resistance : 150 million pulse

Anti-abrasion : 150km

2) Cutter : 1 million cut

3) Definition of life duration

i) Entering point at period of abrasion failure.

ii) Conditions to satisfy the life duration.

Average Print ratio : 12.5%

Recommended thermal paper : TF50KS-E2D

Print density : 100%

Using environment : Normal temperature, normal humidity

* Life duration will differ when using the non-recommended papers because of its quality, width and thickness. Have the user confirm itself with paper that user Intends to use actually.

2.8 Environment Specifications

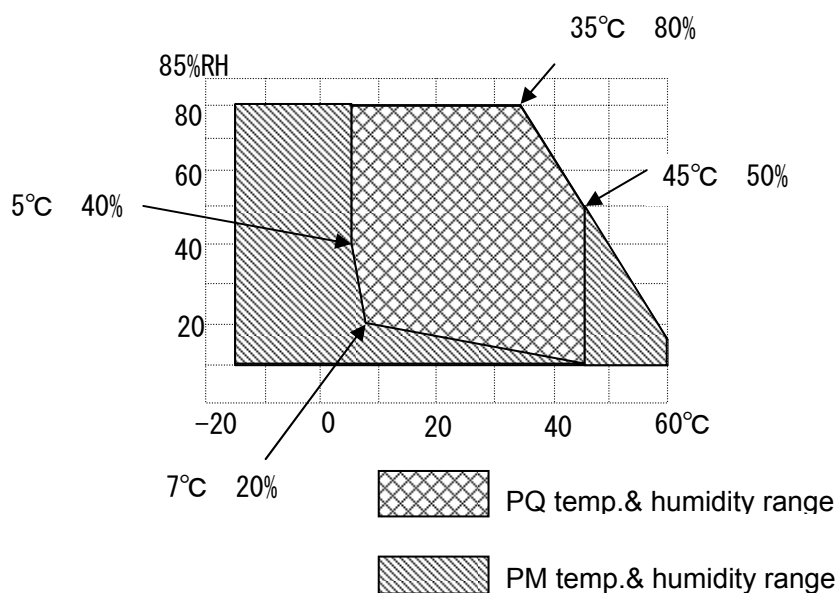
(1) Operating environment

Temperature : -15~60°C

Humidity : 10~80%RH

Prior condition with no condensation, 80%RH supposed 35°C

* Warrant range of print quality (P/Q) & print moveable (P/M)



(2) Storage environment (no paper)

Temperature : -25~70°C

Humidity : 10~90%RH

Prior condition with no dew drop

High temperature & humidity.: Assuring 40°C 90%RH (no dew drop) is the worst value.

2.9 Regulations

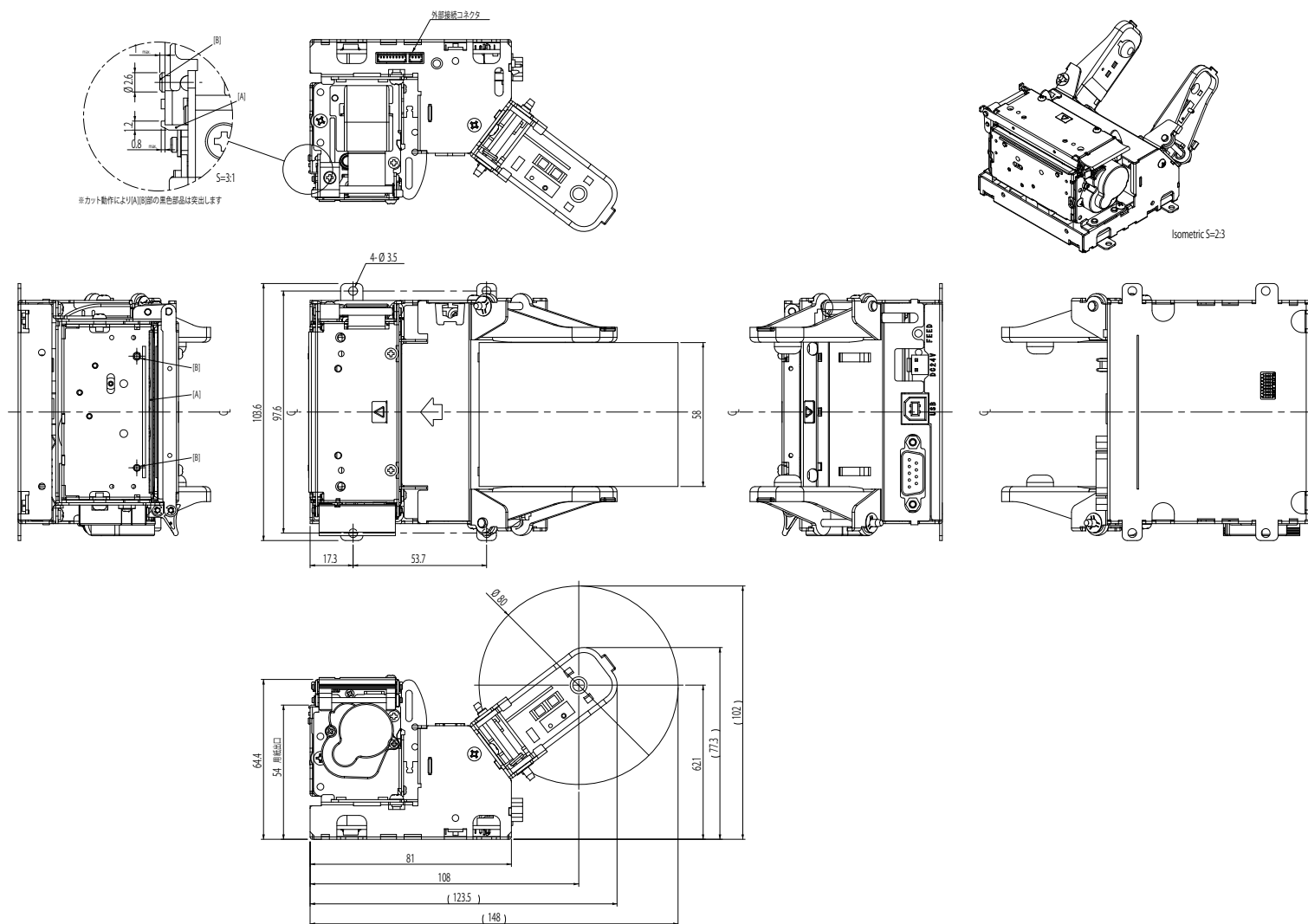
	Revision after "02A"* ²	Revision No mark,01A	Remarks
CE mark	Approved	Approved	
UL60950-1	Approved	Approved	* ¹
VCCI	Class A(Approved)	Class A(Approved)	
FCC	Class A(Approved)	Class A(Approved)	
TUV	-	Approved	

*¹ It will be unapplied when selecting different appearance from standard.

