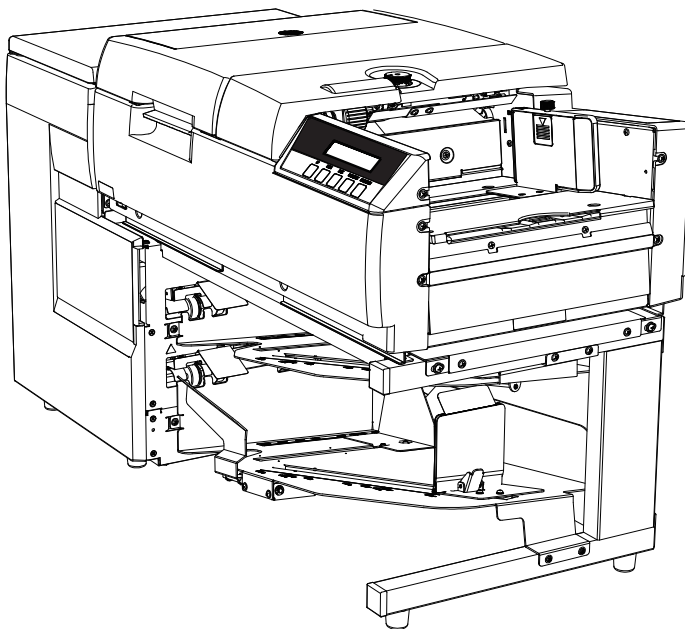


SEKONIC

Operating Manual

SR-8000 HYBRID ***Optical Mark Reader***



*View of main body with select stacker unit (option) equipped.

Introduction

Thank you very much for purchasing our product.

Please read the operating manual before using this product, and be sure to use it properly. After reading this operating manual (stored in CD-ROM), be sure to keep it in a place that you can access at any time.

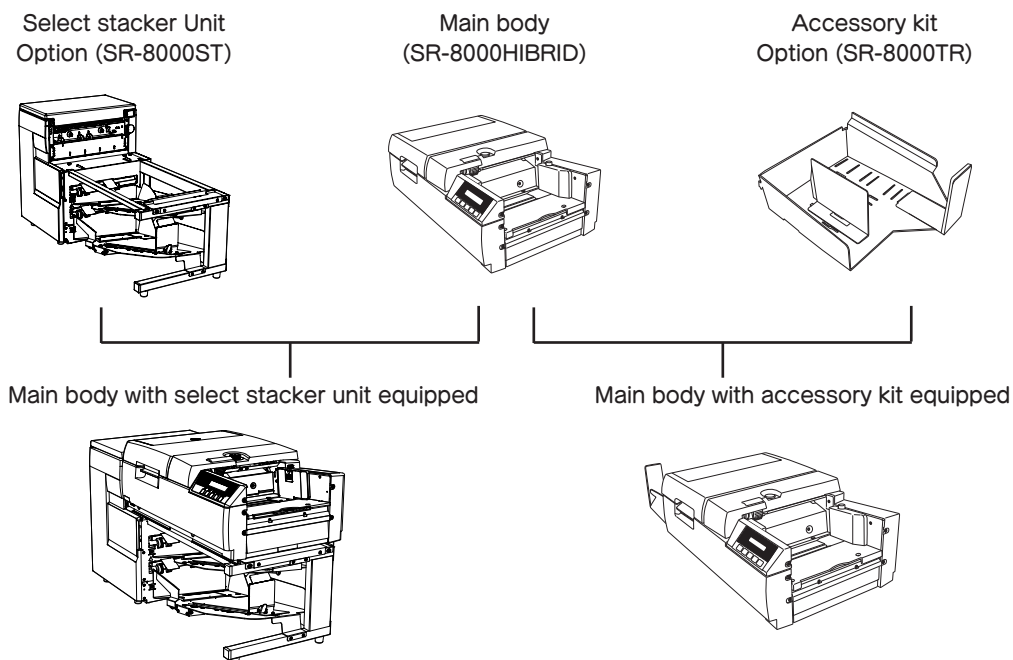
The main body can be used with option of select stacker unit or accessory kit but can't be used alone. Please make sure to purchase select stacker unit or accessory kit together with main body.

*The device means either the system structure of main body with select stacker unit equipped or main body with accessory kit equipped.

*Application software is required to operate the device. Please purchase the software from the distributor, or refer to "API Reference Manual" stored in the CD-ROM if you would like to develop the software by yourself.

- Select stacker unit: MODEL SR-8000ST
- Accessory kit: MODEL SR-8000TR

● System structure



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. In a residential environment this device may cause radio interference. In this case, the user may be required to take appropriate measures.




Handling the Device Correctly and Safely

Safety Precautions




Read the "Safety Precautions" carefully before using, and use this product correctly.







This "Safety Precautions" page lists graphic to ensure the safe operation of this product to prevent users, other people or property from being damaged. Thoroughly read these precautions and understand the meaning of the symbols before proceeding to the main text of this manual.

- The levels of danger and damage that will arise if the device is inappropriately used are classified and indicated as shown below.









 WARNING	Improper operation by neglecting this instruction may result in personal death or serious injury.
 CAUTION	Improper operation by neglecting this instruction may result in personal injury or property damage.
NOTICE	Precautions and restrictions for operating the device. Be sure to read carefully to prevent improper operation.
NOTE	Indicates additional information about the controls or related functions. Reading these is recommended.
 Reference	Indicates reference page.




- The following graphic symbols explain the necessary actions to be taken.

	Indicates warning and precautions. The exact warnings and precautions are shown in the symbols.
	Indicates prohibited actions. The exact prohibited actions are shown in the symbols.
	Indicates actions that must be carried out. The exact required actions are shown in the symbols.

⚠ WARNING	
	<p>● Do not place your hand on the paper feeding surface while the device is in operation. Your hand can be caught and injured due to incorrect usage.</p>
	<p>● Do not place your hand into any moving parts while the device is in operation. Your hand can be caught and injured due to incorrect usage.</p>
	<p>● When placing your hand on the paper feeding surface during a paper jam, be careful not to allow your fingers to be caught or hit. Your finger or hand can be caught on the paper feeding surface or the upper cover and this may result in a injury. Turn the power switch off while working.</p>
	<p>● Do not touch the motor part inside the stacker while the device is in operation or immediately after turning off the power. <u>Caution: High temperature</u> High heat may cause burns.</p>
	<p>● Equipment used in an environment without children. Do not use in the presence of children. This may result in an accident or injury.</p>
	<p>● Do not place the storage bags in the package within reach of children or near fire. If placed in the mouth or over the head, this may result in an accident or cause suffocation. Do not place near fire, or it may cause a fire.</p>






How to Handle Power Cord and Power Plug




	<ul style="list-style-type: none"> ● Stop using the device immediately in the event of abnormal operation or a break-down, and unplug the power cord. <ul style="list-style-type: none"> ● The device emits smoke or a strange odor or noise. ● Liquid such as water or a foreign matter enters inside. ● The power plug gets abnormally hot. ● There is deformation or damage to the device. <p>If the product is used as is, a fire or an electric shock may result.</p> <ul style="list-style-type: none"> · Immediately turn the power switch off and contact the sales shop. <p>Never attempt to repair by yourself since it may cause serious danger.</p>
	<ul style="list-style-type: none"> ● Make sure the power outlet is within reach so the power cord can be easily unplugged. ● Make sure the plug is firmly inserted into the outlet.
	<ul style="list-style-type: none"> ● Do not use the device with other supply voltage than the specified one. ● Use only appropriately rated outlet and wiring tools. ● Avoid the use of multi-socketed adapters. <p>This may cause a fire due to heat generation.</p>
	<ul style="list-style-type: none"> ● Use only the specified power cord and power plug. <p>Be sure to use the ones supplied with the device. Otherwise it may cause a fire or an electric shock.</p>
	<ul style="list-style-type: none"> ● Do not damage the power cord or power plug. <p>This may cause a fire due to an electric shock or short circuit.</p>
	<ul style="list-style-type: none"> ● Do not use the power cord while rolled up. <p>This may cause a fire due to heat generation.</p>
	<ul style="list-style-type: none"> ● Do not pull the cable when unplugging the power cord. <p>Damage to the power cord or deformation of the plug can cause a fire or an electric shock.</p>
	<ul style="list-style-type: none"> ● Do not touch the power plug or the device itself during a thunder and lightning storm. <p>This may result in an electric shock.</p>

	<ul style="list-style-type: none"> ● Do not connect or disconnect the power plug with a wet hand. This may cause electric shock.
	<ul style="list-style-type: none"> ● Connect a ground cable and ground the device. Be sure to ground the device with a ground cable. Otherwise, an electric shock may occur.
	<ul style="list-style-type: none"> ● When connecting or disconnecting the ground cable, unplug the power cord first. Otherwise, an electric shock may occur.






⚠ WARNING

How to Handle the Device

	<ul style="list-style-type: none"> ● Do not spray organic solvent such as flammable fluids or paint thinner. Flammable gas remaining inside the device can catch fire from static electricity, which may cause a fire, burn or injury.
	<ul style="list-style-type: none"> ● If the device is dropped or the cover is broken, power down and remove the power plug. If the device is dropped or the cover is broken, immediately turn the power switch off and remove the power plug from the outlet. Then contact the distributor.
	<ul style="list-style-type: none"> ● For internal inspection, adjustment or repair of the product, contact the distributor. <u>Caution: High Pressure</u> Only service staff should remove the cover. Do not attempt to do this yourself as it may cause an electric shock.
	<ul style="list-style-type: none"> ● Do not modify the device, remove the cover or disassemble it. There is a high voltage part inside. It may cause a fire or an electric shock.
	<ul style="list-style-type: none"> ● Do not place the device in areas subject to liquid, dust, or humidity. This may cause a fire.
	<ul style="list-style-type: none"> ● Don't insert or drop foreign objects such as metals or flammables into the opening. This may result in a fire or an electric shock.

	<p>● Do not place a container with liquid or a metal piece on the device.</p> <p>Do not place a container with chemicals or liquid or a small metal piece on the device. This may cause a fire.</p>
	<p>● Do not cover the vent hole of the main body.</p> <p>Otherwise, the heat contained inside could result in a fire.</p>
	<p>● Do not use in a place where there is explosive, combustible or flammable gas.</p> <p>It is extremely dangerous to use the device in a place where there is explosive, combustible or flammable gas. You must not do this.</p>

CAUTION

	<p>● Before moving the device, make sure to unplug the power cord from the outlet.</p> <p>Before moving the device, make sure to unplug the power cord from the outlet.</p> <p>If the power cord is damaged, a fire or an electric shock may occur.</p>
	<p>● Do not install on an unstable surface.</p> <p>Do not place or install the device on an unstable surface. It may fall, resulting in an injury.</p>
	<p>● A void using the device in the following places as this may cause malfunction.</p> <ol style="list-style-type: none"> 1. a place receiving radiant heat (such as direct sunlight) 2. a place that is 2,000 m above sea level 3. a place where mechanical vibration frequently occurs 4. a place near the source of an electromagnetic field 5. a place where dust and oily smoke are frequently released 6. a place prone to steam, water or condensation 7. an environment that contains organic gas, inorganic gas or salinity.
	<p>● The device should only be used indoors. Do not use it outdoors.</p> <p>The device is designed only for indoor use. Do not use it outdoors. This may cause a fire or malfunction.</p>
	<p>● When the device is not in use for a long time, remove the power cord for safety.</p> <p>When the device is not in use for a long period of time, remove the power cord from the outlet for safety.</p>

CAUTION

Cleaning



- Regularly wipe off dust on the power plug.

If dust builds up on the power plug, it may cause problems in insulation, which could lead to a fire.

*Unplug the power cord and wipe with a dry cloth.



- Unplug the power cord before cleaning for safety.

When cleaning, first unplug the power cord for your safety. Failure to do so may cause an electric shock, fire or injury.



- Do not use volatile chemicals like paint thinner or benzene or a wet cloth.

When cleaning, wipe gently with a dry soft cloth. Do not use volatile chemicals like paint thinner or benzene or a wet cloth.

Avoid getting the sensor part wet. This may cause malfunction.

NOTICE

Do not dispose of the device with general household waste.

Waste electrical product disposal must be conducted according to the regulations of the area or the relevant local government.

WARNING

This product can expose you to chemicals including lead, which is known to the State of California to cause cancer, and Di (2-ethylhexyl) phthalate (DEHP), which is known to the State of California to cause birth defects or other reproductive harm.

For more information, go to www.P65Warnings.ca.gov.

NOTICE

- 1) Microsoft Visual Basic is a registered trademark of Microsoft Corporation.
- 2) This product must not be reproduced or modified without permission from SEKONIC.

Warranty

This product will be warranted without any charge for one year after delivery. In case of a failure occurring during this period, we repair it for free if it is judged to be related to our responsibility. In this case, we temporarily keep the failed product to repair it. For details, contact the shop at which you have purchased it.

In case that the free warranty period has expired or the failure is related to your responsibility or has resulted from a worn part, we will repair it with charge.

The scope of this warranty is limited to this product and its accessories. Note that SEKONIC will not be responsible for any financial damage, lost profit or claim from a third party resulting from operation of this product.

Disclaimer

The Company shall not be liable for any direct or indirect damage resulting from the failure of this device or its use.

Intended Usage

This device is designed to tally mark information on mark cards.

The data read by this device can be classified and processed quickly and accurately for the intended use with a software program.

Therefore it can be used for exam grading, questionnaire surveys, attendance management, and the ordering of various products.

Features of the SR-8000 HYBRID

- This HYBRID model can read marks and images at high speed.
 - The operation speed is max. 8,000 sheets per hour (133 sheets per minute).
- 【Note1】
- Forms from card size up to 9 inches can be read.
 - Information such as sequential numbers, dates, etc. can be printed on scanned sheets.
 - The reverse paper ejection function allows paper to be ejected without changing the sheet order (models with select stacker).
 - The sheet sorting function enables error sorting (models with select stacker).
 - Barcode reading (1D, QR code) is possible (barcode option).

【Note 1】

Conditions: Paper size: Up to A4 size

Image resolution: Up to 300 dpi

Image output format: Only JPEG

Barcode quantity: Only 1 dimensional barcode or 1 QR code in either front page or back page
Barcode position: Within 100 mm from top edge of form
QR code size: Up to 18 x 18mm.

Operation speed varies depending on feed mode and paper size.

See to  [Product specifications] P.74 in regard to operation

speed and See to  [Selecting feed mode] P.9 in regard to feed mode.

Intended Users

- Users who have read this instruction manual, understand the device, and use it safely.
- Persons in charge of maintenance and inspection services.

Restrictions

There are some cautions and restrictions regarding the use of this product. Please read and agree to the following terms and conditions before using the product.

- The safety-related precautions such as "Safety Guide and Maintenance" and "Safety Precautions" conform to the legal and industry standards that were applicable at the time this operating manual was created. Therefore, this manual may not contain the latest information. If you are using the previous operating manual, please download and refer to the latest operating manual.
- The product may contain printing materials such as cautions related to safety and/or printing errors as a supplement to the operating manual.
- The contents of this operating manual may be reproduced for non-commercial purposes and for personal use only. However, the reproduced material must contain the copyright notice of our company.
- The diagrams and illustrations in this manual may differ from the actual product (color, text, etc.).

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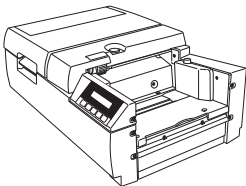
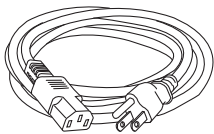
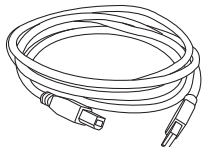
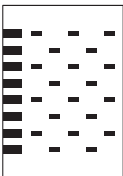
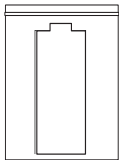

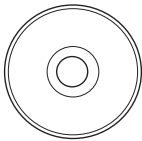

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Before Usage

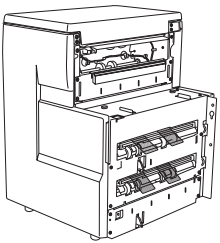
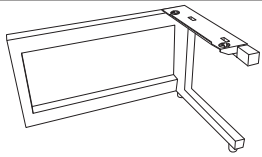
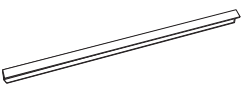

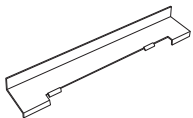
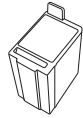
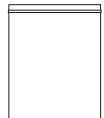
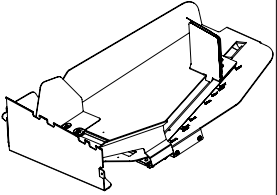
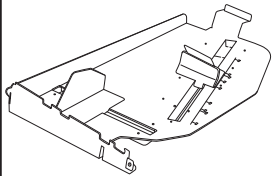


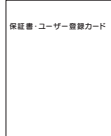
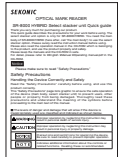
Make sure that the following are contained in the package immediately after unpacking the product.

If you find any missing or damaged items, please contact your dealer.

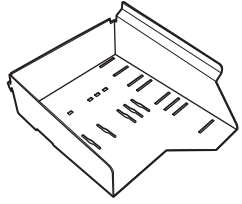
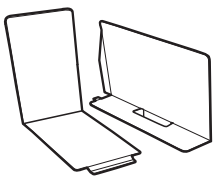
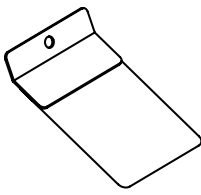

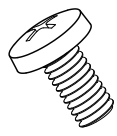


• Items included in main body unit package

Main body unit	Power cord	USB 3.0 cable
		
A4 check sheets	CIS calibration sheet	Product Warranty Sheet · Customer Registration Sheet *1
		 <p>*1 : Applicable only for Japanese customers</p>
CD-ROM		Instruction Manual
 <ul style="list-style-type: none"> • Operating manual • Driver • Diagnostic utility • Middleware • Calibration tool 		

· Items included in the package of select stacker unit (option)

Select stacker unit	Fixing Pedestal Assy	Reinforce Plate/2	Wire Saddle × 6 pcs.
			
	Main Body Fixing Plate	Ink cartridge	Storage bag for the ink cartridge (Transparent plastic bag)
			
Main tray	Selection tray	TP screw, black (M4 × 6 : 3 pcs)	TP screw, black (M3 × 6 : 10 pcs)
			
		Product Warranty Sheet · Customer Registration Sheet *1	Select stacker unit quick guide
		 *1 : Applicable only for Japanese customers	

· Items included in the package of accessory kit (option)

Paper receiver	Paper discharge brackets	Paper discharge guide sheet	Rubber leg × 4 pcs
			
Bind screws (M4 × 8: 4 pcs)	TP Screw, black (M3 × 6 : 1 pcs.)	Accessory kit quick guide	
			

Precautions on Usage

Handle the device with the following in mind so as to enable the functions of it to be fully utilized.

• Precautions regarding installation

Do not place the device in the following places. Otherwise, failures could result such as paper jams, reading errors, or the unit could become inoperative.

- (1) In direct sunlight or near a heating device.
- (2) A place where the main body may not perform satisfactorily such as it is subject to vibration while operating, or it is placed in an unstable location.
- (3) Places subject to sudden temperature changes, excessive moisture and dust.