*² It will be unapplied that, even if revision "02A", production prior to approved date end of June 2010.

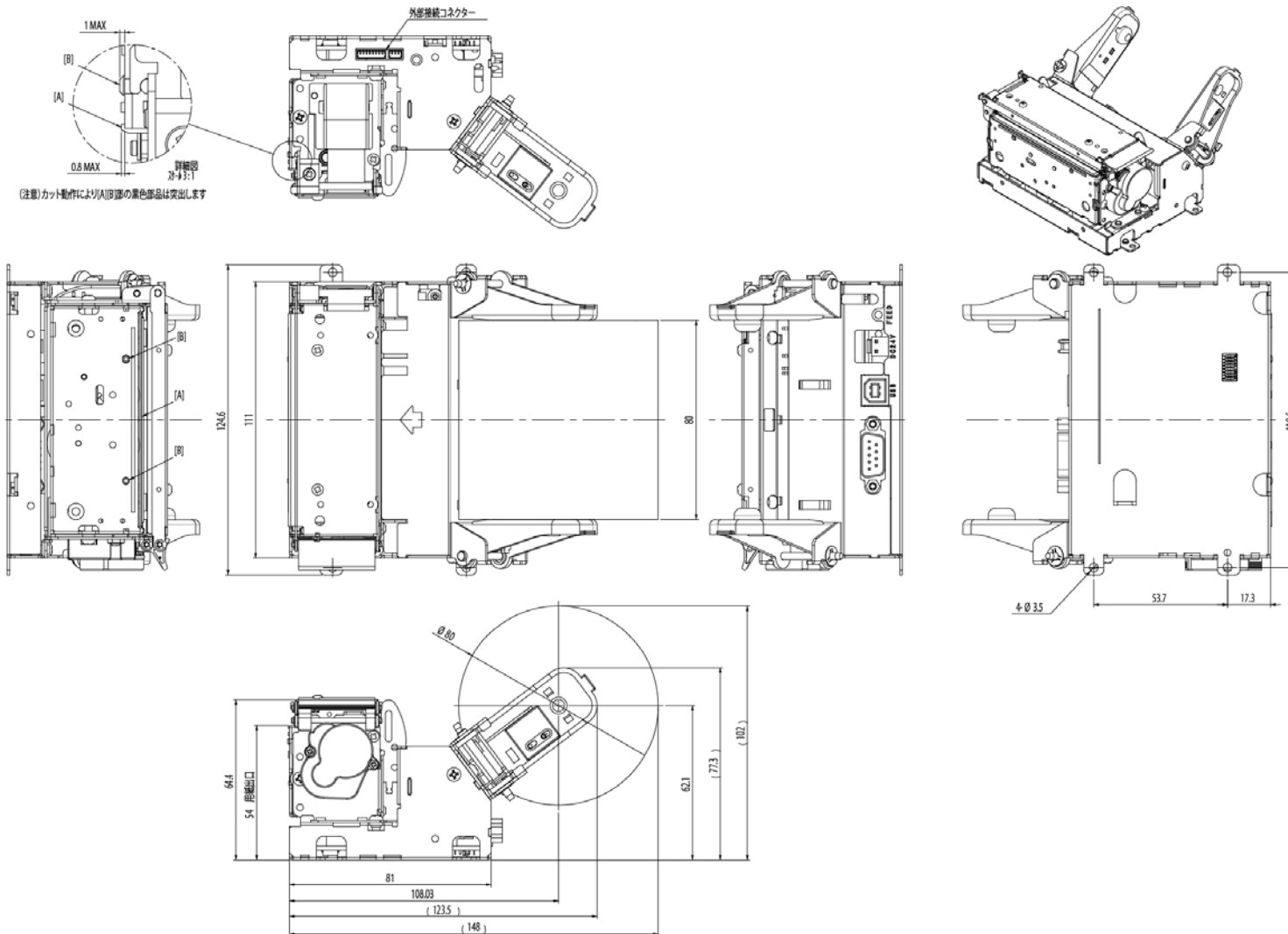
2.10 External Dimensions

(1) NP-2411



* This drawing is revision "02A" D type.

(2) NP-3411

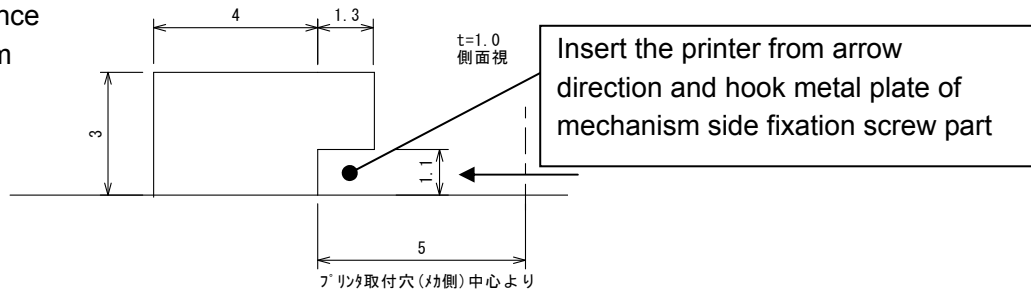


*This drawing is revision "02A" D type.

(3) Other

Fixation holes (2 places) of mechanism side enables to fix the main body by creating hook part in the front and screwing fixation holes in the back as shown in the below diagram.

Reference
diagram



3. Configurations

3.1 Interface [USB(V2.0 FULL SPEED)]

- 1) Version : V2.0 FULL SPEED (12Mbps)
- 2) Port : Upstream port(B jack)
- 3) Power supply : Self-powered
- 4) Reset function : printer is reset automatically when USB cable connected to host is inserted.

When using with USB interface, make sure to use driver^{*NOTE1} we provide.

When direct transfer, make sure to monitor receive buffer remaining amount^{*NOTE2} and Please DO NOT transmit data exceeding this amount.