Recommended temperature: 10 to 30°C

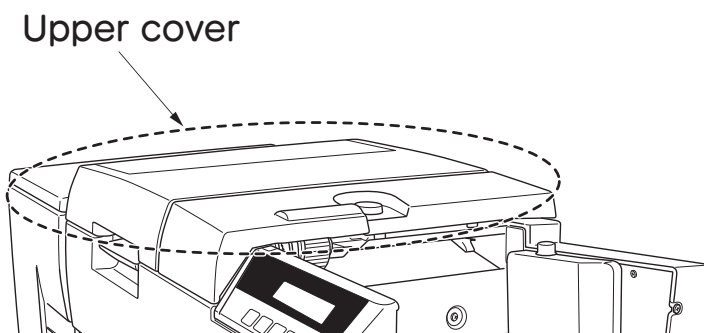
Guaranteed operating temperature range: 5 to 35°C

Humidity: 30 to 80% (no condensation)

Avoid environments outside the above ranges as much as possible when placing the device.

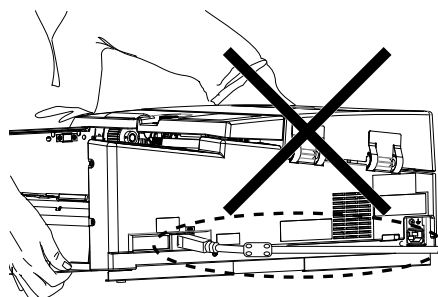
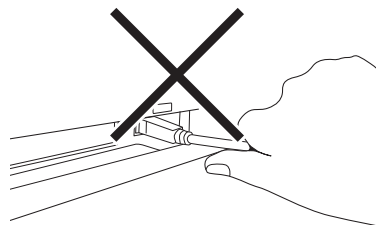
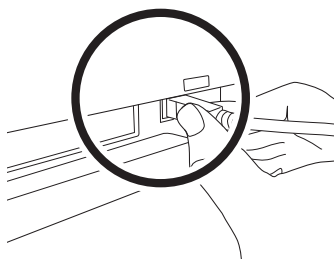
• Handling precautions

- (1) Do not connect or disconnect the power cord or connector when the device is operating or the power switch is on.
- (2) Do not move the device while it is operating. Also, do not touch, pull, or push paper.
- (3) Please do not put any substances and one's hand on the upper cover. It will be occurred paper jamming or reading error.




*Main body with select stacker unit.

- (4) This device is designed to deferred type. Do not give it a strong vibration and shock etc.
- (5) Allow an interval of at least 5 seconds between turning the power switch on and off.
- (6) Do not insert objects other than paper sheets (such as paper clips, staples, etc.).
- (7) Do not apply force that deforms paper while it is being loaded.
- (8) Since the paper reading part is equipped with an optical lens, never insert a screwdriver or other such objects. (Otherwise, reading may be disabled.) If paper feeding is disabled due to dust or the like in the paper feeder, open the top cover to remove it. ([Reference](#) 「Cleaning」 P.64)
- (9) If the roller becomes soiled with powder from paper or pencil lead, the roller and the paper may slip. In order to prevent slippage, clean the roller at proper intervals. ([Reference](#) 「Cleaning」 P.64)
- (10) If the exterior of the device is soiled, lightly wipe with a soft cloth wetted with water or a neutral detergent. Note that wiping with a cloth wetted with volatile chemicals like benzene or paint thinner may cause deformation or discoloring.
- (11) Do not apply strong loads to the tray, as it may bend or break.
- (12) Make sure to observe the following points when you handle the device and USB cables. Otherwise, mechanical failure or damage may be caused.
 - * Do not forcibly pull or bend the USB cable.
 - * Always hold the plug when you insert or pull out the USB cable. Never apply excessive force to the cable.
 - * Do not connect or disconnect the USB cable while the power is on.
 - * When installing/moving the device or a PC, do not apply excessive power to the cord or plug of the USB cable.

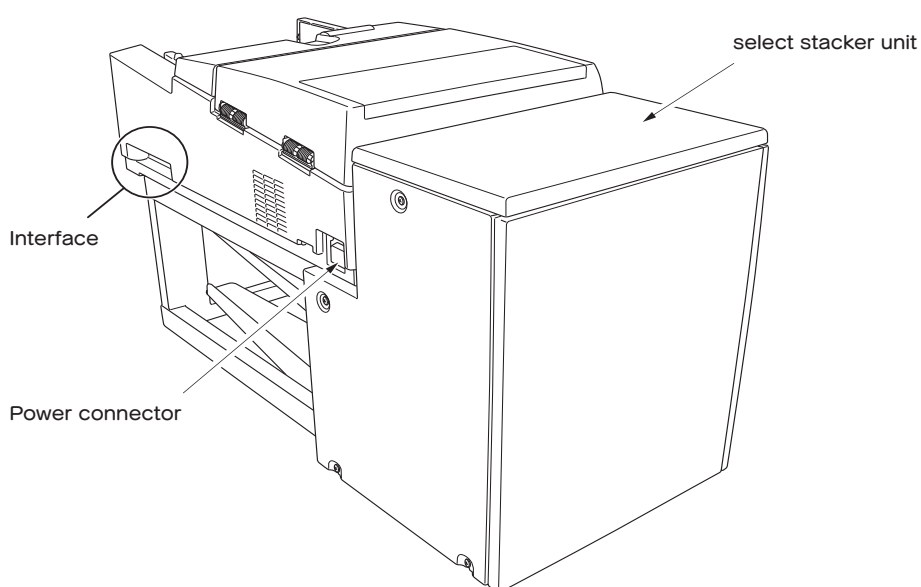
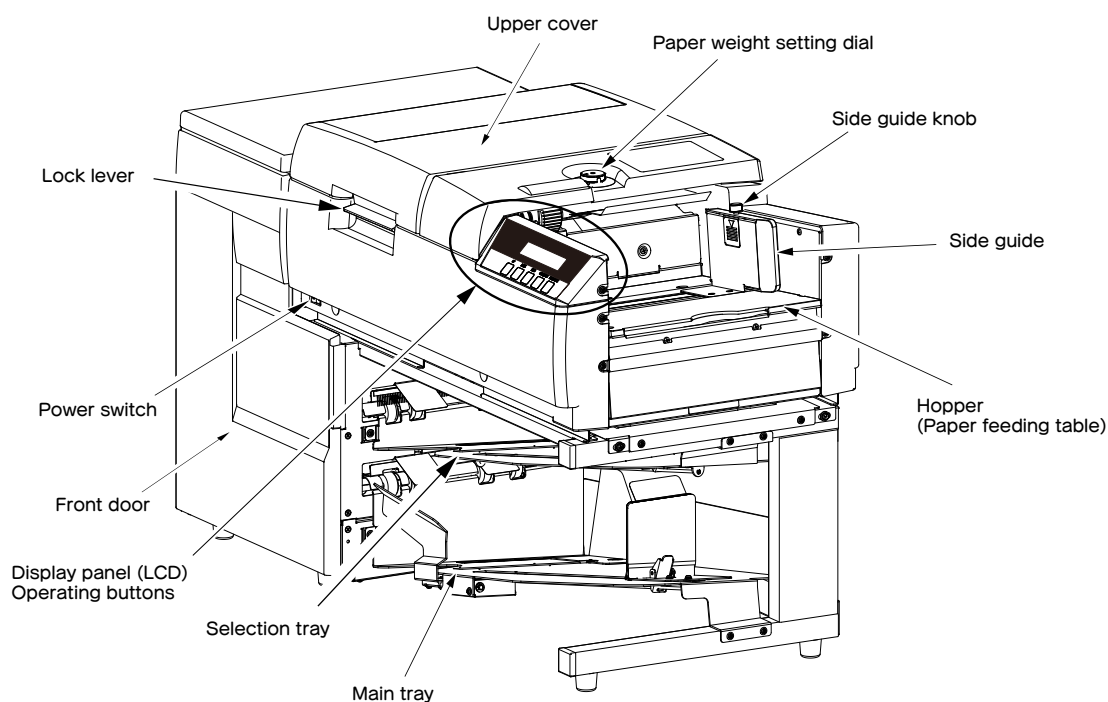


■ Select stacker unit precautions for use (option)

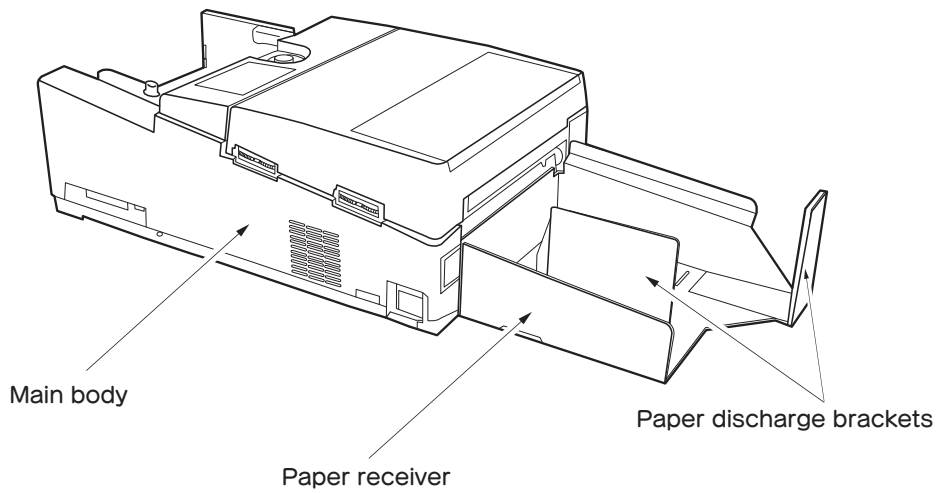
- (1) Make sure to tightly close the jam release levers and the front door.
Loose levers or a loose door may trigger paper jams. ( 5.
Close the jam release lever 1.] P.68)
- (2) Use ink cartridges before their expiry dates.

Names of Each Parts

- Main body with select stacker unit



- Main body with accessory kit



■ Operating panel functions and operating instructions

The operating panel has five kinds of switches.






The switches don't work while the machine is performing a function.



There are two modes: normal mode and menu mode.

In normal mode, the machine is connected to a computer and is controlled by commands from the host.

In menu mode, various settings are controlled by using panel switches.

1.  switch
 - (1) Normal mode: Raises the hopper.
 - (2) Menu mode: Use it to choose menu items and to select parameters.
2.  switch
 - (1) Normal mode: Raises the hopper.
 - (2) Menu mode: Use it to choose menu items and to select parameters.
3.  switch
 - (1) Normal mode: Enters menu mode.
 - (2) Menu mode: Returns to normal mode.
4.  switch
 - (1) Normal mode: Clears the feed count.
If an error is displayed, you can clear the error.
 - (2) Menu mode: Moves one level higher in the hierarchy from the current level.
5.  switch
 - (1) Normal mode: Feeds one sheet. If you keep the switch depressed, paper is fed as long as the switch is depressed.
 - (2) Menu mode: Executes the selected menu item.

Selecting feed mode

There are the continuous feed mode, the continuous/stop feed mode and the one sheet feed mode as selectable.

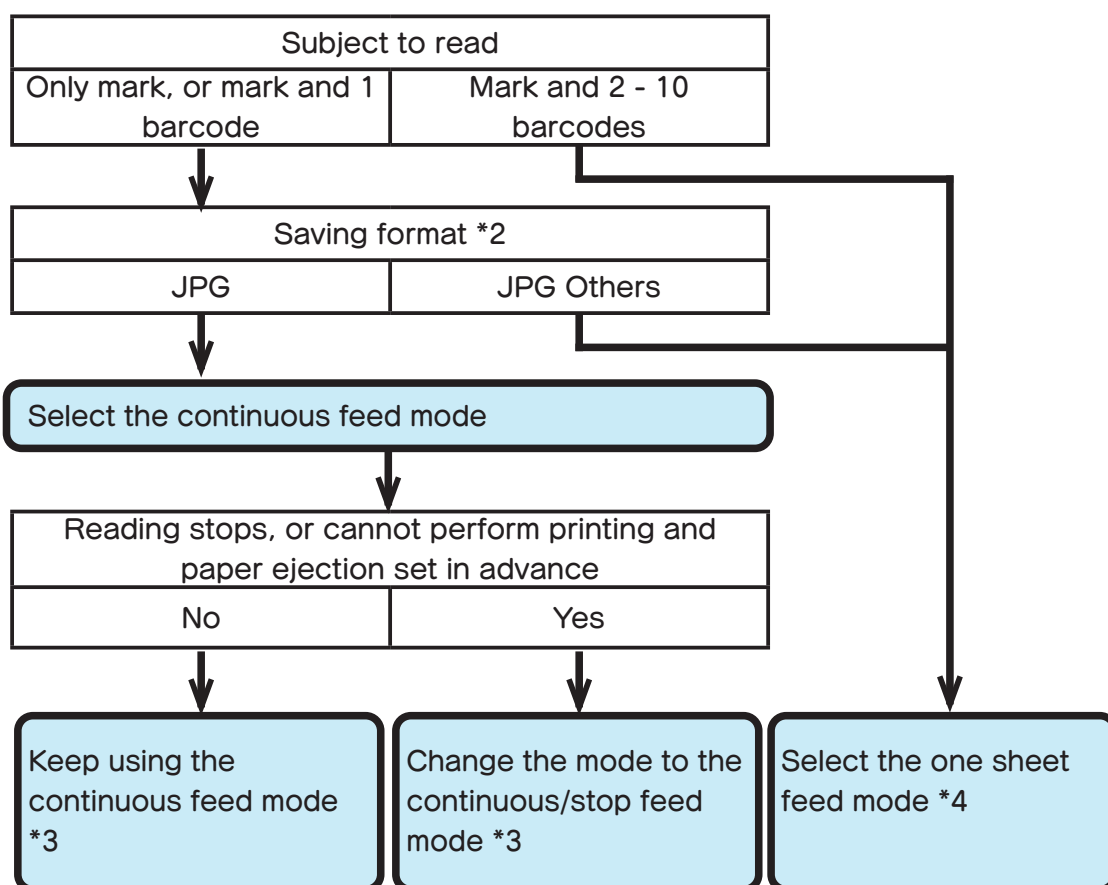
Suitable mode is different depending on subject to read (mark, image, and barcode).

Please select the mode according to the flow below.

Refer to the operating manual of application software to use in regard to how to select the mode. *1


Operation speed varies depending on feed mode and paper size.

See to  [Product specifications] P.74 in regard to operation speed.



*1 Whether the function exists or not varies depending on application software.

*2 Refer to the operating manual of application software to use in regard to how to set saving format of image.

*3 See to  [■ Cont Feed Setting [Cont Feed]] P.34 in regard to how to set the continuous feed mode and the continuous/stop feed mode.

*4 Cannot select this mode on the control panel of the main body.

It can be selected by the application software with this function.

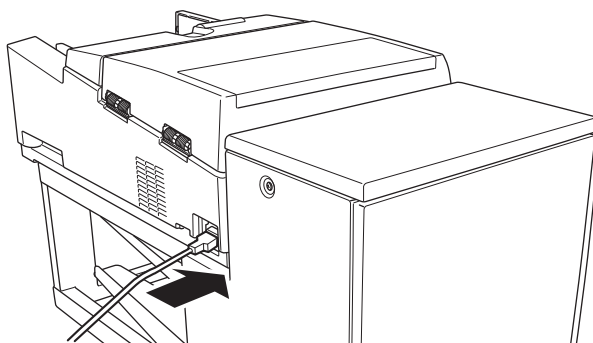
 [Introduction] P.1)

Operation

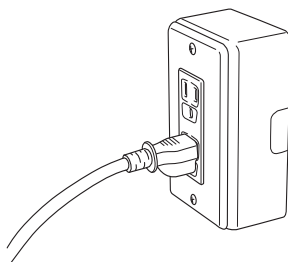
■ Preparation

< For customers purchased select stacker unit >

1. Install the main body on the select stacker unit following the instruction manual belonging to the main body.
2. If you use the printer, see to Reference 「■ Select stacker unit option printer preparation」 P.22 to 「■ Printer unit precautions for use」 P.26.
3. Connect the power cord to the main body.

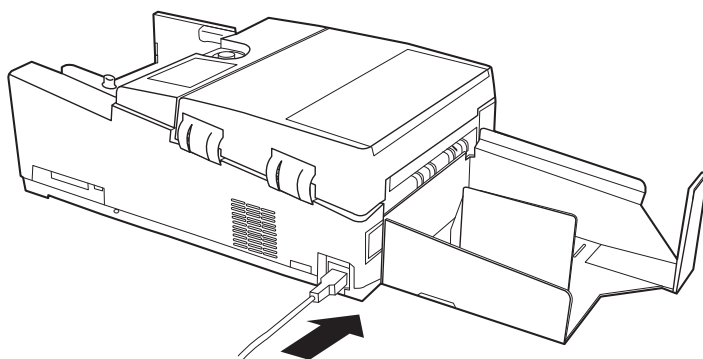


4. Connect the power cord to the power outlet.

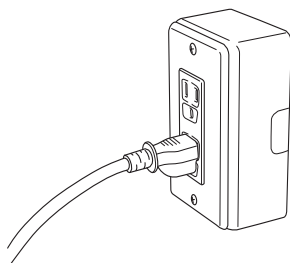


< For customers purchased accessory kit >

1. Install the accessory kit on the main body following the instruction manual belonging to the main body.
2. Connect the power cord to the main body.



3. Connect the power cord to the power outlet.



■ Connecting to a computer

(If newly implementing OMR for the first time)

The device is equipped with a USB port that serves as an interface for connecting to a computer.

An application software program must be installed to enable it to control the device and collect data for the computer.

Purchase the application software program sold separately and download it to the relevant computer.

*See to  [Introduction] P.I in regard to application software.

Install the USB device driver in a computer before connecting the device to it. Use [Driverinstaller*.*.exe] stored in the CD-ROM belonging to the product for installation.

1. Installing the USB device driver
Start the USB device driver installer, and follow the instructions displayed to install the driver.
The “*.*” in the installer file name represents the version number of the driver.
2. Connecting with a USB cable
After installing the USB device driver, use the included USB cable to connect the device and computer together.

You may develop the application software as referring to [API Reference Manual] belonging to the product instead of purchasing it from the distributor.

*How to develop application software is out of our support.

Supported Operating Systems

Windows 8.1 (32bit/64bit)

Windows 10 (32bit/64bit)

*Operating systems will no longer be considered compatible once Microsoft Corporation ends official support for that particular operating system.

*The device runs using WOW64 on 64-bit Windows operating systems.

Operating Environment

CPU: Intel Core i3 2GHz or higher, or equivalent CPU (recommended: Core i5 or higher)

Number of simultaneous connections: 1 unit

Disk space : 10GB or more free space

Memory capacity: 1GB or more (2GB or more is recommended.)

*System requirements of the OS or higher.

*2GB or more for image storing. 4GB or more is recommended.

*Depending on the processing performed by the application software, higher specifications than the recommended operating environment may be required.

Interface:USB3.0

*USB3.0 is required to obtain maximum performance.

*Do not connect to USB1.0/1.1 FullSpeed mode.

*When reading continuously with USB2.0, a "USB connection error (R7)" will occur.