^{*NOTE1}: Use either one of the following drivers or newer revision (Recommend NII EX Driver)
NII EX Driver Ver.1.0.
NiiPrinter_DS2.0

^{*NOTE2}: Receive buffer remaining amount's auto-reply format (when receive buffer remaining amount's auto-reply is effective.)
[FF]h + [01]h + [00]h + [00]h + [00]h + n * [00 ≤ n ≤ 0F]h
n = Receive buffer remaining amount (0 ~ 15K byte)

3.2 Interface[Serial(RS-232C compliance)]

- | | |
|------------------------------|---|
| 1) Synchro system | : Asynchronous |
| 2) Baud rate | : 9600,19200,38400,115200bps(User select) |
| 3) Composition of 1 word | |
| Start bit | : 1 bit |
| Data bit | : 7 bit or 8 bit (user select) |
| Parity | : Odd, even, or no parity (user select) |
| Stop bit | : More than 1 bit |
| 4) Signal polarity | |
| RS-232C | |
| Mark | =logical" 1 " /OFF (-3V~-12V) |
| Space | =logical" 0 " /ON (+3V~+12V) |
| 5) Received data(RXD signal) | |
| Mark | = 1 |
| Space | = 0 |
| 6) Transmit data(TXD signal) | |
| Mark | = 1 |
| Space | = 0 |

In case of XON/XOFF control

《DC1》 [11] h code, XON : Possible to receive data *1

《DC3》 [13] h code, XOFF : Impossible to receive data *2

- | | |
|------------------------------------|---------------------------------|
| 7) Received control(RTS signal) | |
| Mark | : Impossible to receive data *3 |
| Space | : Possible to receive data *1 |
| 8) Transmit permission(CTS signal) | |
| Mark | : Impossible to transfer data |
| Space | : Possible to transfer data |

*1 Occurs when after turning the power ON or self-diagnostic print and after software reset or when releasing receive buffer full or rewriting firmware.

*2 Occurs when receive buffer is full or after receiving memory switch setting command and after receiving software reset command or firmware rewrite.

*3 Occurs when turning the power OFF or during self-diagnostic print and while software reset or when receive buffer full or after receiving memory switch setting command or when rewriting firmware.

3.3 Connector Signal Table

1) Power Input connector

CN1 : 2 PIN connector (standard)

CN2 : Round shape connector (Specification possibly to be considered in Mass production : OEM)

Refer to [2 . 6 Power specifications]

2) CN4 : Serial data signal input connector (dual type only)

Printer side : 17LE-23090-27(D3CK)-FA (DDK), JEC-9P(JST) or equivalent

Host side : 17JE-13090-37-FA (DDK), JEC-9S(JST) or equivalent

Pin No.	Signal	Input/Output	Function	Remark
2	RXD	Input	SERIAL received data	
3	TXD	Output	SERIAL transmitted data	
4	DTR	Output	Same as RTS signal	Connect to No.7 inside PCB
5	GND	-	Signal ground	
7	RTS	Output	Receivable signal	Connect to No.4 inside PCB
8	CTS	Input	Transmit permission signal	
1,6,9	NC	-		

3) CN3 : USB Data Signal input Connector

Printer side : B Jack DUSB-BRA42-T11(DDK) or equivalent

Host side : B plug or equivalent

Pin No.	Signal name	Input/Output	Function	Remark
1	VBUS	Input	Power line	Non twisted power line
2	D-	Input/Output	Data line	Twist pair signal line
3	D+	Input/Output	Data line	Twist pair signal line
4	GND	-	Power line	Non twisted power line
Shell	Shield	-		

*USB cable must be compliant to the standard. (FULL SPEED)

*We do NOT guarantee operation using non compliant cables.

4) CN5 : New End sensor connector

Printer side : 53047-0310(Molex) or equivalent

Applicable housing : 51021-0300(Molex) or equivalent

Pin No.	Signal name	Input/Output	Function	Remark
1	LED+	Output	LED anode	
2	PNE	Input	Phototransistor collector	"H" means no paper
3	SG	-	Signal GND	Connect cathode and emitter

*Use upon confirmation of sensor specification when connecting external near end sensor with non-standard paper-holder. Contact us for consultant.

*This connector equips with standard paper-holder PH-10. Enable to visual check from the outside.

This connector is mounted at side of the printer after revision "02A".

5) CN12 : Bezel sensor detection or presenter connector

Printer side : 53048-0810(molex) or equivalent

Corresponding housing : 51021-0800(molex) or equivalent

Pin No.	Signal	INPUT/OUTPUT	FUNCTION	REMARKS
1	LED1+	OUTPUT	To sensor LED1	
2	Sensor 1	INPUT	From sensor 1	
3	GND	—	Signal GND	
4	LED2+	OUTPUT	To sensor LED2	
5	Sensor 2	INPUT	From sensor 2	
6	GND	—	Signal GND	
7	M+	OUTPUT	Motor Drive Output	
8	M-	OUTPUT	Motor Drive Output	

* When using as bezel sensor or LED bezel or presenter, please DO NOT connect any connectors except [BEZ-220/221/230/231] or [BEZ-320/330] or a presenter [NPT-306].

There may be failure when other bezel sensor connected. No diversion.

* LED Bezel [BEZ-320/330] control is applied to F/W Ver.1.50 or later. (After product revision 03A)

* Bezel sensor[BEZ-221/231] control is applied to F/W Ver.1.40 or later.

* Presenter [NPT-306] control is applied to F/W Ver.1.50 or later.

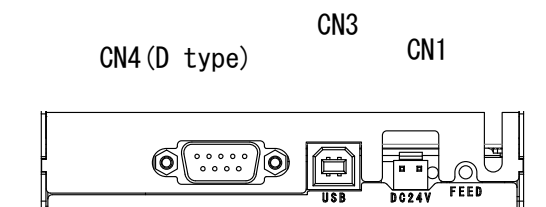
* In case of bezel with sensor or LED bezel [BEZ-320/330], able to select function A and B by memory switch MS2-6 (55mm paper feed control is effective).

[please refer to 4. 1 function setting for details]

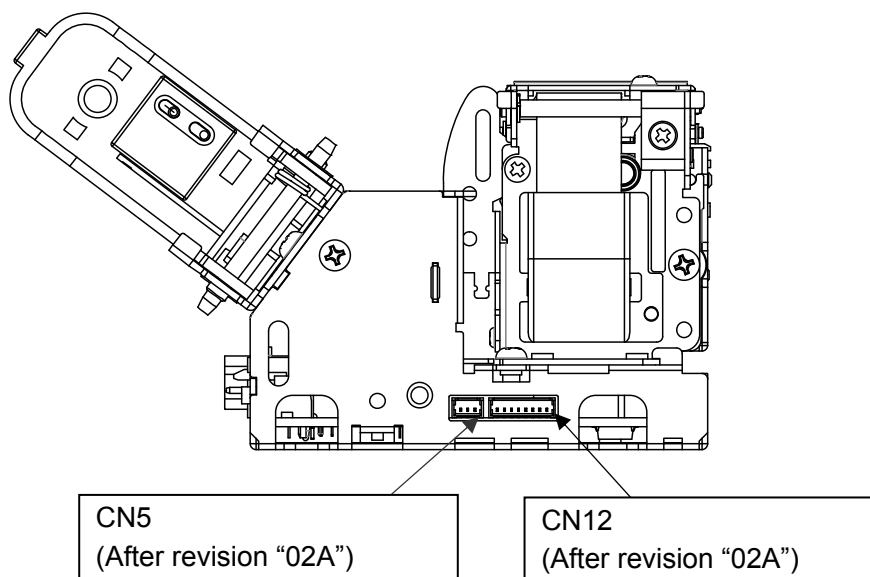
When using bezel, please use 55mm or longer paper.

If you do not use 55mm or longer paper, please set (set 55mm paper feed control effective) Dip switch DS1-8 (or memory switch MS1-8) ON[Enable paper feed control for 55mm] . Otherwise, it is difficult to take a paper out from bezel.

* This connector is mounted after revision “02A”.



When selecting round shape connector, CN2: round shape connector is mounted instead of CN1:2 pin connector



4. Functions

4.1 Function Setup

4.1.1 Switch Setup

1) DIP Switch DS1 (Revision after "02A", F/W Ver.1.40 or later)

	Function	O N	OFF	Default setting
				NP-2411D/NP-3411D
DS1-1	Interface ^{*1}	Refer to table 1		OFF
DS1-2				OFF
DS1-3				OFF
DS1-4	Serial baud rate ^{*1}	Refer to table 2		O N
DS1-5				O N
DS1-6	Serial flow control ^{*1}	XON/XOFF	RTS/CTS	OFF
DS1-7	Auto cutter control	Disable	Enable	OFF
DS1-8	55mm paper feed control	Enable	disable	OFF

* when DS1-8 is set ON with mounting bezel (including one with sensor) , if the distance from right after cut to a next cut is less than 55mm, mandatory paper feed is activated continuously to get 55mm in order to have paper edge come out from bezel. (Feed paper by 2mmafter cutting.)

* In case of using USB I/F, USB I/F is configured automatically by rebooting power of printer with connecting USB cable connected to the host. (USB auto-recognition function)

In case of connecting USB cable connected to the host after printer powered on, printer activates reset once, after that, USB I/F is configured. (USB auto-switching function)

Once after USB I/F configured, even if USB cable is removed (even if USB I/F disconnected) USB I/F setup is maintained.

*1 : In case of power on printer without connecting USB cable, it enables serial I/F, and DIP switch DS1-1 ~ DS1-6 setting become effective.

In case using by serial I/F, please do not connect USB cable. If USB cable connected when using by serial I/F, USB auto-switching function starts to work and serial I/F is disabled.

Table 1 : Interface setting

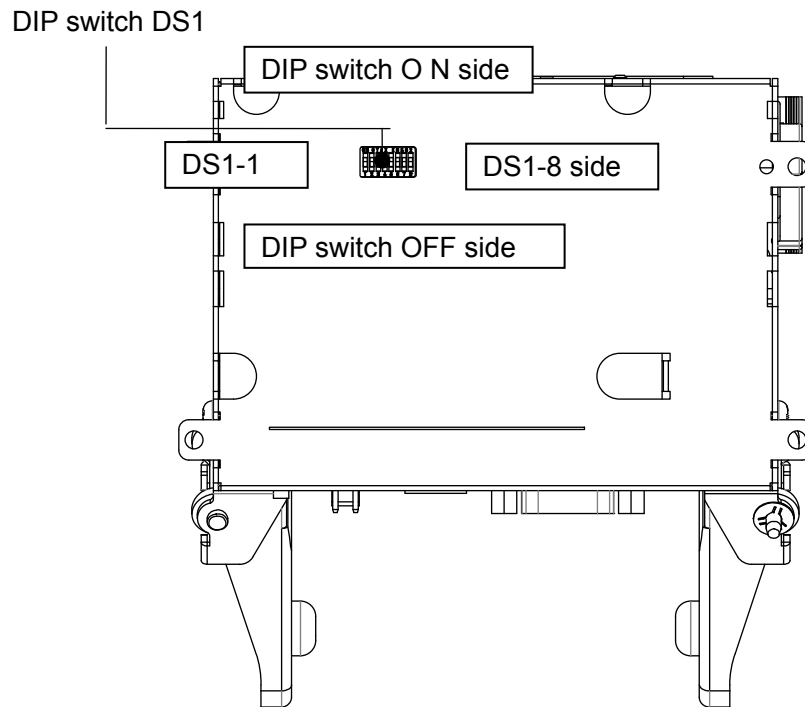
Interface	Bit length	Parity setting	DS1-1	DS1-2	DS1-3	Receive buffer remaining Size auto reply ^{*2}
Serial or USB	8bit (at Serial)	NIL	OFF	OFF	OFF	Enable (at USB)
		NIL	O N	OFF	OFF	Disable (at USB)
	8bit	ODD	OFF	O N	OFF	
		EVEN	O N	O N	OFF	
	7bit	NIL	OFF	OFF	O N	
		ODD	O N	OFF	O N	
		EVEN	OFF	O N	O N	
Reserve	-	-	O N	O N	O N	

*2 : Setup is enabled at USB communication. Periodically auto-reply the same contents that will be replied when assigning receive buffer remaining size (n=01h) in [Printer Information Transmission] 《ESC s n》 command.

Table 2 : Serial communication speed

Serial transmit speed	DS1-4	DS1-5
115200	OFF	OFF
38400	O N	OFF
19200	OFF	O N
9600	O N	O N

After revision "02A", DIP switch is mounted on the bottom face.



- * In case of no DIP switch mounted, substituted by memory switch.
In that case, regarding contents of memory switch function, please refer to
[4. 1. 1 Switch setting (3) memory switch MS1 (F/W Ver.1.00 ~ 1.30)]
or
[4. 1. 1 Switch setting (4) memory switch MS1 (F/W Ver.1.40 or later)]

2) Memory Switch MS2

	Function	O N	OFF	Default Setting	
				NP-2411D NP-3411D	NP-2411U NP-3411U
MS2-1	Japanese Kanji Code	Shift JIS	JIS	OFF	OFF
MS2-2	Built-in language	Refer to table 3		OFF	OFF
MS2-3	Font switching			OFF	OFF
MS2-4	Near end detection	disable	enable	OFF	OFF
MS2-5	Reserved			OFF	OFF
MS2-6	Bezel sensor function ^{*4}	B function	A function	OFF	OFF
MS2-7	Printable area assign	69(54)mm ^{*3}	72(52)mm ^{*3}	OFF	OFF
MS2-8	Print density setup	Dark	Standard	OFF	OFF

* Setting of MS2-5 must be "OFF" at normal operation.

*3 : Figures in () will be applied to NP-2411

Please refer to [2. 3 Printing Area].

*4 : Applied to F/W Ver.1.40 or later

Please refer to table 4 for bezel paper-out sensor function (A function • B function)

LED Bezel [BEZ-320/330] control is applied to F/W Ver.1.50 or later.

Bezel sensor[BEZ-221/231] control is applied to F/W Ver.1.40 or later.

Table 3 : Built-in language font

Font	MS2-2	MS2-3
Japanese	OFF	OFF
Chinese	O N	OFF
Korean	OFF	O N
Greek	O N	O N

* Japanese JIS C 6226 : Full size

Code for domestic+Code for overseas+Code Page 858+International character

: Half size

* Korean KS X 1001:1992 : Full size

Katakana character set+Extended graphic character set+Code Page 858 : Half size

(KS X 1001:1992 Built-in font)

* Chinese GB18030-2000 : Half/Full size

* Greek Code Page1253 : Full size (Character code is 1 byte code)

* Please refer to [Character Code Table Selection] for other language font.