*The included USB interface is not guaranteed to work with all USBcompatible devices.

*Microsoft and Windows are registered trademarks of Microsoft Corporation.

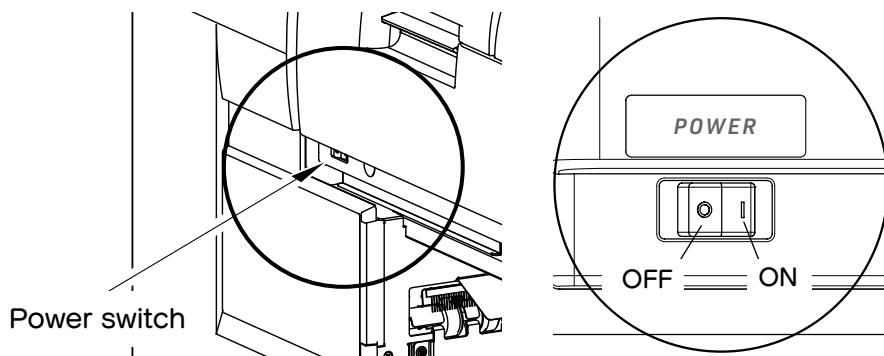
*Intel, Intel Core, Atom, Celeron, Pentium are trademarks of Intel Corporation or its subsidiaries.

*Other company and product names used in this manual are trademarks or registered trademarks of their respective companies.

The TM and [®] symbols are not used in this manual.

■ Turning power on

1. Turn the power by pushing "I" side of the power switch.




2. The following message appears on the display panel (LCD).

I n i t i a l i z i n g

3. OMR is initialized.
4. The motor and other components are activated to check startup conditions.
5. Check if the following message appears on the display panel (LCD).

C o u n t : 0

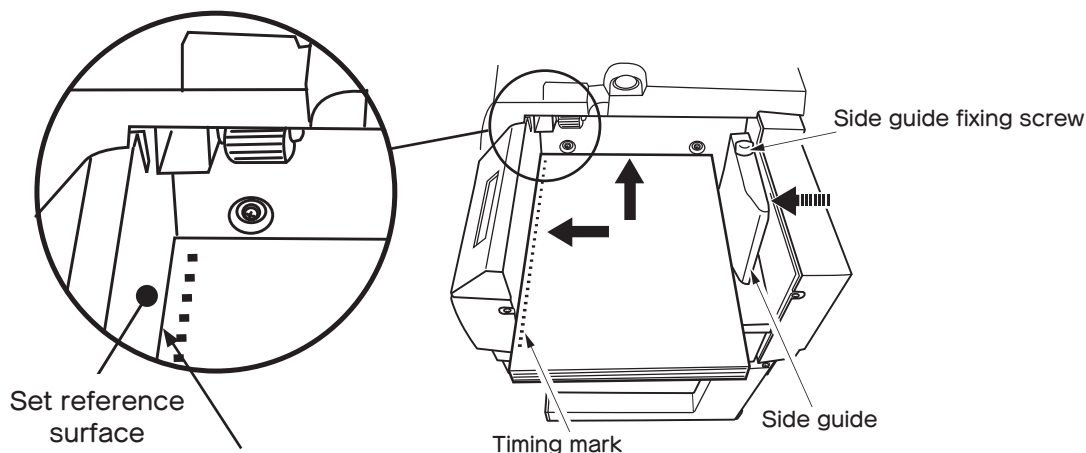
6. When error messages may appear between steps 2 and 3 , respond according to  [Error displays and countermeasures] P.83.

■ Loading paper

1. Load paper with the timing marks on the left side of the hopper. The hopper is set to drop when the power is turned on, but if it's still raised, press the DOWN switch in normal mode to lower the hopper. At this time, align paper carefully. Pay particular attention to the leading edges of the paper because feeding errors may occur unless the paper is properly aligned.
2. Adjust the side guide in order to close a gap between the paper and the side guide then fix it with the side guide knob. Note a large gap because mark reading becomes unstable. When moving the side guide loosen the side guide knob. Then adjust and tighten the side guide knob and fix.

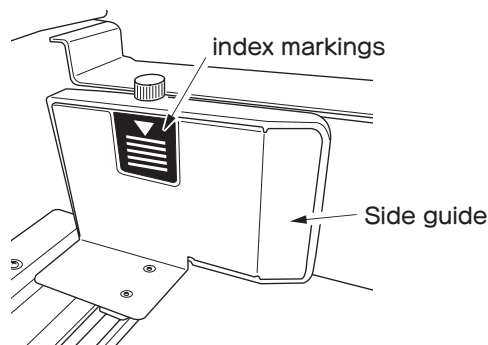
NOTICE

- 1) When the side guide is pushed to seat side too much, there are times when it becomes cause of no feed error.
- 2) If there is a gap between the sheet and the set reference surface, or if the timing mark side is not aligned, it may cause a left edge skew error.



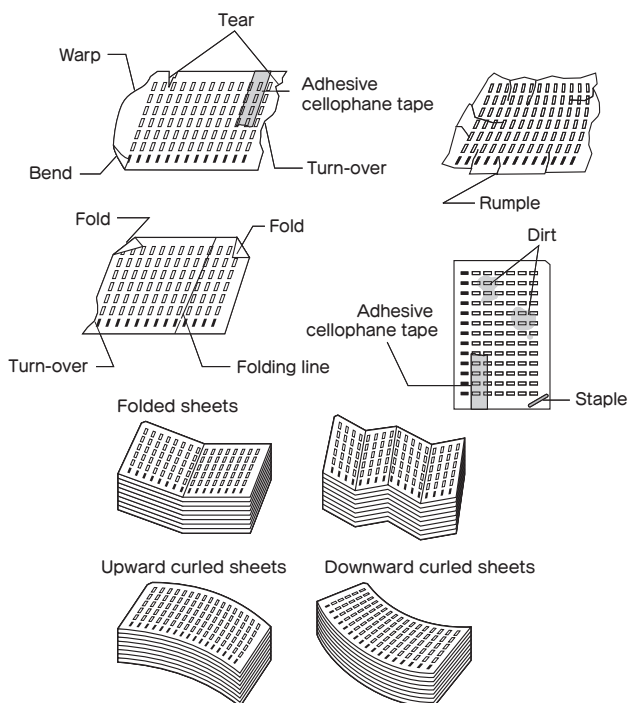
place the sheets in the device so as not to create any gaps between sheets.

3. Use the index markings on the side guide to determine how many sheets maximum should be placed on the paper feed table. Errors may occur if too many sheets are placed on the table.



NOTICE

- 1) Be extremely careful when handling sheets of paper so as not to bend or tear the paper.
Errors may occur to use bend or tear OMR sheet.
Do not attempt to use sheets that are dirty or torn, sheets that have garbage or other contaminants attached to them, or multi-fold sheets (with two or four folds, etc.) that are perforated. If wanting to use paper that is curled, straighten the paper first so that it is flat before putting it in the unit.



NOTICE

- 2) To add sheets, lower the paper feed table, place extra sheets on it, and then reset it anew before proceeding.

Double-feeding problems may occur if sheets get stuck together.

Make sure to separate sheets of paper as shown at left before placing them on the paper feed table.



- 3) When storing paper, avoid keeping it in a place subject to sudden environmental changes. Pay thorough attention to moisture and keep paper in a cabinet or other safe place. Do not leave paper in a dusty place such as near a window.

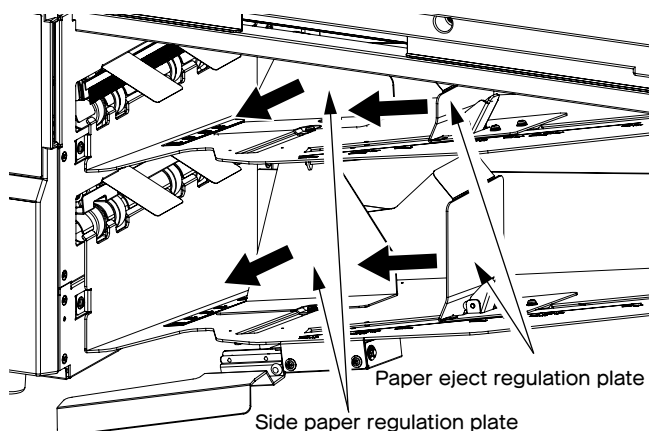
■ Setting the sheet size [Paper size]

< For customers purchased select stacker unit >

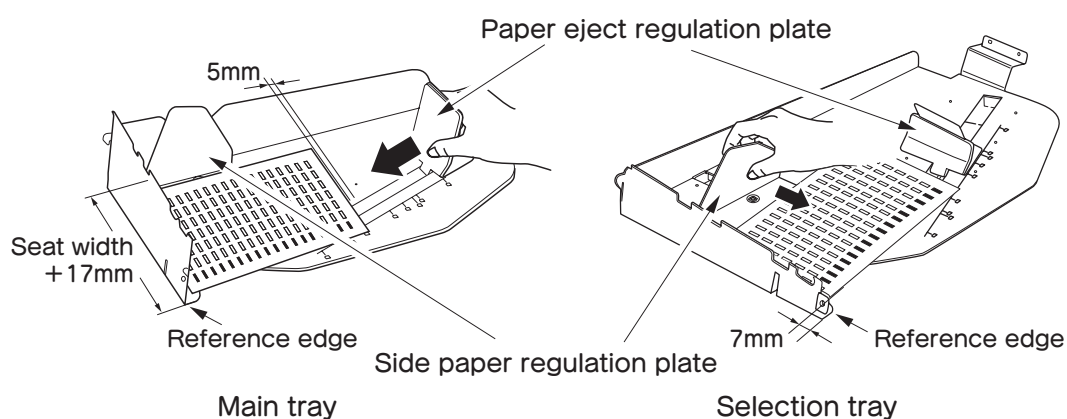
1. Line up the sheets to the proper paper size indicator markings using the paper eject regulation plate and side paper regulation plate on the main tray and select tray.

Push and hold down the lever on the paper eject regulation plate to move the plate.

If wanting to use paper of an irregular size, position sheets at around 5 mm from the sheet size front and back ends and around 7 mm from the standard edges of the paper tray.



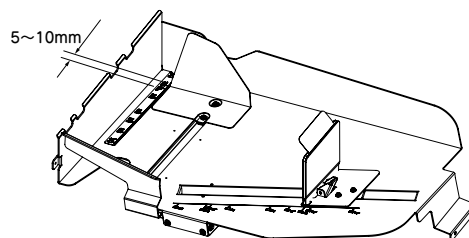
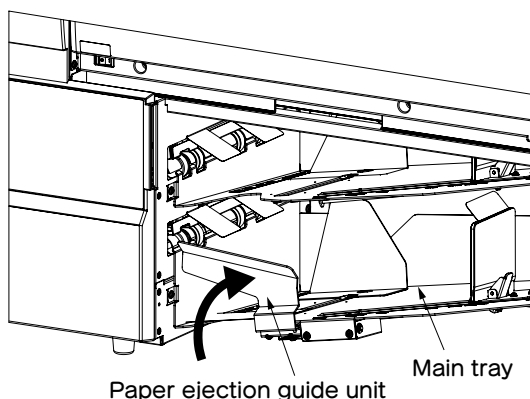
Index markings



· Stack capacity of select stacker unit

Paper weight		84 g/m ²	105 g/m ²	128 g/m ²	157 g/m ²
Stack capacity	Main tray	500 sheets	500 sheets	450 sheets	350 sheets
	Selection tray	150 sheets	150 sheets	130 sheets	100 sheets

2. When using the device to read optical mark cards
Flip up the paper ejection guide plate on the paper ejection guide unit to use.

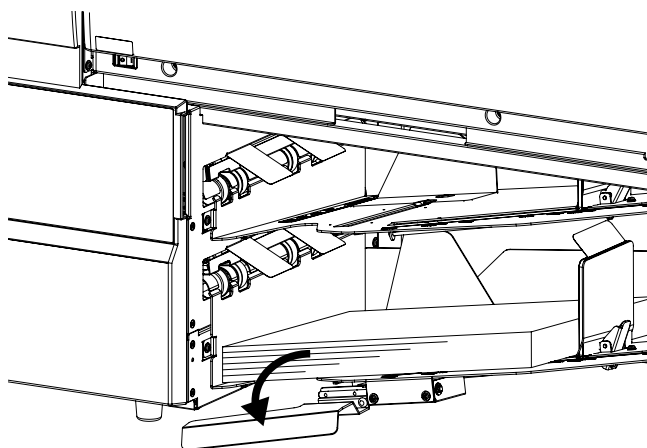


Main tray

NOTICE

When using the paper ejection guide unit, position the side paper regulation plate on the main tray 5 mm to 10 mm further over along the scale.

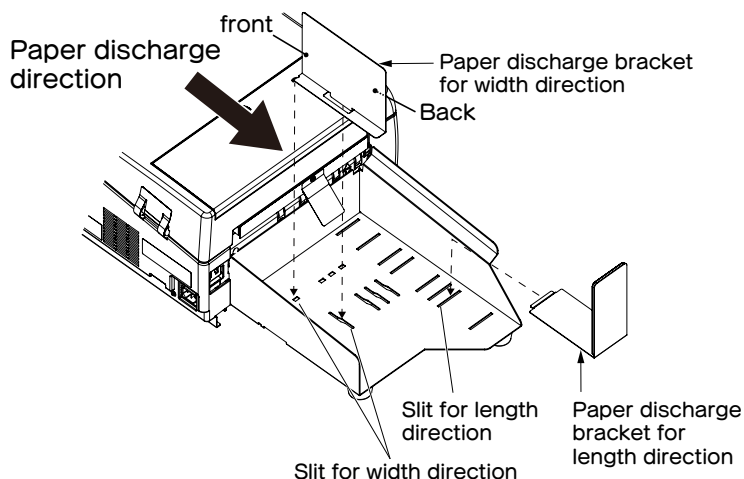
3. When removing optical mark cards that have been ejected by the device
Flip the paper ejection guide plate on the paper ejection guide unit forward toward you before removing the optical mark cards from the tray.



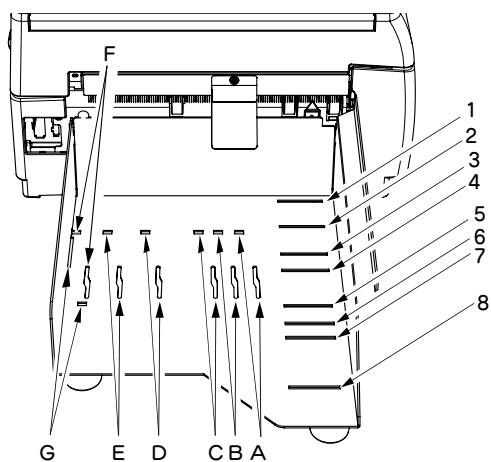
< For customers purchased accessory kit >

1. Insert respective paper discharge bracket of length direction and width direction into the designated slit of paper receiver and locate them to match sheet size to read.

*The paper discharge bracket of width direction is inserted into 2 slits.



· Correspondence table of sheet size and slit position



size	Slit no.	
	Length	Width
110 mm × 63.5 mm	1	A
Postcard	2	B
IBM card	3	C
A5	4	D
B5	5	E
A4	6	F
8.5" × 11"	7	F
9" × 14"	8	G *1

*1 Insert the paper discharge bracket of width direction with turning front side back.

· Stack capacity of select stacker unit

Paper weight	84 g/m ²	105 g/m ²	128 g/m ²	157 g/m ²
Stack capacity	500 sheets	500 sheets	450 sheets	350 sheets

■ Setting paper weight

1. The device is equipped with a function to detect double-feeding (DF) errors.

Conduct [Paper Weight] *1 according to the thickness of the paper to be used.

 [■ Setting paper weight [Paper Weight]] P.32

NOTE

*1 Setting reading (initially set to a paper weight of 105 g/m².)

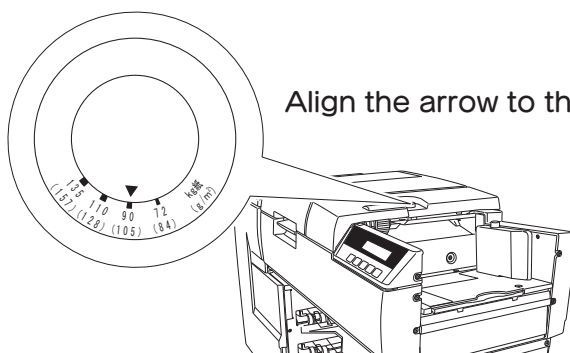
2. There is a mechanism which adjusts paper interval with the paper weight dial to prevent double feeding. Adjusts the paper weight dial to the sheet which you use. Conduct *2

NOTICE

- 1) Because as for thickness of the sheet there is a variation depending upon papery quality, increase and decrease with conveying circumstance.
- 2) When this dial sets extremely small(narrow),there are case which it becomes cause of the paper clogging and the sheet skew.
- 3) If tears appear at the end of the paper on the back side, move the setting for the ream weight dial up to around the second mark. This should help resolve the tear problems.

NOTE

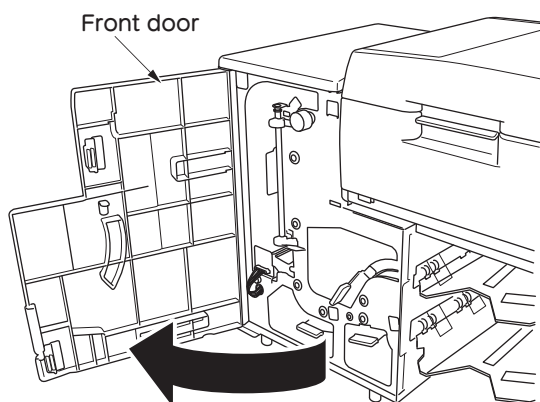
*2 Setting paper weight dial (initially set to a paper weight of 105 g/m².)



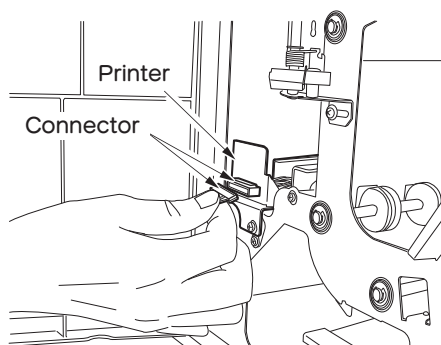
■ Select stacker unit option printer preparation

< For customers purchased select stacker unit >

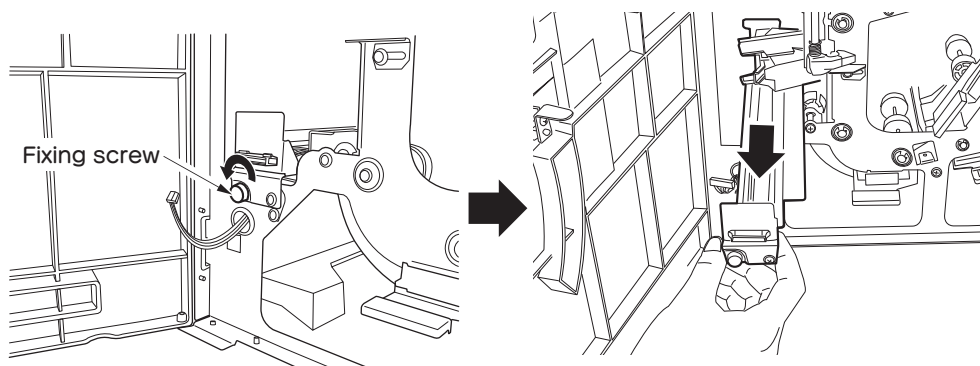
1. Turn the power off and remove the power cord from the outlet.
2. Open the front door of the select stacker unit.