Table 4

Bezel function A	Status Bit6 shows "1" when bezel paper-out sensor detects paper while shows "0" when none.
Bezel function B	*status Bit6 become "1" when paper detected by bezel sensor right after cutting. Print data is not printed during detecting paper even if receiving print data. Status Bit6 become "0" when no paper detected. * When bezel paper-out sensor detects no paper right after cutting, status Bit5 turned to be "1".

*Bezel function is available by using LED bezel BEZ-320/330 or bezel with paper detection sensor BEZ-221/231.

3) Memory Switch MS1 (F/W Ver.1.00~1.30)

	Function	O N	OFF	Default setting	
				NP-2411D NP-3411D	NP-2411U NP-3411U
MS1-1	Interface setting	Refer to table 5		OFF	OFF
MS1-2				OFF	OFF
MS1-3				OFF	OFF
MS1-4	Serial baud rate/Receive buffer remaining size auto reply(USB) ^{*5}	Refer to table 6/7		OFF	OFF
MS1-5				OFF	OFF
MS1-6	Serial flow control	XON/XOFF	RTS/CTS	OFF	OFF
MS1-7	Auto cutter control	Disable	Enable	OFF	OFF
MS1-8	Reserved	—	—	OFF	OFF

* Setting for MS1-8 must be OFF at normal operation time.

*5 : Applied to F/W Ver.1.20~1.30

Table 5 : Interface setting

Interface	Bit Length	Parity setting	MS1-1	MS1-2	MS1-3
USB	-	-	OFF	OFF	OFF
Serial	8bit	NONE	O N	OFF	OFF
		ODD	OFF	O N	OFF
		EVEN	O N	O N	OFF
	7bit	NONE	OFF	OFF	O N
		ODD	O N	OFF	O N
		EVEN	OFF	O N	O N
Reserved	-	-	O N	O N	O N

Table 6 : Serial baud rate setting

Serial baud rate setting	MS1-4	MS1-5
115200	OFF	OFF
38400	O N	OFF
19200	OFF	O N
9600	O N	O N

Table 7 : Receive buffer remaining size auto-reply(USB)^{*3}

Receive buffer remaining size auto-reply	MS1-4
Enable	OFF
Disable	O N

* Setup is enabled when USB communication(MS1-1~3:OFF)

* Periodically auto-reply the same contents that will replied when assigning receive buffer remaining size (n=01h) in [Printer Information Transmission] 《ESC s n》 command.

4) Memory Switch MS1 (Applied to F/W Ver.1.40 or later)

	Function	O N	OFF	Default setting	
				NP-2411D NP-3411D	NP-2411U NP-3411U
MS1-1	Interface setting* ⁶	Refer to table 8		OFF	OFF
MS1-2				OFF	OFF
MS1-3				OFF	OFF
MS1-4	Serial baud rate* ⁶	Refer to table 9		O N	O N
MS1-5				O N	O N
MS1-6	Serial flow control* ⁶	XON/XOFF	RTS/CTS	OFF	OFF
MS1-7	Auto cutter control	Disable	Effect	OFF	OFF
MS1-8	55mm paper feed control	Enable	Disable	OFF	OFF

* In case MS1-8 set to ON with bezel(including one with sensor), if length is below 55mm

To the next cut from right after cut, mandatory paper feed is continuously activated to get 55mm paper length whose front edge comes out from the bezel. (Feed paper by 2mm after cut)

* In case using by USB I/F, USB I/F is configured automatically by rebooting printer power with connecting USB cable connected to the host. (USB auto-recognition function)

In case connecting USB cable connected to PC after rebooting printer, once printer reset,

And after that, USB I/F is enabled. (USB auto-switching function)

Once after USB I/F configured, even if removing USB cable (cutting USB connection),

USB I/F setup is kept.

*6 : In case printer is powered on while USB cable disconnected, serial I/F setup is enabled, and memory switch MS1-1 ~ MS1-6 setting become effective.

In case using by serial I/F, please do not connect USB cable. If USB cable connected when using by serial I/F, serial I/F communication is disabled by activated USB auto-switching function.

Table 8 : Interface Setting

Interface	Bit length	Parity setting	MS1-1	MS1-2	MS1-3	Receive buffer remaining size auto-reply ^{*2}
Serial or USB	8bit (Serial)	NONE	OFF	OFF	OFF	EFFECTIVE(USB)
		NONE	O N	OFF	OFF	INEFFECTIVE(USB)
	8bit	ODD	OFF	O N	OFF	
		EVEN	O N	O N	OFF	
	7bit	NONE	OFF	OFF	O N	
		ODD	O N	OFF	O N	
		EVEN	OFF	O N	O N	
Reserved	-	-	O N	O N	O N	

*2 : Configuration is enabled at USB I/F communication. Periodically auto-reply the same contents that will reply when assigning receive buffer remaining size (n=01h) in [Printer Information Transmission] 《ESC s n》 command.

Table 9 : Serial baud rate setting

Serial baud rate setting	MS1-4	MS1-5
115200	OFF	OFF
38400	O N	OFF
19200	OFF	O N
9600	O N	O N

4.1.2 Memory Switch setting by manual

In case memory switch setup or change is conducted by manual operation, please take a following operation step with print being ready.

(1) How to shift to setting mode

- 1 Please set paper (Thermal head cover closed, Power OFF)
- 2 FEED switch ON (keep holding until completing 3, 4.)
- 3 Turn ON (confirm printer starts to work)
- 4 From Open to Close thermal head cover
- 5 FEED switch OFF (release holding)
- 6 Entering to setup mode to start printing comments of multiline including ** Memory SW SETTING MODE**.

(2) How to set each switch

Please conduct sequential [ON] [OFF] setup by verifying print from MS2-1 to MS2-8 under setup mode.

[F/W Ver.1.40 or later]

Setting ON	Push FEED switch long (over 1 sec.)
Setting OFF	Push FEED switch short (less 1 sec.)

[F/W Ver.1.00~1.30]

Setting ON	Pushing FEED switch with ALARM LED (red) lights on.
Setting OFF	Pushing FEED switch with ALARM LED (red) lights off

Setting is finished after repeating the above operation 8 times. Upon after printing contents of setting, software-reset starts automatically and latest setting is enabled.

* In case no DIP switch mounted, repeat MS1-1 ~ MS2-8 16 times.

* In case need to stop setting on the way, open thermal head cover and press FEED switch once, and then close thermal head cover. Setting is finished. Operation is as follows when desired to stop in the middle of setting.

After F/W Ver.1.40 : MS setting including contents set up until then will not be changed.