3. Disconnect the printer connector.



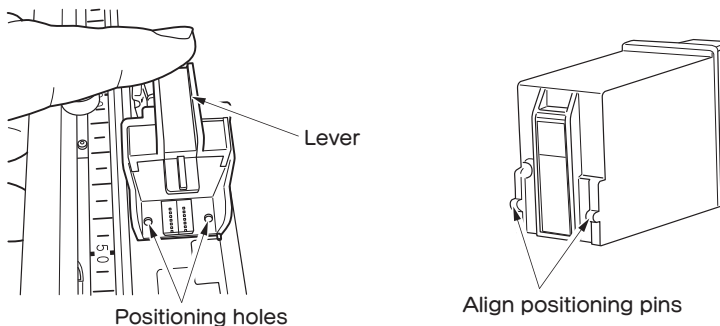
4. Remove the printer fixing screw to remove it.



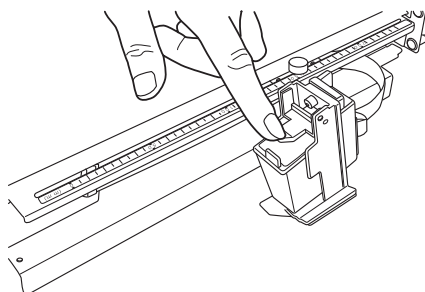
5. Lift the cartridge case lever and insert an ink cartridge.

NOTICE

- 1) Align positioning pins (2 places) of the ink cartridge with the positioning holes (2 places) of the cartridge case.



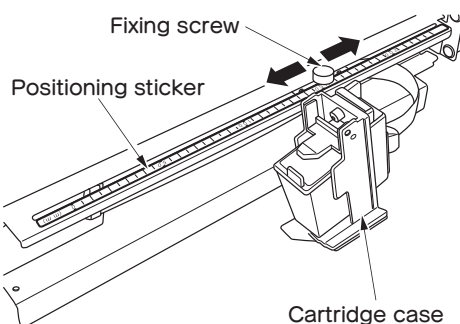
6. Lower the cartridge case lever to lock the ink cartridge.



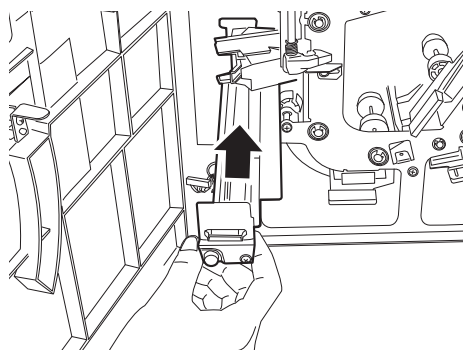
7. Loosen the cartridge case fixing screw, move the cartridge case according to the desired printing position, and tighten the screw to secure it.

NOTICE

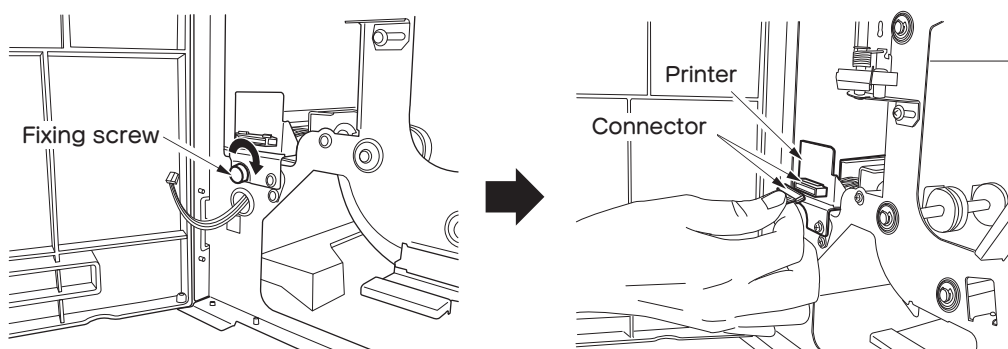
- 1) The scale on the positioning sticker indicates the printing position from the edge of the paper. The printing position is determined by aligning the cartridge case fixing screw with the scale on the sticker.



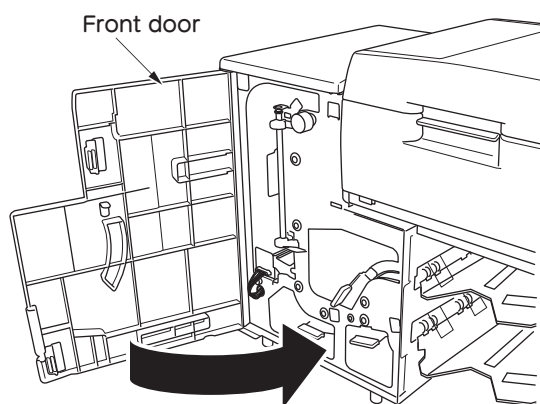
8. If the printing position is properly aligned, install the printer in the select stacker unit.



9. Tighten the printer fixing screw and connect the printer connector.



10. Close the front door of the select stacker unit.



11. Connect the power cord and turn the power on.

12. Enable printer control.

(Reference) ■ Printer control [Printer Control] P.38)

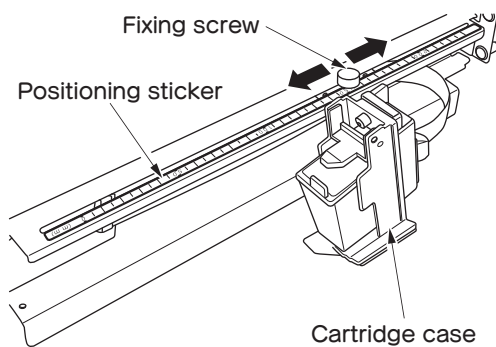
13. Execute printer test (Reference [■ Printer test] P.54)

NOTICE

Use ink cartridges within their expiration date.

NOTE

If the printing position is misaligned, adjust it.



■ Printer unit precautions for use

< For customers purchased select stacker unit >

- (1) Under the following conditions, remove the ink cartridge from the device, and store it at room temperature (10 to 35°C) in the ink cartridge storage bag included in the package.
 - If the main device is stored in an environment outside operating condition parameters.
 - If the printer will not be used for a long time (about 1 week or more).
- (2) Under the following conditions, defective printing (cannot print, streaked printing) may occur.
 - Ink cartridge is stored in environments outside of operating conditions.
 - The printer unit is left installed in the main device and is not used for a long time (about 1 week or more).

If you have printing problems, you can try to fix them by conducting a printer jet test.

If the problem doesn't improve, the ink head may be dirty.

Remove the ink cartridge and clean the ink head.

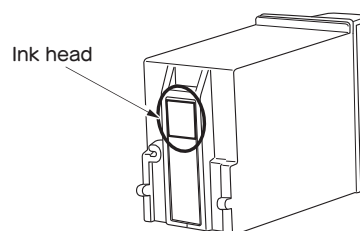
Cleaning method :

Wet a napless (low nap) cloth, tissue paper, or other similar item (tissue hereinafter) with water.

Apply the wet tissue to the ink head for several seconds.

Gently wipe the ink head.

If there is any ink left on the ink head, gently wipe it off with a dry tissue.



- (3) This device consumes the ink little by little even when it does not print. Because it conducts extra injection automatically to prevent clogging up of ink cartridge. If you do not use the printer function, set printer control the invalid and then remove the ink cartridge and keep. And cutting down on consuming the ink becomes possible.
- (4) When you do not use the printer, move the case of cartridge to almost central position of the width of the sheet you use. It may reduce jam.
- (5) Use ink cartridges within their expiration date.

Marking instructions

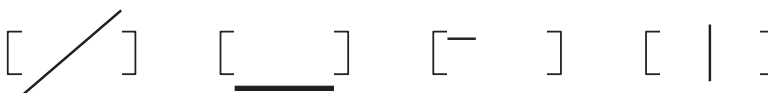
Marks readable by this device are as follows.

- (1) Mark size: 0.5 x 3mm or more
- (2) Readable writing instruments:
 Models with near-infrared sensor: pencils (black, HB or darker)
 Models with visible light sensor: pencils (black, HB or darker),
 ballpoint pen (black or blue)
- (3) Readable marks:

(Good mark example)



(Bad mark example)



Thin line, Out of
the mark frame

Out of the mark
frame

Smaller than the
instructed size

Not satisfy the
instructed size

- (4) Readable darkness: PCS 0.6 or darker
 Setting of a readable mark darkness.
 You can confirm mark darkness using the diagnostic utility
 included in the bundled CD-ROM.

NOTICE

When using a mechanical pencil, make sure to mark with adequate darkness.





Data reading settings [Setting of Reading]

This section explains how to change various sheet-reading settings.
All settings can also be made using computer commands.






■ Setting column [Setting of Column]

Set the column. The number of columns is different depending on the reading sensor.

Sensor pitch	Setting range	Default value
1/6 inch	1 to 48 columns	48 columns
0.2 inch	1 to 40 columns	40 columns
0.25 inch	1 to 33 columns	33 columns
0.3 inch	1 to 27 columns	27 columns
0.2 inch C	1 to 40 columns	40 columns




1. Press the  switch to enter the menu mode.
2. Use the  and  switches to select the following parameters, and press the  switch.

S e t t i n g o f R e a d i n g

3. Use the  and  switches to select [Setting of Column] setting, and press the  switch.
(“*” mark flashes in the first column of the first line on the LCD.)
4. Use the  and  switches to set the value.

* S e t t i n g o f C o l u m n
= 4 8 C o l u m n s





Column setting values
1 - maximum columns

5. Press the  switch to save the setting value into memory.
(The flashing “*” mark disappears from the LCD.)
6. Keep pressing the  switch until it returns to normal mode, or press the  switch to return to normal mode.






■ Setting reading method [Reading Method]

Setting mark-reading method.

There are six kinds of reading methods: "Top-end timing control type," "Bottom-end timing control type," "Direct under type," "FACOM," "Mark to mark type (without top-end margin reading)," and "Mark to mark type (with top-end margin reading)." When setting to "top-end timing control type" or "bottom-end timing control type," you need to set a control multiple number.

1. Press the  switch to enter the menu mode.
2. Use the  and  switches to select the following parameters, and press the  switch.

S e t t i n g o f R e a d i n g




3. Use the  and  switches to select [Reading Method] setting, and press the  switch.
("*" mark flashes in the first column of the first line on the LCD.)
4. Use the  and  switches to set the value.

* R e a d i n g M e t h o d
= D i r e c t

Reading method setting values





- Control Fore
- Control Back
- Direct
- FACOM
- Mark to Mark
- Mark to Mark *

(When "*" is displayed, tip reading is available.)






5. Press the  switch to save the setting value into memory.
(The flashing "*" mark disappears from the LCD.)
6. Keep pressing the  switch until it returns to normal mode, or press the  switch to return to normal mode.

■ Reading magnification setting [Magnification]

Setting magnification when timing control types are selected [Magnification]

1. Press the  switch to enter the menu mode.
2. Use the  and  switches to select the following parameters, and press the  switch.




S e t t i n g o f R e a d i n g

3. Use the  and  switches to select [Magnification] setting, and press the  switch.
(“*” mark flashes in the first column of the first line on the LCD.)
4. Use the  and  switches to set the value.

* M a g n i f i c a t i o n
= 3 T i m e s

Magnification setting values

- Top-end timing control type
1 to 9 (times)
- Bottom-end timing control type
2 to 9 (times)





5. Press the  switch to save the setting value into memory.
(The flashing “*” mark disappears from the LCD.)
6. Keep pressing the  switch until it returns to normal mode, or press the  switch to return to normal mode.

■ Setting reading side [Reading Side]




You can set the reading side when the optional back-sided reading unit is installed.

The reading side can be set to either “single side” or “double side.”

When reading single-sided sheets, if you set the reading side to “single side,” the back side won't be read.

1. Press the  switch to enter the menu mode.
2. Use the  and  switches to select the following parameters, and press the  switch.




S e t t i n g o f R e a d i n g

3. Use the  and  switches to select [Reading Side] setting, and press the  switch.
(“*” mark flashes in the first column of the first line on the LCD.)

4. Use the  and  switches to set the value.

* R e a d i n g S i d e
= D o u b l e S i d e

Reading side setting values
• Single Side
• Double Side

5. Press the  switch to save the setting value into memory.
(The flashing “*” mark disappears from the LCD.)
6. Keep pressing the  switch until it returns to normal mode, or press the  switch to return to normal mode.


■ Setting paper weight [Paper Weight]




Set detection sensitivity In the same paper weight as seat of use to detect double-feeding errors.

Paper weight can be set according to the following five types: "Automatic," "84 g/m²," "105 g/m²," "128 g/m²," and "157 g/m²."




If it's set to "Automatic," the device detects double-feeding errors based on the weight of first sheet read after the device is activated.

Also, in case it is set to "Automatic" , if the count is set to "0" , all the information of the paper weight is cleared, and the device detects the double-feeding error based on the paper weight after the device reads the first sheet.

1. Press the  switch to enter the menu mode.

2. Use the  and  switches to select the following parameters, and press the  switch.


S e t t i n g o f R e a d i n g



3. Use the  and  switches to select [Paper Weight] setting, and press the  switch.
("*" mark flashes in the first column of the first line on the LCD.)

4. Use the  and  switches to set the value.

* P a p e r W e i g h t
= 1 0 5 g / m²

Paper weight setting values
 • Automatic
 • 84 g/m² • 105 g/m²
 • 128 g/m² • 157 g/m²

5. Press the  switch to save the setting value into memory.
(The flashing "*" mark disappears from the LCD.)





6. Keep pressing the  switch until it returns to normal mode, or press the  switch to return to normal mode.

NOTICE






In case of "Automatic Setting", please make sure that double feed does not occur in the first reading sheet after turning the power on.

■ Setting the sheet size [Paper Size]

Set the sheet size to accommodate sheets that are more than 12-inch in length.




1. Press the  switch to activate Menu mode.
2. Use the  and  switches to select the following parameters, and press the  switch.

S e t t i n g o f R e a d i n g

3. Use the  and  switches to select [Paper Size] setting, and press the  switch.
("*" mark flashes in the first column of the first line on the LCD.)
4. Use the  and  switches to set the value.

* P a p e r s i z e
= S t a n d a r d (1 4 i n c h)

Paper Size
· Standard (14 inch) (Default)
· A4 size (11.7 inch)
· small size (Under 7.4 inch)

5. Press the  switch to store the specified setting value to memory.
(The flashing "*" mark disappears from the LCD.)
6. Keep pressing the  switch until it returns to normal mode, or press the  switch to return to normal mode.

NOTICE

When using sheets smaller than 7.4 inches, set the size to "Small Size". Otherwise, a paper feeding failure (double feed) may occur.


■ Cont Feed Setting [Cont Feed]

The Continuous Feed Setting is a setting that allows for reading without the stopping of the feed motor for high speed processing.




Depending on your computer or application, the reply to the OMR may not be received in time, which may result in the interruption of Continuous feed or the inability of to perform pre-selected printing or paper removal operations.




If the reply is not received in time, select [Continuous/Stop] to temporarily stop the feed motor during Continuous feed, and then restart it after the reply is received.

The number of sheets processed will be lower when [Continuous/Stop] is selected than when [Continuous] is selected.

1. Press the  switch to enter the menu mode.

Setting of Reading


2. Use the  and  switches to select the following parameters, and press the  switch.



3. Use the  and  switches to select [Cont Feed] setting, and press the  switch.
(“*” mark flashes in the first column of the first line on the LCD.)

4. Use the  and  switches to set the value.

* C o n t F e e d S e t t i n g
= C o n t i n u o u s

Cont Feed Setting
· Continuous
· Continuous/Stop

5. Press the  switch to save the setting value into memory.
(The flashing “*” mark disappears from the LCD.)

6. Keep pressing the  switch until it returns to normal mode, or press the  switch to return to normal mode.

Error detection settings [Setting of Error]





Refer to the table below for a list of error detection settings that can be used on the device and set the appropriate settings as desired.

Settings can also be made using communications (commands).









		Default value
Automatic paper discharge	"Yes" or "No"	Yes
Sheet empty detection	"Yes" or "No"	No
Timing error detection	"Yes" or "No"	Yes
Double-feeding detection	"Yes" or "No"	Yes
Left end skew detection	"Yes" or "No"	Yes

 [Error displays and countermeasures] P.83

■ Error detection settings

1. Press the  switch to enter the menu mode.
2. Use the  and  switches to select the following parameters, and press the  switch.

S e t t i n g o f E r r o r
D e t e c t i o n

3. Use the  and  switches to select Setting of Error Detection, and press the  switch.
("*" mark flashes in the first column of the first line on the LCD.)
4. Use the  and  switches to select individual error detection setting values.
(See the previous table for setting values.)
5. Press the  switch to save individual setting values into memory.
(The flashing "*" mark disappears from the LCD.)
6. Keep pressing the  switch until it returns to normal mode, or press the  switch to return to normal mode.





Buzzer settings [Setting Buzzer]

You can set the device to either use the buzzer or not use it.






If you set it to use the buzzer, you can set the volume and tone.

If you set it not to use the buzzer, the buzzer will not sound.

■ Buzzer control [Buzzer Control]




1. Press the  switch to enter the menu mode.
2. Use the  and  switches to select the following parameters, and press the  switch.

S e t t i n g o f B u z z e r





3. Use the  and  switches to select [Buzzer Control] setting, and press the  switch.
("*" mark flashes in the first column of the first line on the LCD.)
4. Use the  and  switches to set the value.

* B u z z e r C o n t r o l = V a l i d






Buzzer control
setting values
• Valid
• Invalid

5. Press the  switch to save the setting value into memory.
(The flashing "*" mark disappears from the LCD.)
6. Keep pressing the  switch until it returns to normal mode, or press the  switch to return to normal mode.

■ Buzzer sound adjustment [Buzzer Sound Adjustment]




1. Press the  switch to enter the menu mode.
2. Use the  and  switches to select the following parameters, and press the  switch.

S e t t i n g o f B u z z e r

3. Use the  and  switches to select [Buzzer Sound Adjustment] setting, and press the  switch.
 (“*” mark flashes in the first column of the first line on the LCD.)
4. Use the  and  switches to set the value.

* B u z z e r S o u n d
 A d j u s t m e n t = 3

Buzzer sound adjustment
 setting values
 1 to 5

5. Press the  switch to save the setting value into memory.
 (The flashing “*” mark disappears from the LCD.)
6. Keep pressing the  switch until it returns to normal mode, or press the  switch to return to normal mode.

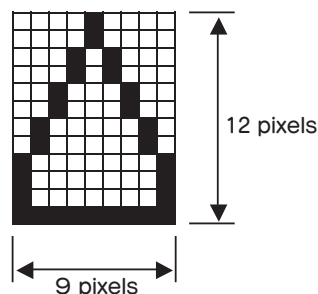
Printer settings [Setting of Printer]

A character is 12 x 9 pixels.

Though character height is fixed (about 3 mm), widths can vary.

However, the number of pixels (9 pixels) does not change, so if you enlarge a character, the space between pixels increases, making the character appear lighter.


Printer settings differ depending on the operating mode.






■ Printer control [Printer Control]




You can set the device to either use the printer or not use it.

If you do not use the printer function, set the invalid.

1. Press the  switch to enter the menu mode.

2. Use the  and  switches to select the following parameters, and press the  switch.

S e t t i n g o f P r i n t e r


3. Use the  and  switches to select [Printer Control] setting, and press the  switch.
("*" mark flashes in the first column of the first line on the LCD.)



4. Use the  and  switches to set the value.

* P r i n t e r C o n t r o l
= V a l i d

Printer control setting values

- Valid
- Invalid

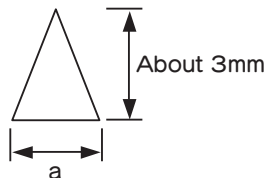
5. Press the  switch to save the setting value into memory.
(The flashing "*" mark disappears from the LCD.)





6. Keep pressing the  switch until it returns to normal mode, or press the  switch to return to normal mode.

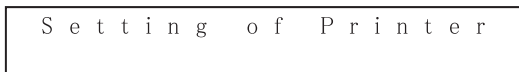
■ Character size setting [Size]




The width of a character can be increased in 0.8 mm increments between 3.2 mm and 6.4 mm.

No.	Size (a)
1	3.2 mm
2	4.0 mm
3	4.8 mm
4	5.6 mm
5	6.4 mm



1. Press the  switch to enter the menu mode.
2. Use the  and  switches to select the following parameters, and press the  switch.






- 3.** Use the  and  switches to select [Size] setting, and press the  switch.
(“*” mark flashes in the first column of the first line on the LCD.)

4. Use the  and  switches to set the value.



- | Character size
- | setting values
- | 3.2 to 6.4 (mm)
- | 0.8 mm increments

5. Press the  switch to save the setting value into memory.
(The flashing “*” mark disappears from the LCD.)

6. Keep pressing the  switch until it returns to normal mode, or press the  switch to return to normal mode.

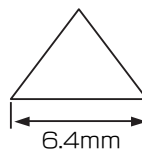
[Setting example 1]

When the size is set at 3.2 mm



[Setting example 2]

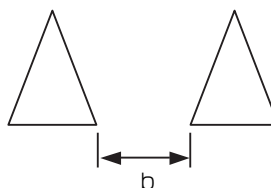
When the size is set at 6.4 mm







■ Character interval setting [Character Pitch]




The space between printed characters can be increased in 0.1 mm increments between 0.8 mm to 92 mm.

No.	Interval (b)
1	0.8 mm
2	0.9 mm
3	1.0 mm
:	:
911	91.8 mm
912	91.9 mm
913	92.0 mm



1. Press the  switch to enter the menu mode.
2. Use the  and  switches to select the following parameters, and press the  switch.


S e t t i n g o f P r i n t e r



3. Use the  and  switches to select [Character Pitch] setting, and press the  switch.
("*" mark flashes in the first column of the first line on the LCD.)

4. Use the  and  switches to set the value.

* C h a r a c t e r P i t c h
= 0 . 8 m m

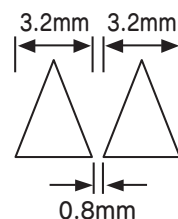
Character pitch
setting values
0.8 to 92.0 (mm)
0.1 mm increments

5. Press the  switch to save the setting value into memory.
(The flashing "*" mark disappears from the LCD.)

6. Keep pressing the  switch until it returns to normal mode, or press the  switch to return to normal mode.

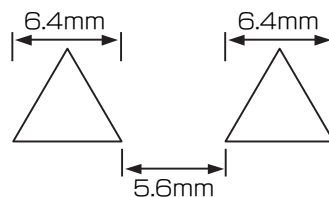
[Setting example 1]

When the size (width) is set at 3.2 mm and the interval is 0.8 mm.



[Setting example 2]

When the size (width) is set at 6.4 mm and the interval is 5.6 mm.



Low power consumption settings [Setting of Electric Power]

This device can be set to reduce power consumption in standby mode. The low-power consumption settings make the device automatically reduce power consumption when it is not used for a certain period.





Sleep mode = low-power consumption condition that it automatically switches to when it is not used for a set time (sleep duration).

* * P o w e r S a v e M o d e * *




Standby mode = a second low-power consumption condition that it automatically and continuously switches to after shifting to the sleep mode when it is not used for a set time (standby duration). (Power consumption is reduced further than sleep mode.) A fan stops in the standby mode.

* * S t a n d b y M o d e * *

■ Sleep duration [Time for Power Save]

1. Press the  switch to enter the menu mode.
2. Use the  and  switches to select the following parameters, and press the  switch.

S e t t i n g o f
E l e c t r i c P o w e r

3. Use the  and  switches to select [Time for Power Save] setting, and press the  switch.
(“*” mark flashes in the first column of the first line on the LCD.)




4. Use the  and  switches to set the value.

* T i m e f o r P o w e r S a v e
= 5 M i n u t e s


Time for Power Save
setting values




- None
- 1 to 60 (Minutes)

*Can be set in minute increments.




5. Press the  switch to save the setting value into memory.
(The flashing “*” mark disappears from the LCD.)
6. Keep pressing the  switch until it returns to normal mode, or press the  switch to return to normal mode.

■ Standby duration [Time for Standby]

1. Press the  switch to enter the menu mode.

2. Use the  and  switches to select the following parameters, and press the  switch.

S e t t i n g o f
E l e c t r i c P o w e r

3. Use the  and  switches to select [Time for Standby] setting, and press the  switch.
(“*” mark flashes in the first column of the first line on the LCD.)


4. Use the  and  switches to set the value.



* T i m e f o r S t a n d b y
= 5 M i n u t e s

Time for Standby
setting values

- None
- 1 to 60 (Minutes)

*Can be set in minute increments.

5. Press the  switch to save the setting value into memory.
(The flashing “*” mark disappears from the LCD.)

6. Keep pressing the  switch until it returns to normal mode, or press the  switch to return to normal mode.

NOTICE

1) Releasing Sleep/Standby mode

Sleep/Standby mode will be cancelled in the following conditions.

- When an operation is entered on the panel screen.
- When a descending command is sent.
- When an error occurs.
- When loading paper on the hopper.

2) Conditions in which Sleep/Standby mode cannot be attained

Sleep/Standby mode is not available in the following conditions.

- When displaying a menu on the panel screen.
- When an error occurs.

3) Cover open (Front door/Upper cover) error cannot be detected in Sleep/Standby mode.

Displaying various information [Display Mode]





This section explains how to display various setting information.

■ Displaying the version [Version Info.]




This displays the versions of the “main body unit,” “front side reading unit,” “back side reading unit,” “main body unit 2,” “image unit,” “select stacker unit,” “barcode unit” and other items.

(“Back side reading unit,” and “barcode unit” display only if they are installed.)

Versions are displayed in a two-digit format.

1. Press the  switch to enter the menu mode.
2. Use the  and  switches to select the following parameters, and press the  switch.



Display Mode





3. Use the  and  switches to select [Version Info.], and press the  switch.

NOTICE

If “Version = @@” appears in the display, contact the dealer where you purchase.





Main Body Unit
 Version = 00

The present version is displayed. 
 The name of each unit is displayed. 






4. Use the  and  switches to display individual versions.
5. Keep pressing the  switch until it returns to normal mode, or press the  switch to return to normal mode.

■ Displaying front side reading sensor settings [Type of Front Reading Sensor]

This displays the settings for “sensor pitch” and “sensor type” for the front side reading unit in this device.

1. Press the  switch to enter the menu mode.
2. Use the  and  switches to select the following parameters, and press the  switch.

Display Mode

3. Use the  and  switches to select [Type of Front Reading Sensor] display, and press the  switch.
4. Use the  and  switches to display the settings.

Sensor pitch



Sensor Pitch
= 0.2 inch

Sensor pitch display
 • 0.2 inch • 0.25 inch
 • 0.3 inch • 1/6 inch
 • 0.2 inch C

Sensor type





Type of Sensor
= Infra Red

Sensor type display
 • Infra Red
 • Visible Red




5. Keep pressing the  switch until it returns to normal mode, or press the  switch to return to normal mode.

■ Displaying back side reading sensor settings [Type of Back Reading Sensor]

This displays the settings for “sensor pitch” and “sensor type” for the back side reading unit in this device. (This display is available only when the device has a back side reading unit attached.)

1. Press the  switch to enter the menu mode.
2. Use the  and  switches to select the following parameters, and press the  switch.

Display Mode

3. Use the  and  switches to select [Type of Back Reading Sensor] display, and press the  switch.

4. Use the  and  switches to display the settings.

Sensor pitch



Sensor Pitch
= 0.2 inch

Sensor pitch display
• 0.2 inch • 0.25 inch
• 0.3 inch • 1/6 inch
• 0.2 inch C

Sensor type





Type of Sensor
= Infra Red

Sensor type display
• Infra Red
• Visible Red






5. Keep pressing the  switch until it returns to normal mode, or press the  switch to return to normal mode.

■ Displaying optional unit settings [Type of Option]

This displays the settings for an optional unit installed in this device.

1. Press the  switch to enter the menu mode.
2. Use the  and  switches to select the following parameters, and press the  switch.

Display Mode

3. Use the  and  switches to select [Type of Option] display, and press the  switch.
4. Use the  and  switches to display the options.

Reading sensor unit

Reading Sensor Unit
= Double Side

Reading sensor unit
display settings

- Single Side
- Double Side

Select stacker unit

Stacker Unit
= Cartridge

Select stacker unit
display



- Not Cartridge
- Cartridge

Barcode unit

Barcode Unit
= Valid





Barcode unit display

- Not unit
- Valid




5. Keep pressing the  switch until it returns to normal mode, or press the  switch to return to normal mode.

■ Displaying total count [Total count]

This displays total count in this device.

1. Press the  switch to enter the menu mode.
2. Use the  and  switches to select the following parameters, and press the  switch.



Display Mode

3. Use the  and  switches to select [Total count] display, and press the  switch.

Total count

Total count
= #####

Total count display
00000000 ~ 99999999





4. Keep pressing the  switch until it returns to normal mode, or press the  switch to return to normal mode.

NOTICE




The accumulated number of sheets to be transferred is saved each time the reading operation is completed (when there are no more sheets in the hopper). If the power is turned off during a reading operation, the accumulated number of sheets will not be saved.

■ Displaying serial number [Serial number]

This displays serial number of this device.

1. Press the  switch to enter the menu mode.
2. Use the  and  switches to select the following parameters, and press the  switch.



Display Mode

3. Use the  and  switches to select [Serial number] display, and press the  switch.

Serial number

S e r i a l n u m b e r
= # # # # # # # #

Serial number display settings
000000000 ~ zzzzzzzzz

4. Keep pressing the  switch until it returns to normal mode, or press the  switch to return to normal mode.





Operating tests [Test Mode]

This section explains operating test procedures.

■ Feed test 1

This test reads the check sheets included in the package to test if the device reads them properly.

If the device doesn't read the check sheets properly, the reading test will stop. Once reading of the check sheets starts, the test will continue until an error occurs or the hopper is empty.


1. Press the  switch to enter the menu mode.
2. Use the  and  switches to select the following parameters, and press the  switch.

T e s t M o d e

3. Use the  and  switches to select [Feed Test 1].

F e e d T e s t 1
E : 0 , T : 0
Error Count Total Count


E: Error count numbers
T: Total count numbers



4. Press the  switch to confirm the selection and display [Feed Test 1].
("*" mark flashes in the first column of the first line on the LCD.)

5. Use the  and  switches to select the setting value.

F e e d T e s t 1	= S t a r t
-----------------------	---------------

Feed test 1 setting values
• Stop • Start

6. Press the  switch to start/stop feed test 1.
(The flashing "*" mark disappears from the LCD, and the test will start/stop.)

7. Keep pressing the  switch until it returns to normal mode, or press the  switch to return to normal mode.

NOTICE





- 1) You cannot return to normal mode while the test is running.
- 2) If a reading error occurs on both sides of a sheet, the error count will be two.
- 3) If the select stacker unit is installed and an error occurs, paper will be transferred to the selection tray.

■ Feed test 2

This test reads the check sheets included in the package to test if the device reads them properly.

Even if the device doesn't read something properly, the test will continue.

Once reading of the check sheets starts, the test will continue until an error other than a reading occurs or the hopper is empty.

1. Press the  switch to enter the menu mode.
2. Use the  and  switches to select the following parameters, and press the  switch.

T e s t M o d e


3. Use the  and  switches to select [Feed Test 2].

F e e d T e s t 2
E : 0 , T : 0

Error Count

Total Count




E: Error count numbers
T: Total count numbers

4. Press the  switch to confirm the selection and display [Feed Test 2].
("*" mark flashes in the first column of the first line on the LCD.)

5. Use the  and  switches to select the setting value.

F e e d T e s t 2
= S t a r t

Feed test 2 setting values
• Stop • Start

6. Press the  switch to start/stop feed test 2.
(The flashing "*" mark disappears from the LCD, and the test will start/stop.)
7. Keep pressing the  switch until it returns to normal mode, or press the  switch to return to normal mode.

NOTICE

- 1) You cannot return to normal mode while the test is running.
- 2) If a reading error occurs on both sides of a sheet, the error count will be two.
- 3) If the select stacker unit is installed and an error occurs, paper will be transferred to the selection tray.

■ Printer test

The test characters are printed on the fed sheets, and the sheets are alternately discharged into the main tray and select tray.

The number of characters printed varies depending on the printer settings, and character size and interval settings.





Once reading of the check sheets starts, the test will continue until an error occurs or the hopper is empty.

Test characters:

"!"#\$%&'()*+,-./0123456789:;<=>?@

ABCDEFGHIJKLMNOPQRSTUVWXYZ[¥]^_。「」、・

ヲアイウエオヤユョツーアイウエオカキクケコサシスセソタチツテトナニヌネノハヒフヘ
ホマミムメモヤユヨラリルレロワン"


1. Press the  switch to enter the menu mode.
2. Use the  and  switches to select the following parameters, and press the  switch.

T e s t M o d e

3. Use the  and  switches to select [Printer Test].

P r i n t e r T e s t
C o u n t : 0


Count



4. Press the  switch to confirm the selection and display [Printer Test].
("*" mark flashes in the first column of the first line on the LCD.)

5. Use the  and  switches to select the setting value.

* P r i n t e r T e s t
= S t a r t

Printer test setting values
• Stop • Start

6. Press the  switch to start/stop Printer test.
(The flashing "*" mark disappears from the LCD, and the test will start/stop.)





7. Keep pressing the  switch until it returns to normal mode, or press the  switch to return to normal mode.

NOTICE

You cannot return to normal mode while the test is running.

■ Printer inkjet test [Printer Jet Test]


This test is done when the printing of sheets is not possible, is not clear.

1. Press the  switch to enter the menu mode.
2. Use the  and  switches to select the following parameters, and press the  switch.

T e s t M o d e




3. Use the  and  switches to select [Printer Jet Test].

* P r i n t e r J e t T e s t

4. Press the  switch to confirm the selection and display [PJet Test Start = Start].

(“*” mark flashes in the first column of the first line on the LCD.)

* J e t T e s t = S t a r t

5. Press the  switch to do Printer jet test one time.(about 0.5 sec.)
(When Printer jet test ends , the flashing “*” mark disappears from the LCD.)
6. Keep pressing the  switch until it returns to normal mode, or press the  switch to return to normal mode.

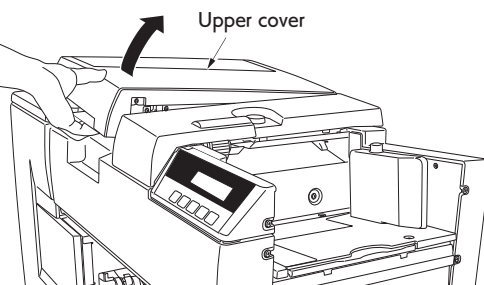
NOTICE

You cannot return to normal mode while the test is running.

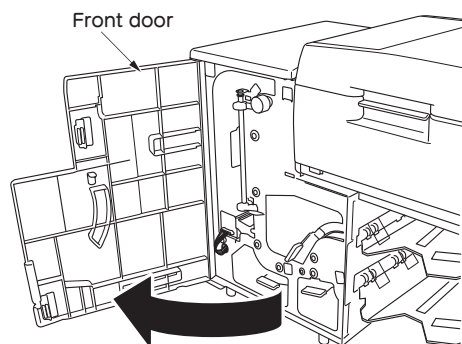
Clearing paper jams

1. Release the grip lock on the lock lever, and slowly lift up the top cover. Once the top cover is up far enough, remove the paper from the device.

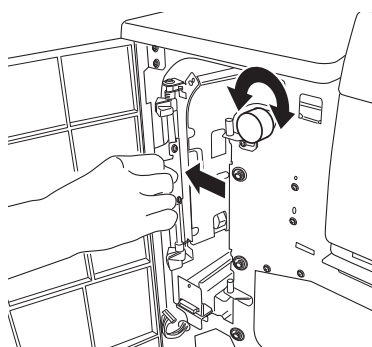
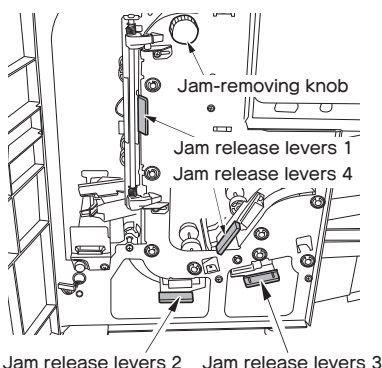
(Remove the paper from the device as same also in case with accessory kit. Close the top cover and push to the click sound.)



2. Open the front door after step 1. in case with the select stacker unit.



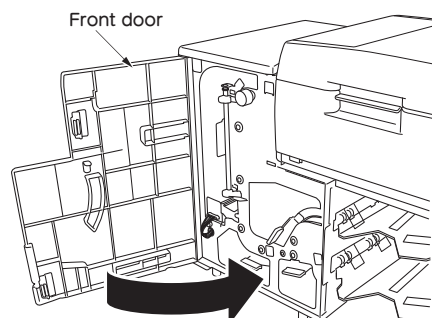
3. Open the jam release levers 1 to 4 (4 levers) or turn the jam-removing knob to remove jammed paper.



4. After removing jammed paper, close the jam release levers.
5. Close the top cover of the main body and the front door of the select stacker unit.

NOTICE

Securely close the top cover, the front door of the select stacker unit, and the jam release levers 1 to 4. Failure to do so may result in a jam (paper jam).