F/W Ver.1.00~1.30 : Contents configured until then is set and setup after in the middle of setting MS is all OFF.

4.1.3 Memory Switch setting by on-line command

please conduct Memory switch setup (or change) by on-line command by following command from the host after paper is set and normal on-line print is possible .

once printer receives setup command normally, software reset is activated after printing setup content , the latest setup is enabled.

(1) Setup command

[Memory Switch Setup and Printing] 《GS M n d1 d2》

It is possible to setup MS1 and MS2 of Memory switch or to print the setup content.

* Please refer to “4.1.1 Switch Setting” for each Memory Switch content and note.

* Please refer to command “<<GS M n d1 d2>> [Memory Switch Setup and Printing]” for memory switch setup by command.

* Memory switch setup command can be sent by using NiiPrinterTool.

4.1.4 Self-diagnostic print

(1) Confirmation by self-diagnostic print function

- Function of control circuit board
- Version for control F/W
- Setting statuses of memory switch
- Setting statuses of DIP switch (Model revision after “02A”)
- Movement of paper end sensor

(2) Start and finish of self-diagnostic print

Turn ON the power with pressing FEED switch and release a finger from the FEED switch after initialization response of the printer mechanism. Then Self-diagnostic print is started. Finishes after printing out prescribed printing patterns.
Printer is in off-line during self-diagnostic print.

4.1.5 Paper Sensor

There is a sensor as paper detector, mounted on paper path of the printer mechanism body and detects a complete paper-out condition. The printer will transmit paper-end status and stop printing as soon as detection of paper out.

Since it is not detectable, please do not use a roll paper that is glued to the core at the end of the paper. Please replace with a new paper as soon as detection of paper out.

4.2 Error Handling

1) Details of error Detection

Item	Status	Status information	ALARM status	How to Release
Communication error*1	232C communication error Parity Overrun Framing	-	-	Match communication condition
Normal	Normal status	-	Light off	
Print start status	Print start setting by command (not error).	bit7 1	Light off	Print end setting by command.
Paper clamp status *2*3	Presenter or bezel sensor detects paper.	Bit6 1	Blinking	Remove paper falling out of presenter or bezel.
Paper detection error *2*3	If no paper detected during black mark detection, or presenter or bezel sensor Unable to detect paper.	bit5 1	Blinking	Open thermal head cover, remove paper and close it.
Auto cutter error	Cutter Paper jam	bit4 1	Blinking	Open thermal head cover, remove error factor and close it
Head temperature irregular Presenter ejection error*3	Head temperature at 70°C approx. or more, presenter ejection or retraction is not completed.	bit3 1	Blinking	Auto recovery at approx. 65°C. Remove paper in the presenter.
Paper end	Out of paper	bit2 1	Light ON	Paper replenishment
Thermal head cover open	Thermal head cover open	bit1 1	Light ON	Thermal head cover close
Paper near end detection	Remaining paper detection Paper near end sensor detection (MS2-4: OFF)	bit0 1	Blinking	Paper replenishment

- Printer stops all operations and turns ON ("1") for the error bit of status information
When detecting above-mentioned errors except for communication error, paper near end and print start status.

*1 When communication error happened, printing character may be replaced with "?" to print..

*2 F/W Ver.1.40 or later

*3 Regarding presenter, F/W Ver.1.50 or later

4.3 Buffer Full Print

At the time when the printer received data for one line^{*NOTE1}, the printer prints out automatically based on [line feed quantity of Smallest paper feed pitch unit] «ESC 3 n» (refer to 5.3.15).

^{*NOTE1}: Buffer full data number (max. print digit number) varies on the each size of ANK or Kanji.
(please refer to [2. 1. 2 printing specification])

4.4 Driving Selection

Fixed partition (no partition, dual, three-way and four-way partition), Optimization (anomaly) is available by command.

Please select after considering consumption current by print ratio.
(Please refer to [2. 6. 3 consumption current])

(1) Selection of partition drive

Please refer to command specifications.

- * Printing speed decreases when selecting partition drive except “no partition”.
Also, depending on printing contents(like pattern changing print ratio), space line(max.1 dot line) may issue.

(2) Optimization

Switch partition number to each mode, no partition, dual, 3-way, 4-way partition depending on total dot number/l line to print

	No partition	2 partition	3 partition	4 partition
NP-2411	less than 144dot	more than 145dot less than 288dot	more than 289dot	
NP-3411	less than 144dot	more than 145dot less than 288dot		more than 289dot

- * Printing speed varies on print ratio and may generate noise a bit when selecting optimization mode.

- * Up to 1 dot line space (max) may appear, also print quality may decrease in a certain degree.
When optimization selected.

4.5 How to switch Print of Full size / Half size

Language font	Switching method			
Japanese	Command[FS &],[FS .] or shift JIS code switch			
Korean	Command[FS &],[FS .]switch			
Chinese	Code switch (see below)			
		1byte code(Half size) *NOTE1	2byte code(Full size)	4byte code(Full size)
	1 st byte	00 h ~ 80 h	81 h~FE h	81 h~FE h
	2 nd byte		40 h~7E h 80 h~FE h	30 h~39 h
	3 rd byte			81 h~FE h
	4 th byte			30 h~39 h
Greek	No switch (only full size, no half size)			
Polish	No switch (only half size, no full size)			
Russian	No switch (only half size, no full size)			
Scandinavian	No switch (only half size, no full size)			
Turkish	No switch (only half size, no full size)			

*NOTE1: Since 00h ~ 1Fh are control code, no print is enabled.

4.6 Operation Panel

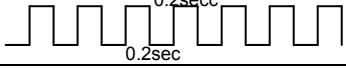
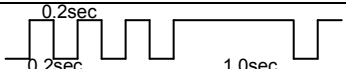
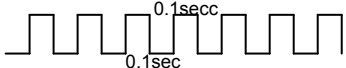
The following operation panel are built-in the main body of the printer.

(1) ALARM (red) [Alarm Lamp] :

LED lights on or blinks if error found in printer.

LED blinks/lights ON/lights OFF when writing to Flash ROM.

* Alarm display pattern shown below.

Display pattern	Printer status	Priority (9:High~1:Low)
1 0 	Normal Print(receive)enable	1
1 0 	Paper near end	2
1 0 	Paper-out	3
1 0 	Thermal headcover open	4
1 0 	Head temperature abnormal (approx. 70°C or more) inappropriate head connection or presenter eject error	5
1 0 	Auto cutter error	6
1 0 	Paper clamp status or paper, detection error(black mark,or bezel sensor or presenter)	7
1 0 	F/W write mode	8

(2) FEED Switch [Paper Feed Switch] :

Switch for feeding paper to the forwarding direction

Also, used for self-diagnostic printing, memory switch setting.

*Enable to change the FEED switch valid or invalid by command of [Enable/Disable of FEED Switch] 《ESC c 5 n》.