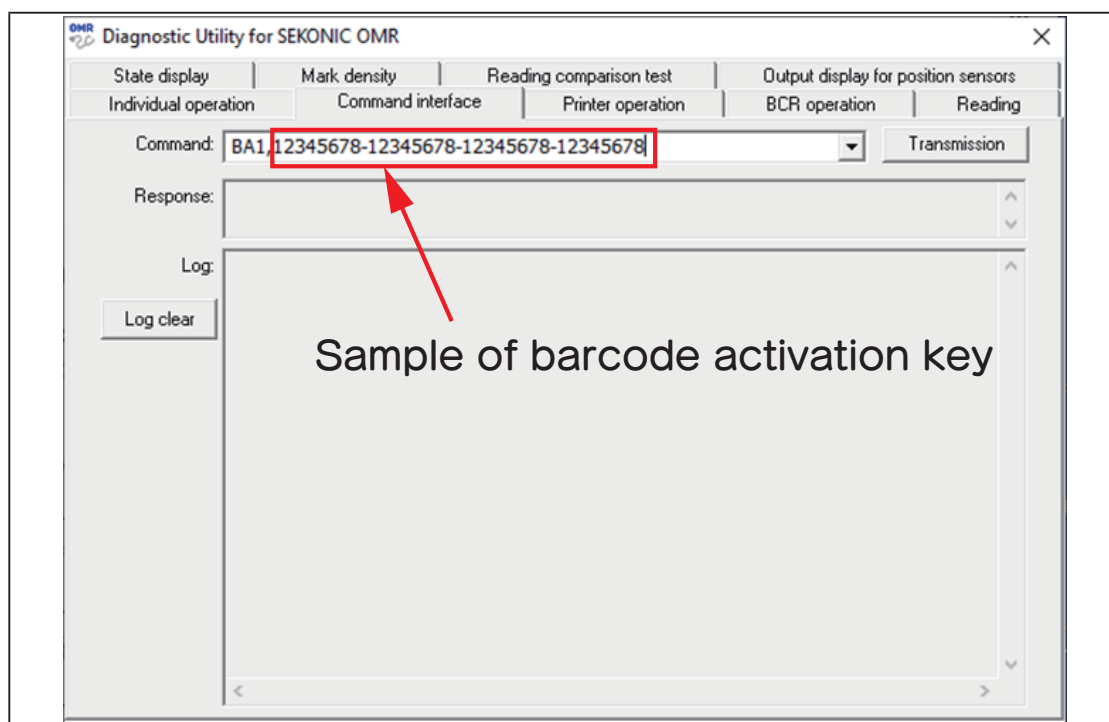
Option

Barcode unit


The barcode unit is enabled by configuring the barcode option settings.

■ Activation of barcode unit

- (1) It is necessary to purchase the barcode activation key.
- (2) Type "BA1," with capital single byte character in "Command interface" of the diagnostic utility and then click "Transmission".
*Refer to the Diagnostic Utility User's Manual stored in CD-ROM belonging to the product in regard to how to install the utility.
- (3) After reboot the device, the barcode unit is activated.



■ Confirmation of activation

Confirm that "Barcode Unit = Valid" is shown in "Type of option" of the optional unit settings. ( [■ Displaying optional unit settings [Type of Option]] P.48)

■ Barcode readable area

Readable area of Barcode varies depending on the feed mode.

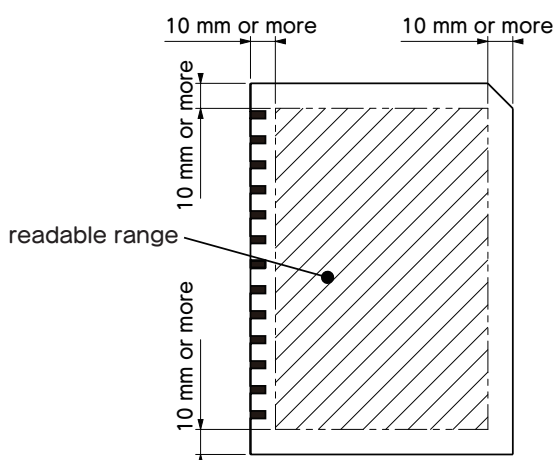
Position a barcode within readable area of each feed mode including clear area.

*Clear area means necessary margin around barcode printed in a form.

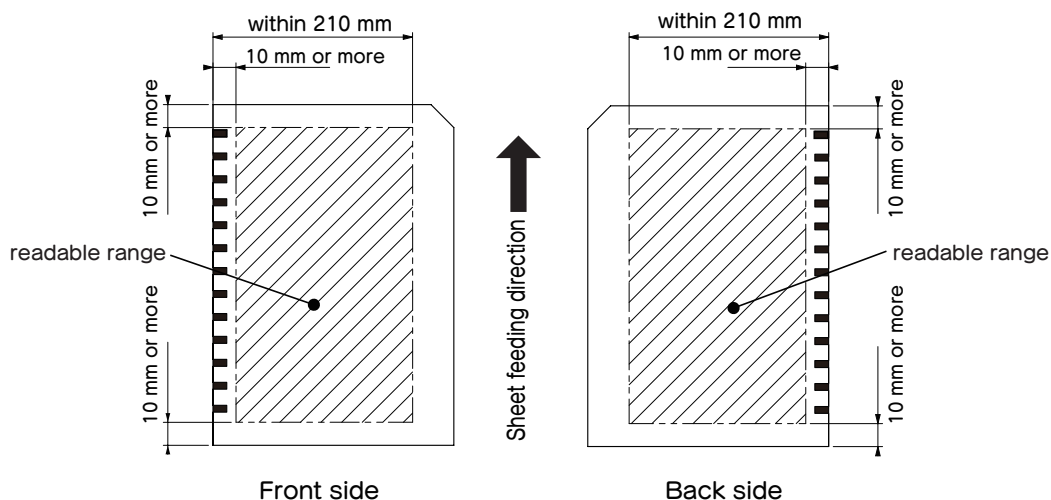
(Prohibited printing area) 【Note1】

(1) One sheet feed mode

- ① In case the width of form is 220 mm or shorter
Position a barcode 10 mm away from each end (top, bottom, left, and right) of form.

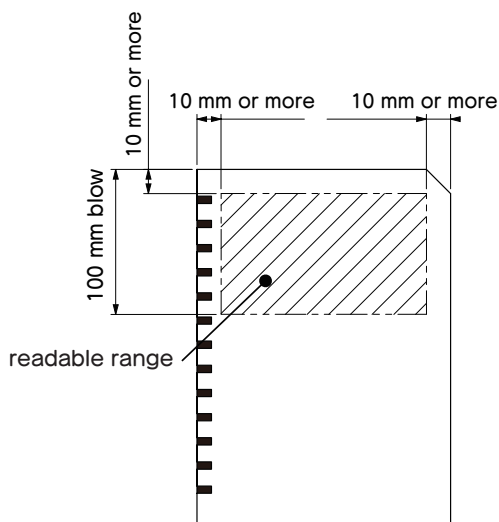


- ② In case the width of form is longer than 220 mm.
Place barcode within the area defined in below.
Front page is defined from left end (timing mark side) and back page is defined from right end (opposite side of timing mark).



(2) Continuous feed mode

Place barcode within 10 - 100 mm from top end of form and 10 mm or more from left and right end of form.

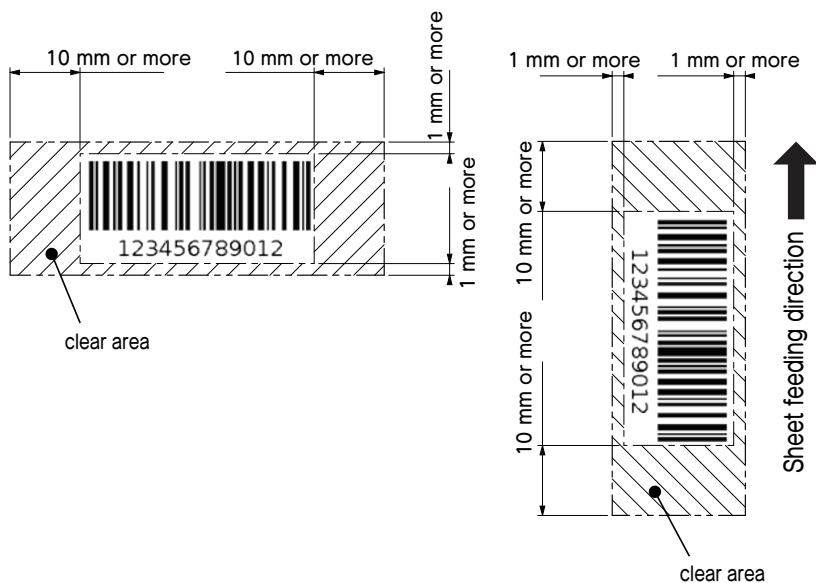


【Note 1】 Clear area (Prohibited printing zone)

· One-dimensional code

Make clear area 10 mm or more from left and right end of barcode, and 1 mm or more from top and bottom end of barcode.

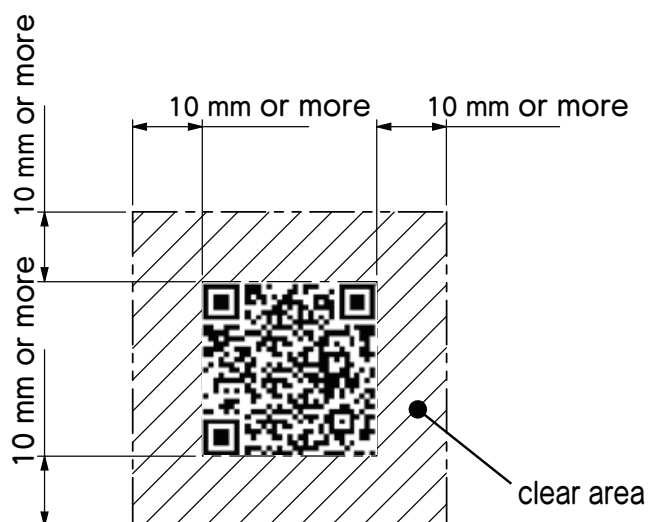
*Dimension of clear area does not vary depending on resolution.



· QR code

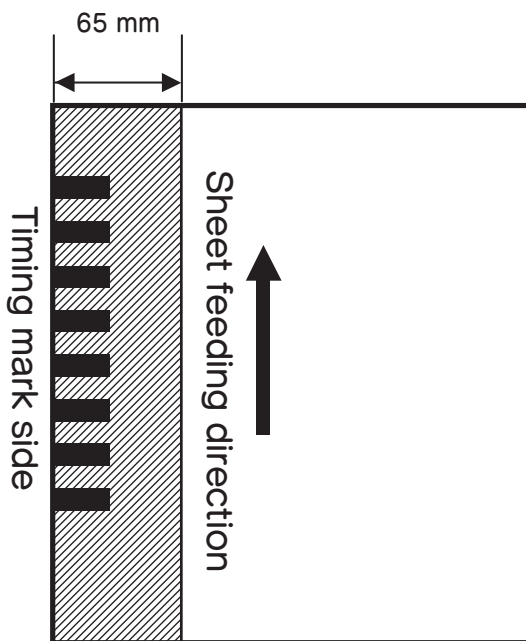
Make clear area 10 mm or more from each end (top, bottom, left, right) of QR code.

*Dimension of clear area does not vary depending on resolution.



■ Barcode unit precautions for use

- (1) When applying barcode stickers, etc. on a sheet, make sure that sheet thickness with stickers is 0.25 mm or less.
- (2) When applying barcode stickers, etc. on a sheet, avoid the grayed area below.



- (3) Make barcodes according to the following specifications and guidelines.
 - AIM USS (Automatic Identification Manufacturers barcode symbol specifications)
 - JIS
 - JIS X 0502 Barcode symbols for logistic product codes
 - JIS X 0503 Barcode symbol NW-7 and code 39 basic specifications
 - JIS X 0504 Barcode symbols Code 128
 - JIS X 0505 Barcode symbols Interleaved 2 of 5
 - JIS X 0506 (Code-bar NW-7 Basic specification)
 - JIS X 0520 (Barcode symbols Specifications for evaluating printing quality - One-dimensional symbols)
- (4) Faded, chipped, and bleeding barcodes cannot be read. Please note that barcodes printed with low-resolution printers such as dot-matrix printers and inkjet printers tend to have similar results.
- (5) If the sensor area becomes dirty with paper powder, use a soft cloth, a cotton swab, or similar materials soaked with plastic cleaner, or use a cloth for glasses to wipe it.

■ Specifying barcode reading coordinate range

Specify the following distance when command setting the range when reading barcodes.

- (1) Barcode V : Leave 10 mm to the left and right, and at 16 mm above and below.
- (2) Barcode H : Leave 13mm above and below, and 10mm to the left and right.
- (3) QR code : Leave 3mm to Valid direction and 6mm to vertical direction.
- (4) Specify coordinate ranges for all barcodes in case you read multiple barcodes.

Refer to the operating manual of application software to use in regard to how to specify the coordinate range.

Barcode V	Barcode H	QR code
<p>· In case the height of barcode is 10 mm</p>	<p>· In case the height of barcode is 10 mm</p>	
<p>· In case the height of barcode is 20 mm</p>	<p>· In case the height of barcode is 20 mm</p>	

Cleaning

Dirty rollers, reading lenses, and sensors can cause various operational errors. Clean them regularly using the following procedures. Cleaning intervals differ depending on usage conditions (usage frequency, quality of paper used, etc.) Cleaning periods are for your reference -- clean the device soon if you notice dirt or other irregularities.

⚠ WARNING



- Do not spray organic solvent such as flammable fluids or paint thinner.

Flammable gas remaining inside the device can catch fire from static electricity, which may cause a fire, burn or injury.



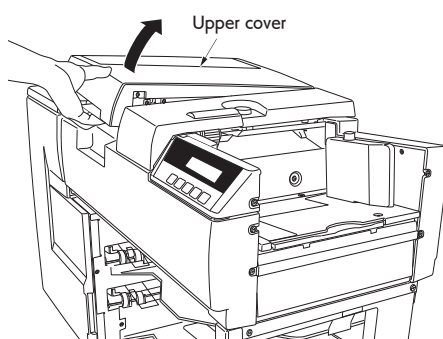
- If the device is dropped or the cover is broken, power down and remove the power plug.

If the device is dropped or the cover is broken, immediately turn the power switch off and remove the power plug from the outlet. Then contact the distributor.

■ Cleaning procedures

Main body unit

1. Turn the power off and remove the power cord from the outlet.
2. Grasp the lock lever to release the lock, and push the top cover up to open it.
3. Clean necessary parts.



Data reading settings - 「■ Cleaning point」 P.65

4. Close the top cover.
Slowly close the top cover and press it until there is a click sound that indicates it is locked.

■ Cleaning point

(1) Cleaning rollers

After feeding 50,000 sheets, a large number of cards, or when using carbon paper, wipe the rollers softly with a clean cloth slightly wetted with disinfectant alcohol (ethanol).

*Use a solution of 1 part ethanol to 5 parts water as the diluted disinfectant alcohol.

NOTICE

1) If the rollers are stained, the stains may rub off on cards or other various malfunctions may occur.

(2) Cleaning reading lens

Clean the reader lens by softly wiping it with a clean cloth slightly wetted with disinfectant alcohol (ethanol) once a month or every 50,000 sheets.

NOTICE

If the reading lens is stained, reading errors may occur.

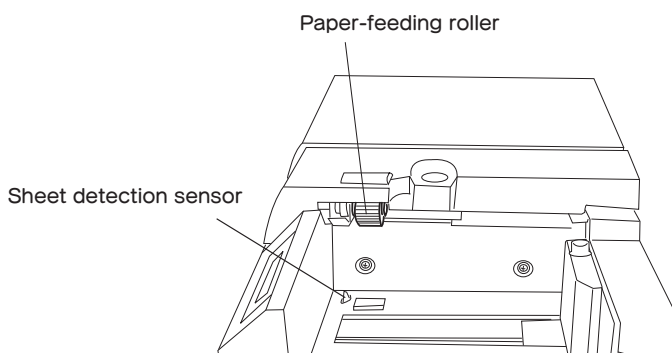
(3) Cleaning various sensors

Softly wipe the sensors with a clean cloth slightly wetted with disinfectant alcohol (ethanol) once a month or every 50,000 sheets.

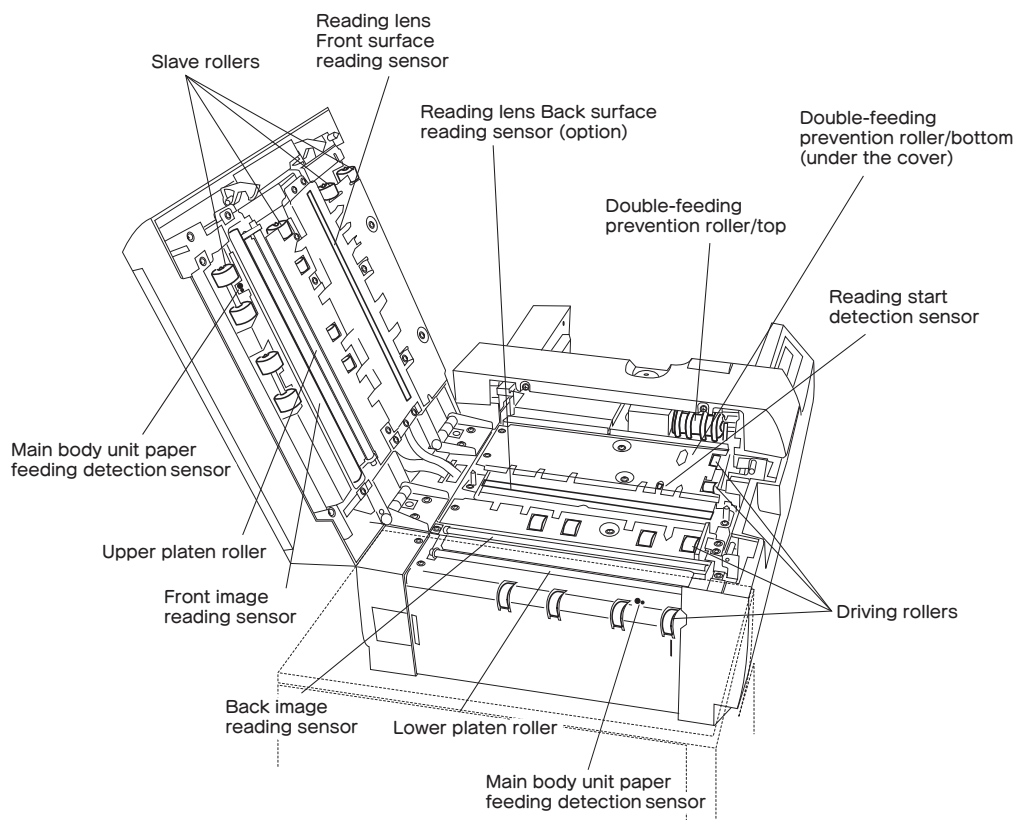
Use air blow etc. when cleaning the left skew sensor section.