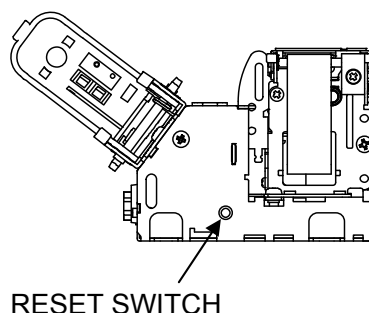
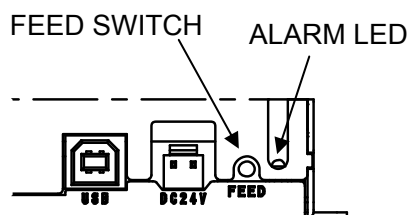
(3) RESET Switch

Equipped to the side surface (see fig. below) and unable to press by a finger in order to avoid operation mistake.

(Push it lightly with ballpoint pen edge etc and release.)

Since printer will return to same status as turning the switch on when activating RESET switch, it requires setting it again.

It requires precaution when data remains to buffer because data will be deleted.



4.7 How to set Roll Paper

* Also refer when unloading roll paper.

(1) Set roll paper to the paper holder(PH-10).

1) Slightly tip a roll paper and open the holder with contacting circular boss of the holder.

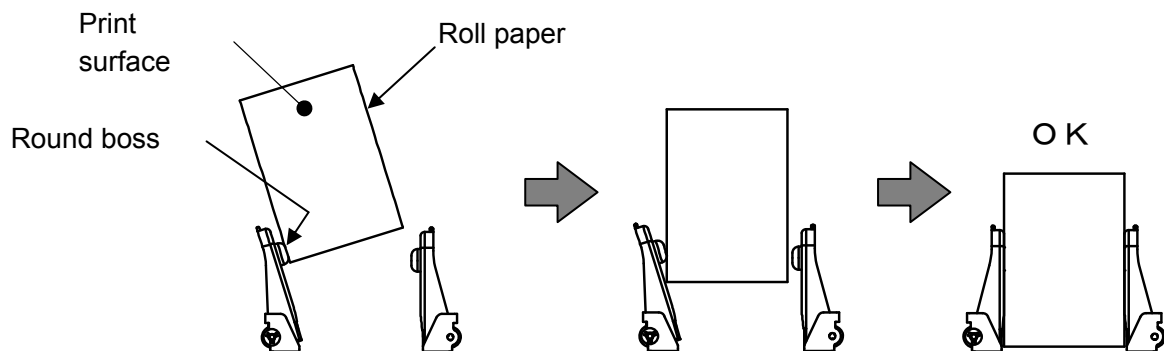
(Pay attention to print surface and roll direction of roll paper)

(Beware not to apply excess force when widening the paper holder.)

2) Fit and insert paper core hole to circular boss.

(Make sure the holder is set in parallel.)

(Make sure circular boss fits appropriately into the paper core hole.)



(2) Setting paper by auto-loading function.(recommended)

1) Set roll paper following the above instruction (1).

2) Insert paper edge into paper entrance.

(Make sure roll paper will be inserted straightly with applying to paper insertion guide.)

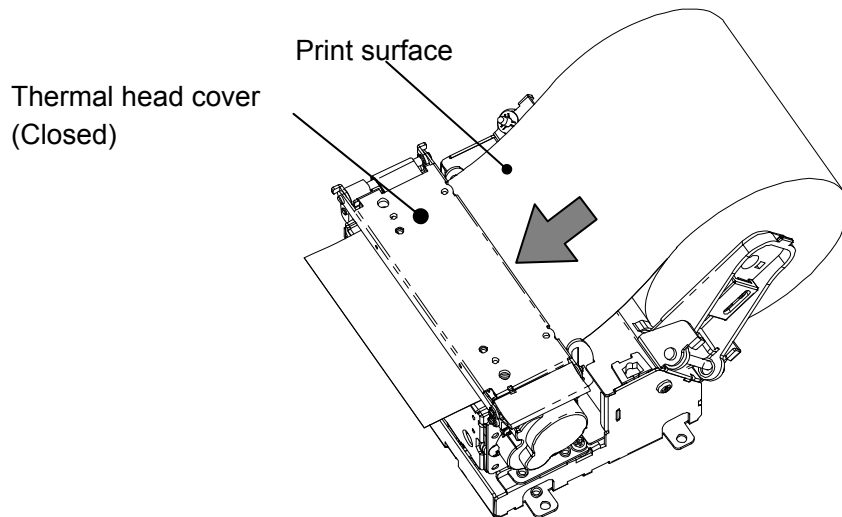
(In case of there is a tape, peel off and vertically cut the paper to get rid of any traces left.)

3) Paper sensor will detect and automatically pull in the inserted paper.

(Make sure thermal head cover is closed.)

(Make sure the power is turned ON.)

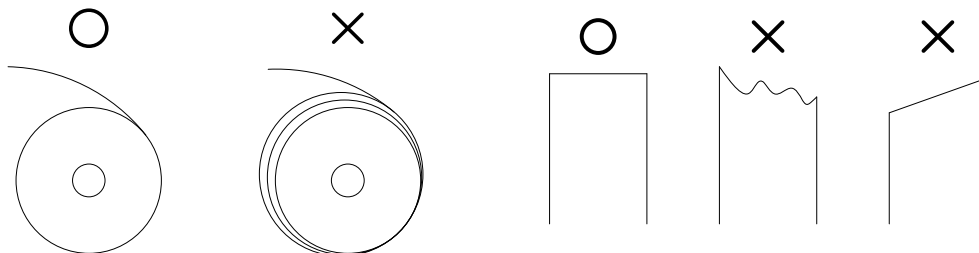
4) Paper will be pulled in and cut at a constant length and will be ready for printing.