NOTICE

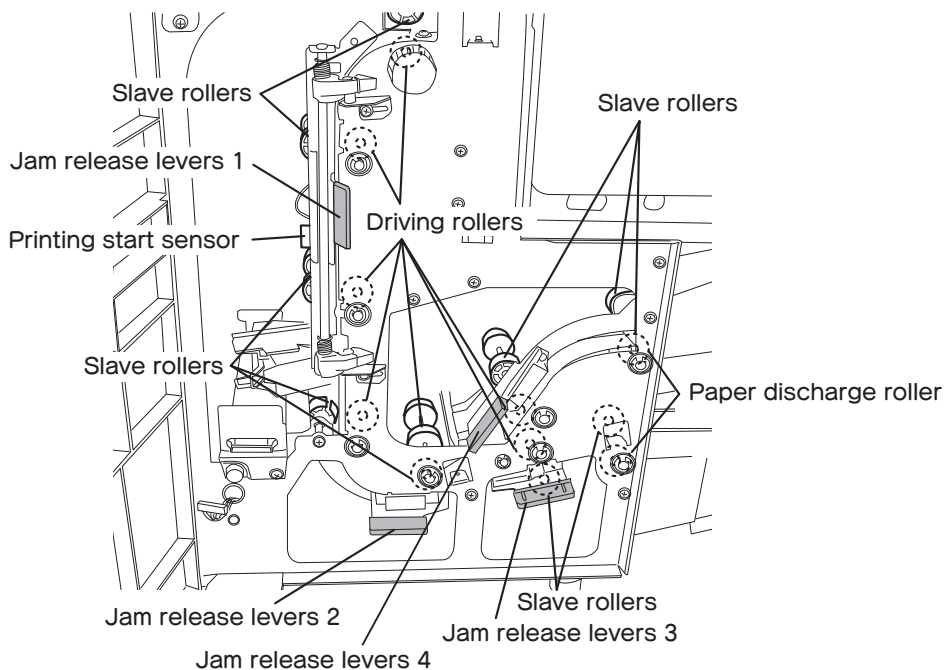
- 1) If the sensors are stained (with paper powder, etc.) detection errors may occur.
- 2) Cleaning intervals may differ depending on usage conditions (usage frequency, quality of paper used, etc.)



Main body unit

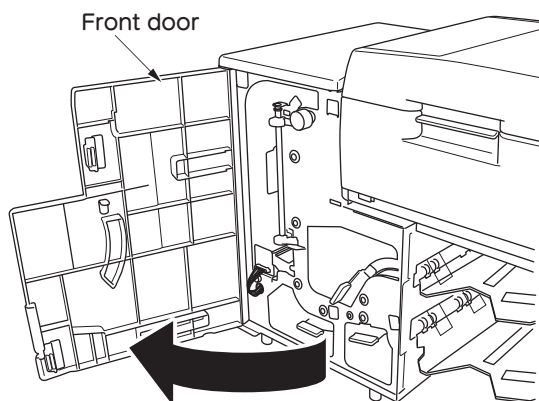


Select stacker unit

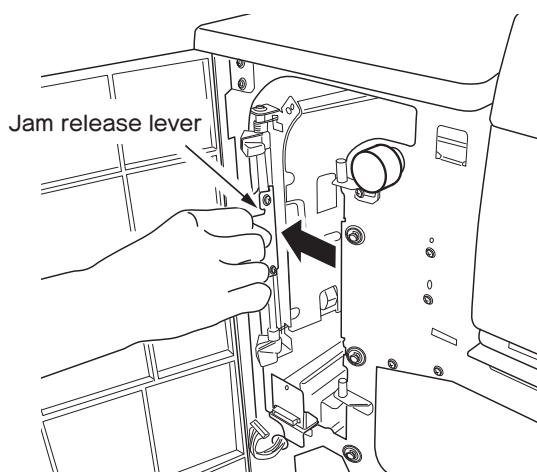


Select stacker unit

1. Turn the power off and remove the power cord from the outlet.
2. Open the front door of the select stacker unit.

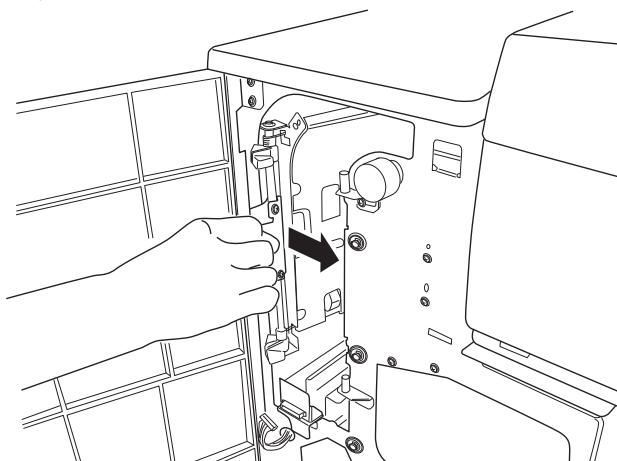


3. Open the jam release lever 1.

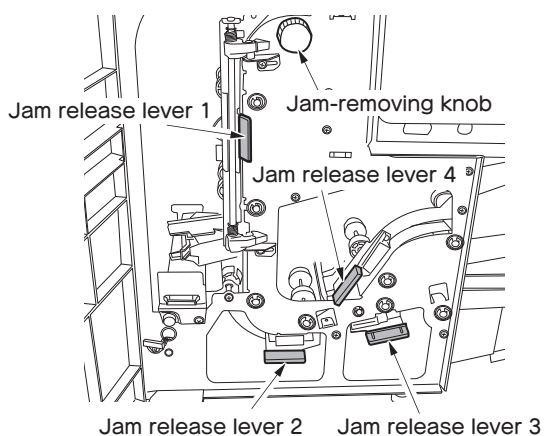


4. Clean necessary parts. (Reference) 「Select stacker unit」 P.66)

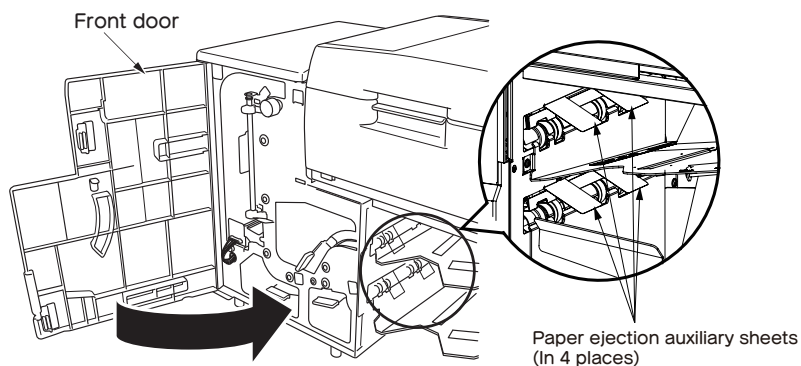
5. Close the jam release lever 1.



6. Clean the jam release levers 2, 3, and 4 as shown in steps 3 through 5.



7. Close the front door of the select stacker unit.
8. Remove any paper dust and scraps that have collected on the paper ejection auxiliary sheets.



Service schedule

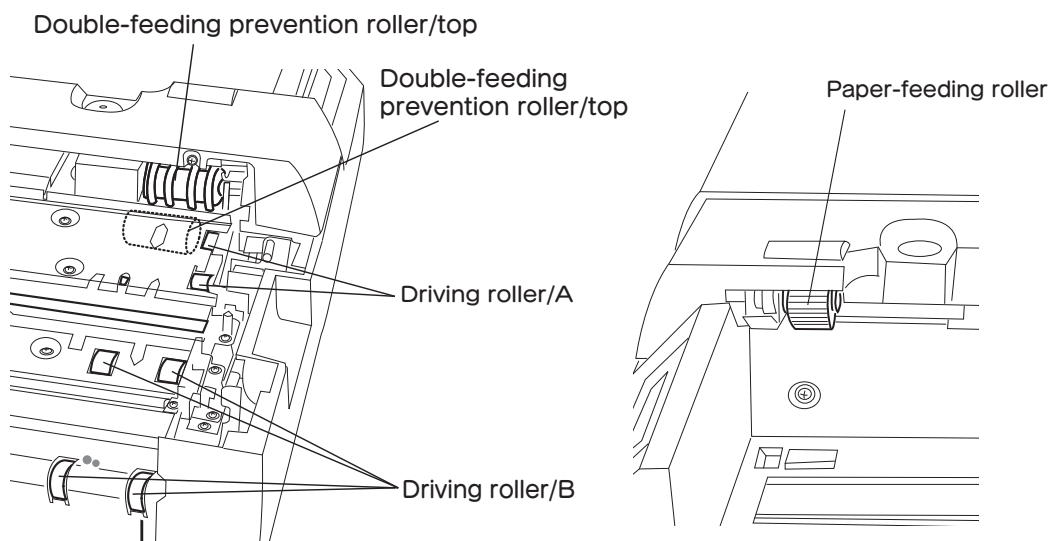
For stable operation of this device, regular replacement of components is required.

See the following table, and contact Sekonic, or the dealer where you purchased the device, when requiring component replacement.

Main body unit

Component name	Number	Replacement reference (counter number)	Remarks
Paper-feeding roller	1	100,000 or 3 years	—
Double-feeding prevention roller/top	1	100,000 or 3 years	Replace at the same time as double-feeding prevention roller/bottom
Double-feeding prevention roller/bottom	1	100,000 or 3 years	Replace at the same time as double-feeding prevention roller/top
Driving roller/A	2	500,000 or 3 years	—
Driving roller/B	2	500,000 or 3 years	—

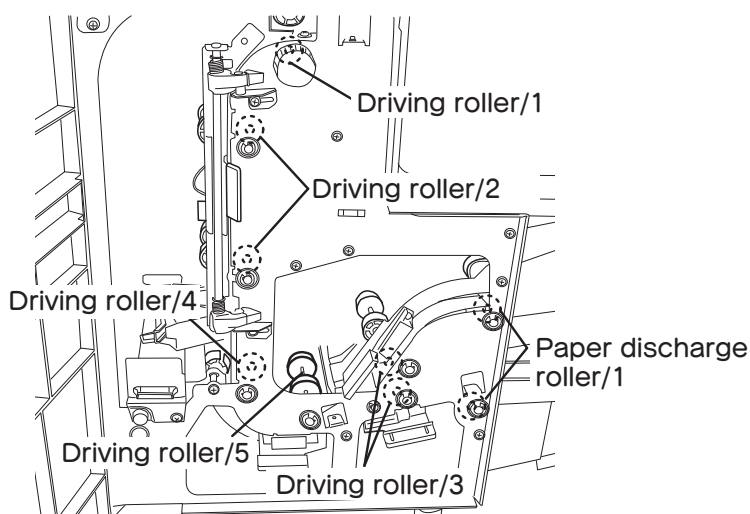
*Replacement periods may differ depending on usage conditions (usage frequency, quality of paper used, etc.)



Select stacker unit

Component name	Number	Replacement reference (counter number)	Remarks
Driving roller/1	1	500,000 or 3 years	—
Driving roller/2	2	500,000 or 3 years	—
Driving roller/3	2	500,000 or 3 years	—
Driving roller/4	1	500,000 or 3 years	—
Driving roller/5	1	500,000 or 3 years	—
Paper exit roller/1	2	500,000 or 3 years	—

*Replacement periods may differ depending on usage conditions (usage frequency, quality of paper used, etc.)



Product specifications

[] inside option

Operation speed	Reading mode	Feed mode	Continuous feed mode		Continuous/stop feed mode		One sheet feed mode	
		Sheet size	Smaller than A4	A4 to 14 inch	Smaller than A4	A4 to 14 inch	Smaller than A4	A4 to 14 inch
		Resolution (DPI)						
Image (color) +mark		600	2000 sheets/hour	1800 sheets/hour	1400 sheets/hour	1200 sheets/hour	900 sheets/hour	800 sheets/hour
		300	8000 sheets/hour	6900 sheets/hour	5200 sheets/hour	4500 sheets/hour	3200 sheets/hour	2800 sheets/hour
		200						
		150						
		100						
Image (Gray) +mark		600	2000 sheets/hour	1800 sheets/hour	1400 sheets/hour	1200 sheets/hour	1000 sheets/hour	900 sheets/hour
		300	8000 sheets/hour	6900 sheets/hour	5200 sheets/hour	4500 sheets/hour	3200 sheets/hour	3000 sheets/hour
		200						
		150						
		100						
Mark only			8000 sheets/hour	6900 sheets/hour	5200 sheets/hour	4500 sheets/hour	3600 sheets/hour	3500 sheets/hour

Conditions

- ① Double-sided mark reading
- ② Double-sided image reading (*1)
- ③ Barcode (*2)

The above table shows the speed with all 3 conditions of ①②③ applied together.

*1) No rotation: Transfer JPEG file (Quality level = up to 85%) in the continuous feed mode and continuous/stop feed mode.

Transfer BMP file in the one sheet feed mode.

*2) 1 QR code in either page within 100 mm from top edge of form

*Mark reading condition

Columns=46, Rows=66

*PC connection

The one sheet feed mode: USB3.0 (Superspeed) and USB2.0 (Highspeed)

*Required PC specification

CPU: Intel Core i3-3240 @3.40GHz

Memory: 2GB

OS: Windows 10 Pro 32 bit or greater

*Operation speed is measurement result with defined conditions but not guaranteed

Mark reading sensor	Reading	Single sided or double sided (*You need an optional back side reading unit for double-sided reading.)
	Darkness levels	16 levels (internal 256 levels)

OPTICAL MARK READER SR-8000 HYBRID

Product specifications

	Light source	infra red light (940 nm) or visible red light (660 nm)
	Pitch (inch)	Either 1/6", 0.2", 0.2" C, 0.25" or 0.3" (near infrared, red visible). *The front and back must have the same pitch.
	Mark implements	infra red light : pencil visible red light : pencil, ballpoint pen (black or blue)
	Reading mark	size : 0.5 × 3 mm or more darkness : PCS 0.6 or darker
	Number of timing marks	Four or more
	Image reading sensor	Reading method CIS (Contact Image Sensor) Reading Dual-sided Light source LED (white) Reading width 210 mm (main scanning direction) Reading color Grayscale (8 bit), Color (24 bit) Resolution 100dpi, 150dpi, 200dpi, 300 dpi 600 dpi or equivalent (supported with middleware) 【Note 1】 Image data Original image, a part of image
Error detection function	Sheet position detection, multiple sheet feeding detection, skew detection 【Note 2】	
PC interface	USB	USB3.0 (Super Speed/ High Speed) USB2.0 (Cannot be read continuously)
Display panel and operating switches	Display panel (LCD)	20 characters x 2 lines
	Operating switches	5
Hopper capacity	Sheet loading capacity	500 sheets (ream weight, 90 kg (105 g/m ²) for base) *With pictures attached, 20 sheets (90 kg (105 g/m ²) for base) 【Note 3】
	Mixed sheets	Only sheets with the same characteristics (paper type, size, thickness) can be set
Paper used	Paper size	IBM card size, postcard size, A5, B5, A4 8.5 inch, 9 inch Length 110 to 355.6 mm, width 63.5 to 228.6 mm
	Paper weight	72 to 135 kg (83.8 to 157 g/m ²) *Length less than 148 mm: 105 g/m ² to 157 g/m ²
	Paper quality	OCR paper, bond paper, recycled OCR paper (recycled OCR paper composition 50%)

Sheet Ejection	Capacity	500 sheets (Ream weight 105 g/m ² when using base paper) [Main tray : 500 sheets (when weight 105 g/m ² paper is used) Selection tray : 150 sheets (when weight 105 g/m ² paper is used)] *With pictures attached, 20 sheets (90 kg (105 g/m ²) for base) (Paper receiver: 500 sheets (when 105 g/m ² paper is used.)]
Power source	100 V AC to 240 V AC, 50Hz/60Hz	
Environmental	Temperature	5 to 35°C
operating conditions	Humidity	30 to 80%
External measurements	Main body unit	575 (W) × 227 (H) × 365 (D) mm
	[With select stacker unit]	800 (W) × 490 (H) × 365 (D) mm
	[With accessory kit]	947 (W) × 227 (H) × 365 (D) mm
Weight	Main body unit	Approx. 20 kg
	[With select stacker unit]	Approx. 39 kg
	[With accessory kit]	Approx. 20 kg
Noise	70dB (A) (when operating)	
service life	6 years	

[Note 1] At 600 dpi resolution, the reading speed will be reduced.

[Note 2] Left margin skew detection is used to determine if the left margin is skewed by checking the edge of the left margin on the back of a sheet. If colors other than shades of white are printed on the back of the sheet, detection may not work properly. For such cases, set left margin skew detection to [Off]. Please be aware that sheet print colors that may cause detection to work incorrectly may differ depending on the reading color.

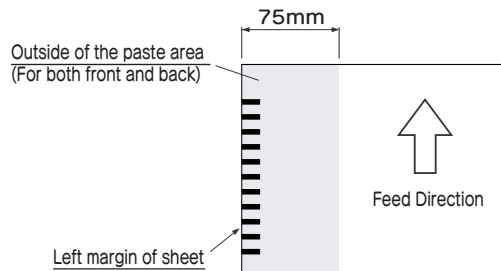
Reading color		Sheet print colors that are often detected incorrectly (back side)
Grayscale		Colors other than shades of white
Color		Colors other than shades of red
Dropout color	Red	Colors other than shades of white
	Green	Colors other than shades of green
	Blue	Colors other than shades of blue



[Error detection settings [Setting of Error]] P.35

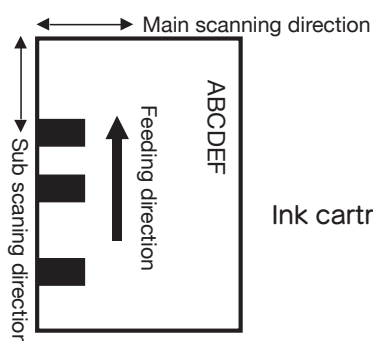
【Note 3】 When feeding sheets that have pictures attached, check and verify the items listed below and make sure to complete a test run before actually feeding in any sheets.

- ① The maximum thickness for a picture that can be attached onto a sheet is approx. 0.25 mm (including the thickness of the sheet and the thickness of the picture).
- ② Do not attach pictures into areas that are up to 75 mm from the left margin of the sheet (for both front and back).
- ③ Attach pictures that have not been folded and that have no fold lines. For pictures that have a curl in them, only attach pictures with a curl of 1 mm or less.
- ④ Make sure that attached pictures are not lifting away from or peeling off from the sheets.
- ⑤ The edges of sheets with a low stiffness of 72 kg (84 g/m²) or less may sag on the stacker and become uneven around where pictures are attached, which could cause the sheet to get caught and become jammed in the machine, which is why sheets should be fed in one sheet at a time in such cases.