[CAUTION]

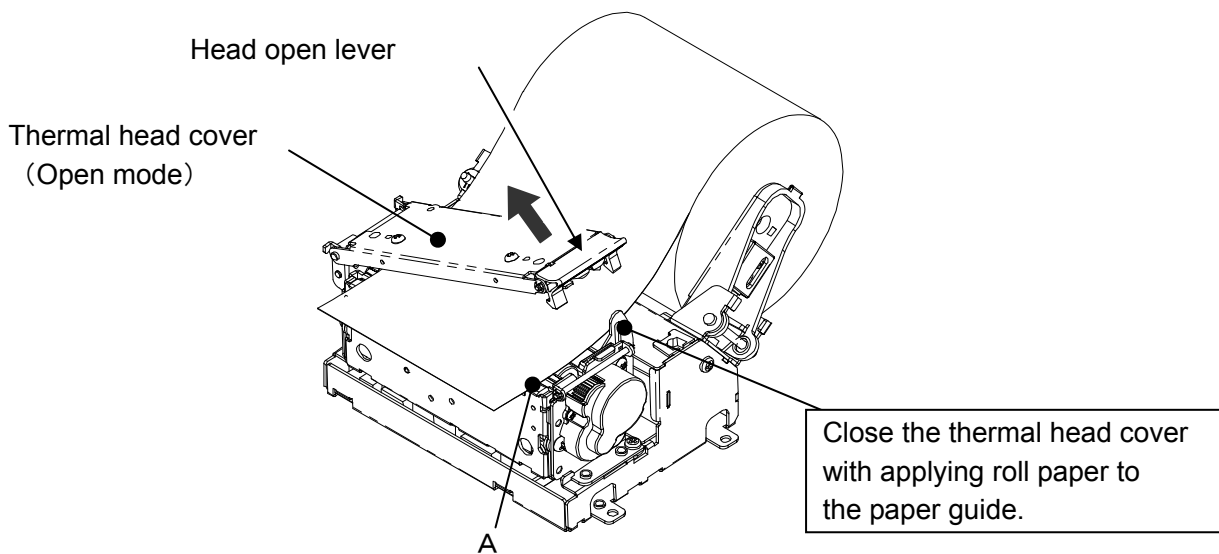
- * Remove old roll paper core before setting new roll paper.
- * Do not set roll paper loosening. (It may cause paper jam.)
- * Leading edge of paper must be straight and right angle. (Paper Edge Shape Drawing)
- * When insert roll paper with edge of paper is fractured or angle cut, leading may not enable.
- * In case of there is a tape, peel off and vertically cut the paper to get rid of any traces left.
- * Beware printing surface will face upwards/outside.
- * In the incident of inserted paper on the bias, open the head cover and straighten the paper. (Make sure not to apply excess angle when opening the head cover, Also, beware not to catch a finger or hand in the cover.)
- * Since thermal head may be highly-heated right after printing, beware not to touch it.

Paper Edge Shape Drawing



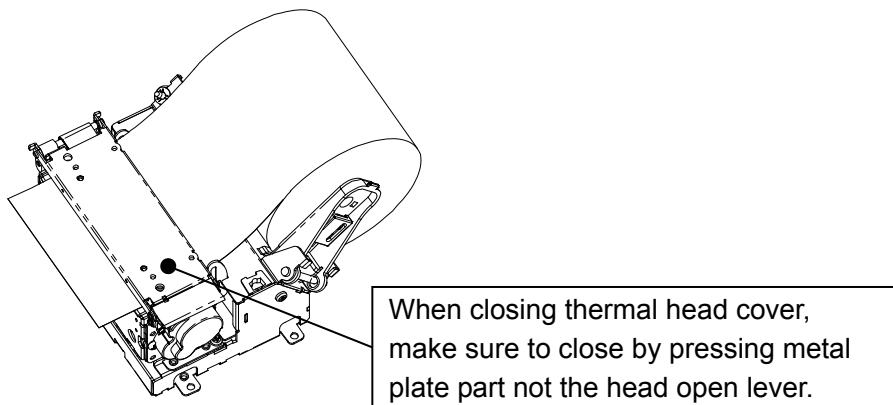
(3) Setting paper by thermal head cover open/close function.

- 1) Set roll paper following the above instruction (1).
- 2) Open thermal head cover by lifting up the head open lever to the arrow direction.
- 3) Pull out the paper until passes through the printing mechanism.
(Pull out the paper until mark is outside of A point of mechanism if tape mark remains on the paper.)
(Pull out the paper applying to paper insertion guide.)
- 4) Completely close the thermal head cover until it clicks and locks.
- 5) Paper will be pulled in and cut at a constant length and will be ready for printing.
(Make sure the power is turned on.)



[Caution]

- * Remove old roll paper core before setting new roll paper.
- * Do not set roll paper loosening. (It may cause paper jam.)
- * Make sure not to apply excess angle when opening the head cover.
- * Since thermal head may be highly-heated right after printing, beware not to touch it.
- * In the incident of inserted paper on the bias, open the head cover and straighten the paper. (Do not slip roll paper out of paper guide.)

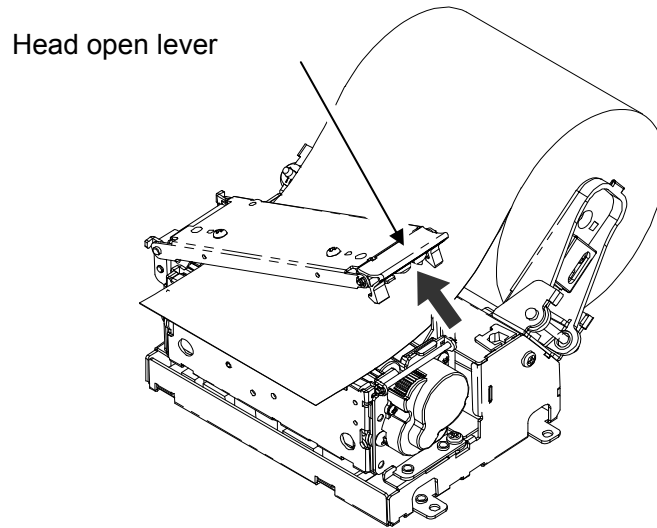


4.8 How to remove the remaining paper, jammed paper.

- 1) Lift head open lever as per arrow direction to open the thermal head cover.
- 2) Remove all papers on paper path.
- 3) Completely close the thermal head cover unit it clicks and locks.

[CAUTION]

- * Since thermal head may be highly-heated right after printing, beware not to touch it.
- * Beware not to touch cutter blade at paper jam failure because it may fall out from the unit.
- * Do not use excess power passing over stop position when open thermal head cover.
- * Beware not to tuck down fingers or hand.



4.9 How to clean thermal head.

Printing quality may get worse if paper chaff is adhered to heating element of thermal head. Also, paper dust may adhere to platen and sensor part. In this case, turn OFF the power and follow instructions shown below.

(1) Thermal head

Clean surface of heating element with a cotton swab moistened with alcohols solvent (ethanol or IPA).

(2) Platen

Remove trash, dust from platen surface by wiping and rubbing lightly with a dry cloth.

(3) Mark sensor / paper sensor and surroundings

Remove trash / dust adhered to sensor with a soft-bristled brush or a cotton swab.

(4) Auto cutter

Remove trash, dust by air blow. (Estimate : every 100K operation)

[CAUTION]

- *Since thermal head may be highly-heated right after printing, beware not to touch it.
- *Do NOT touch directly with metal or by your hand to heating element of the thermal head.
- *Beware of static electricity while cleaning, because it may damage the thermal head.
- *It may have a bloom of paper depending on papers, check at the period of maintenance and decide what kind of a paper to use.
- *Make sure to turn ON the power after its complete dry.
- *Make sure not to apply excess angle when opening the head cover.