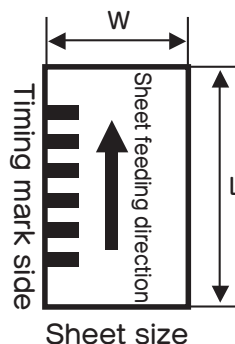
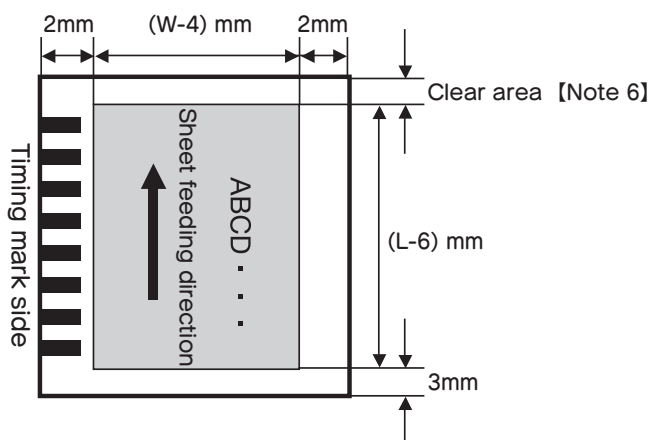
■ Printer unit specifications

Printing location	Prints on top surface of fed sheet
Printing method	Inkjet
Number of characters printed	Continuous feed setting : Maximum 28 characters 【Note 1】 Single-sheet reading setting : Maximum 72 characters 【Note 2】 (for A4-size paper)
Kinds of characters printed	Alphabet (uppercase and lowercase letters) Numbers (0 to 9) 35 Symbols (!"#\$%&'()*+,-./:;<=>?@ [¥] ^_ {SP} ~○△□×) 【Note 3】 Japanese kana (including half and full accents, 。 []、・ー)
Character size	Height approximately 3 mm × Width approximately 3.2 mm to 6.4 mm
Character interval	Approximately 0.8 mm to 92 mm
Printing pixels	12 vertical × 9 horizontal pixels
Printing position	2 mm or more from standard paper feeding edge to beginning of characters (not extended to timing mark) 2 mm or more from right edge of maximum size sheet to beginning of characters
Printing position adjustment	Main scanning direction : Adjust head position manually. Sub scanning direction : Set print starting position command.



Ink cartridge Expires : 6 months after opening
Life : about 1 million characters 【Note 4】

The printable area ■ 【Note 5】



【Note 1】 Continuous feed setting

This setting allows for Continuous feed without stopping the feed motor, for high-speed processing

Instructions for setting this function are found in the API Reference Manual, "API Functions - Continuous feed" section.

【Note 2】 Each time one sheet is read, the transfer motor is stopped and controlled.**【Note 3】 ■ is printed as □ .****【Note 4】 The number of letters until it stops being printed depend on working condition.****【Note 5】 The size of printable area depends on the size of the sheet used.****【Note 6】 The printable area changed by Sheet size setting as follow.**

· Continuous feed

< Continuous feed setting = Continuous >

[Standard (14 inches)] setting: 70 mm

[A4 size (11.7 inches)] or [Small size (7.4 inches)]: 3 mm

< Continuous feed setting = Continuous/Stop >

[Standard (14 inches)]: 70 mm



[A4 size (11.7 inches)] or [Small size (7.4 inches)]: 60 mm

· Single-sheet reading: 60 mm

NOTICE

If a sheet is curled, it may cause a paper jam, so please do not use curly sheet.

■ Barcode unit specifications

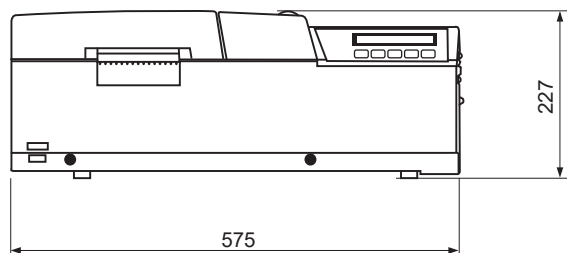
Item		One-dimensional code	QR code
Reading direction		0/90/180/270 degrees	0/90/180/270 degrees
Applicable codes		CODE-39 CODE-128 JAN/EAN 13 digits JAN/EAN 8 digits UPC-A 12 digits/13 digits UPC-E 8 digits NW-7 ITF COOP2of5	Model: 2 Error correction level: L, M, Q, H *Coupling function of multiple QR codes is not available. *Cannot read Model 1, Micro QR, iQR, SOQR, and Frame QR.
Readable range	Single-sheet reading	Barcode readable area ( ■ Barcode readable area [(1) One sheet feed mode] P.59)	
	Continuous feed	Refer to barcode reading range ( ■ Barcode readable area [(2) Continuous feed mode] P.60)	
Number of digits that can be read		Up to 255 characters (255 bytes) *Including start-stop characters	Up to 255 bytes
Number of labels that can be read	Single-sheet reading	10	
	Continuous feed	1	
Label interval		20 mm or more	
Barcode size	Single-sheet reading	Less than 100 mm in length x 10 to 20 mm in height	length and height within 33 mm
	Continuous feed		length and height within 18 mm
Module width/cell size	300dpi	Module width : 0.33 ~ 0.66 mm	Cell size : 0.51 ~ 0.66 mm
	600dpi	Module width : 0.25 ~ 0.66 mm	Cell size : 0.33 ~ 0.66 mm
NW ratio		Wide module (element) width must be 2.0 times or more and 3.0 times or less of narrow module (element) width.	
Tolerance of width of bar		Tolerance of width of printed bar must be 10.0 % or less \pm standard width.	
Version	Single-sheet reading	—	Version 2 (25 x 25 cell) - Version 20 (97 x 97 cell)
	Continuous feed	—	Version 2 (25 x 25 cell) - Version 9 (53 x 53 cell)
clear area		Upper and lower 1mm or more, left and right 10mm or more	Upper and lower left and right: 10mm or more
Barcode density		PCS0.7 more (R:650 nm, G:545 nm, B:46 nm)	
Inclination		Up to \pm 3 degrees	
Reading side		Surface or back of the sheet	

External diagram

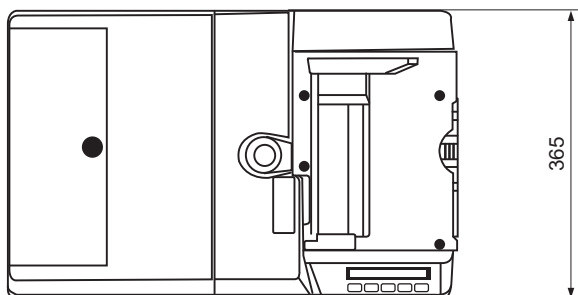
■ Main body

(Unit : mm)

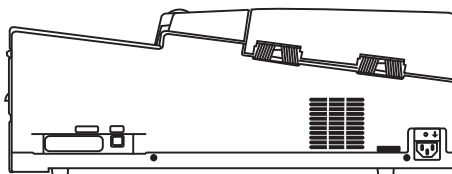
Front view



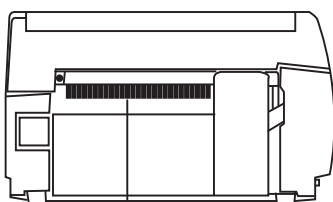
Top view



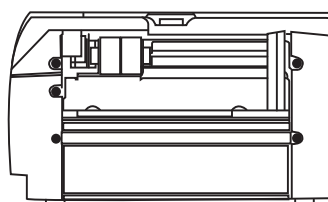
Rear view



Left view



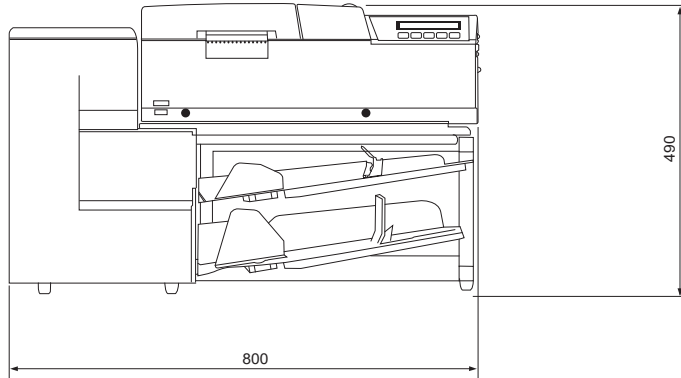
Right view



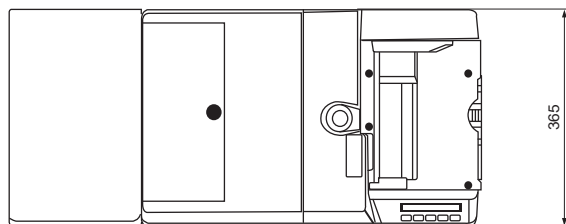
■ Main body with select stacker unit

(Unit : mm)

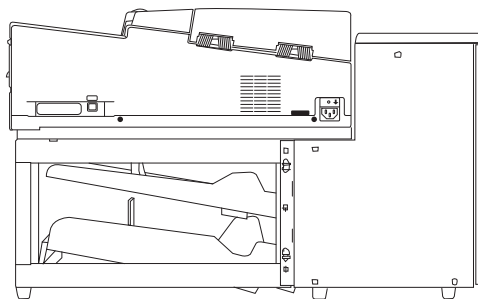
Front view



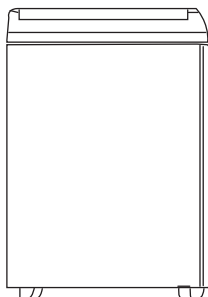
Top view



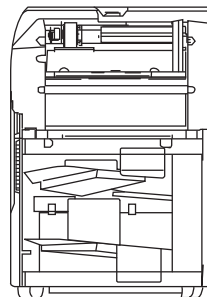
Rear view



Left view



Right view



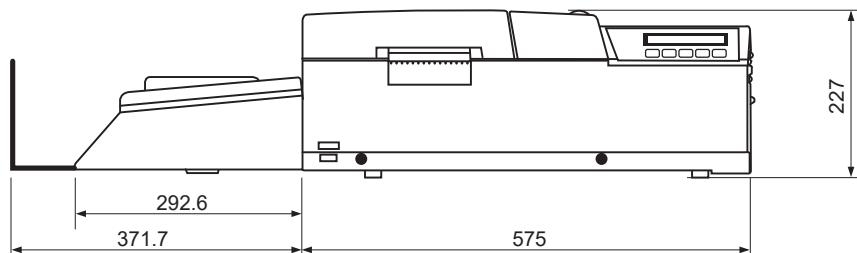
OPTICAL MARK READER SR-8000 HYBRID

External diagram ■ Accessory kit (Option)

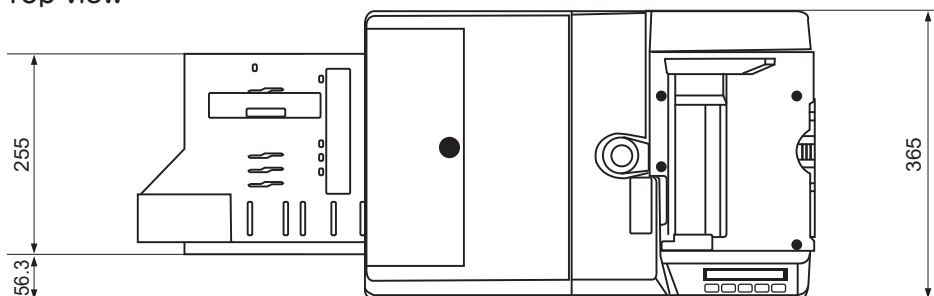
■ Accessory kit (Option)

(Unit : mm)

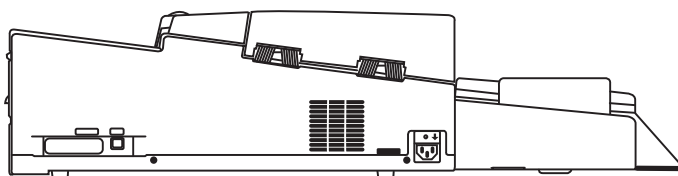
Front view



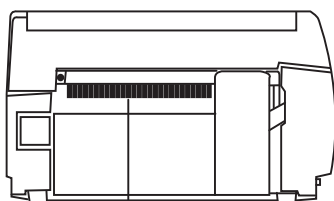
Top view



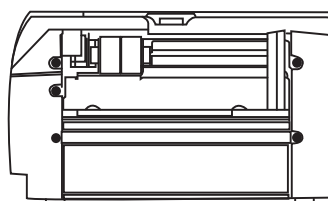
Rear view



Left view



Right view



List of menu modes

Setting menu	Setting item	Setting value
Setting of Interface	Select Interface	<input type="text" value="USB"/>
	Device ID	<input type="text" value="0"/> ~ 126
Setting of Reading	Setting of Column	1 ~ (<input type="text" value="maximum"/>) Columns *1
	Reading Method	Direct , Control fore , Control back, FACOM, Mark to mark Mark to mark *2
	Magnification (display only when timing control types are selected)	1 ~ <input type="text" value="3"/> ~ 9 times (for top-end timing control) 2 ~ <input type="text" value="3"/> ~ 9 times (for bottom-end timing control)
	Reading Side (only when back-sided reading unit is installed)	Single Side , <input type="text" value="Double Side"/>
	Paper Weight	Automatic, 84g/m ² , <input type="text" value="105g/m²"/> , 128g/m ² , 157g/m ²
	Paper Size	standard (14 inch), A4 size (11.7 inch), Short (7.4 inch)
Setting of Error Detection	Automatic Paper Discharge	<input type="text" value="Yes"/> , No
	Sheet Empty Detection	Yes , <input type="text" value="No"/>
	Timing Mark Error Detection	<input type="text" value="Yes"/> , No
	Double-Feeding Detection	<input type="text" value="Yes"/> , No
	Left End Skew Detection	<input type="text" value="Yes"/> , No
Setting of Buzzer	Buzzer Control	<input type="text" value="Valid"/> , Invalid
	Buzzer Sound Adjustment (displayed only when it's valid)	1 ~ <input type="text" value="3"/> ~ 5
Setting of Printer	Printer Control	Valid , <input type="text" value="Invalid"/>
	Size	<input type="text" value="3.2mm"/> , 4.0mm, 4.8mm, 5.6mm, 6.4mm
	Character Pitch	<input type="text" value="0.8mm"/> ~ 92.0mm , 0.8 Pitch
Setting of Electric Power	Time for Power Save	None , 1 Minute ~ <input type="text" value="5 Minutes"/> ~ 60 Minutes
	Time for Standby	None , 1 Minute ~ <input type="text" value="5 Minutes"/> ~ 60 Minutes

OPTICAL MARK READER SR-8000 HYBRID

List of menu modes

Setting menu	Setting item		Setting value
Display Mode	Display Info	Main Body Unit	(01 ~ zz) *3
		Front Reading Unit	(01 ~ zz) *3
		Back Reading Unit (only when backsided reading unit is installed)	(01 ~ zz) *3
		Select stacker unit	(01 ~ zz) *3
		Barcode Unit (only when the barcode unit is installed)	(01 ~ zz) *3
		Main Body Unit 2	(01 ~ zz) *3
		Image Unit	(01 ~ zz) *3
	Type of front Reading Sensor	Sensor Pitch	(1/6, 0.2, 0.25, 0.3, 0.2 inch C) *3
		Sensor of Type	(Infra Red, Visible Red) *3
	Type of Back Reading Sensor (Displayd only for back-side unit)	Sensor Pitch	(1/6, 0.2, 0.25, 0.3, 0.2 inch C) *3
		Sensor of Type	(Infra Red, Visible Red) *3
	Type of Option	Reading Sensor Unit	(Single Side, Double Side) *3
		Select stacker unit	(Not Cartridge, Cartridge) *3
		Barcode Unit (only when the barcode unit is installed)	(Not Unit, Valid) *3
	Total count		(00000000 ~ 99999999)
	Serial number		(000000000 ~ zzzzzzzzz)
Test Mode	Feed Test 1		Start , <input type="button" value="Stop"/>
	Feed Test 2		Start , <input type="button" value="Stop"/>
	Marking Test		Start , <input type="button" value="Stop"/>
	Printer jet test	Jet Test Start	Start

*1 Maximum number of columns to read differs depending on device sensor pitch.

*2 Factory default values differs depending on device sensor pitch.

1/6 inch : Direct under type 0.2 inch, 0.25 inch, 0.3 inch, 0.2 inch C :

Top-end timing control type.

*3 Data in parenthesis will appear according to options installed in the device.

☐ indicates factory default values.

Error displays and countermeasures

1. Errors

If an error occurs, complete the relevant procedures listed below to resolve and clear the cause of the error. If unable to clear the error using the procedures given, contact your dealer for assistance.

(1) Hardware errors

[Main body unit]

Error	Explanation	Code	Procedures for Resolving and Clearing Errors
Memory error 1	Internal memory error 1	A1	Cannot be resolved *1
Memory error 2	Internal memory error 2	A2	
Hopper drive error	Hopper operating error	A3	
Download error	Error while downloading to the main body	A4	
Sensor type error	<ul style="list-style-type: none"> · Sensor specifications for front surface/back surface reading unit are wrong · Sensor specifications for front surface/back surface reading unit are wrong 	A5	
Optional error	Optional unit detection error	A6	
Power supply voltage error	A irregularity is detected in power supply supervisory voltage of control board	A8	

[Reading unit]

Error	Explanation	Code	Procedures for Resolving and Clearing Errors
Communication error	Line error occurred between the device and the front side reading unit.	B1	Cannot be resolved *1
	Line error occurred between the device and the back side reading unit.		
Internal com. error	Front side reading unit doesn't reply	B2	
	Back side reading unit doesn't reply		
Memory error	Front side reading unit memory error	B3	
	Back side reading unit memory error		
Adjusted value error	Offset value of front side reading sensor exceeds acceptable level.	B4	
	Offset value of back side reading sensor exceeds acceptable level.		
Download error	Front side reading unit download error	B5	
	Back side reading unit download error		
Internal error	Front side reading unit internal error	B6	
	Back side reading unit internal error		
Version error	Front side reading unit version does not correspond to the main body unit.	B7	
	Back side reading unit version does not correspond to the main body unit.		
	Front and back side reading unit versions do not match.		

[Barcode unit]

Error	Explanation	Code	Procedures for Resolving and Clearing Errors
Communication error	Line error occurred between the device and the barcode unit.	C1	Cannot be resolved *1
Internal com. error	Barcode unit doesn't reply.	C2	
Memory error	Barcode unit memory error.	C3	
Sensor error	Error occurred with barcode sensor.	C4	
Download error	Barcode unit download error.	C5	
Internal error	Barcode unit internal error.	C6	
Version error	Barcode unit version does not correspond to the main body unit.	C7	
Barcode recognition control error	Barcode recognition control error	C8	

[Select stacker unit]

Error	Explanation	Code	Procedures for Resolving and Clearing Errors
Communication error	Line error occurred between the device and the select stacker unit.	E1	Cannot be resolved *1
Internal com. error	Select stacker unit doesn't reply.	E2	
Memory error	Select stacker unit memory error.	E3	
Download error	Select stacker unit download error.	E4	
Internal error	Select stacker unit internal error.	E5	
Version error	Select stacker unit version does not correspond to the main body unit.	E6	
Driver error	A driver error occurred in the drive system of the select stacker unit.	E7	

[Image reading unit]

Error	Explanation	Code	Procedures for Resolving and Clearing Errors
Download error	Error when downloading to the image reading unit	J1	Cannot be resolved *1
External Flash reading error	External Flash reading error	J4	
External Flash writing error	External Flash writing error	J5	
CIS error	CIS error	J9	
FPGA error	FPGA error	K1	
Version error	Mismatched the firmware in the Image reading unit	K3	
Image control error	Image control error	K4	

***1 Errors that cannot be resolved**

Turn the power off and turn it back on after a while. If the error cannot be resolved by turning the power off and on, contact the dealer where you purchased.

(2) Transmission errors

Error	Explanation	Code	Procedures for Resolving and Clearing Errors
Command error	A non-specified command code was received.	F5	<ul style="list-style-type: none"> • Press the (CLEAR) switch (or execute the clear error command). • Check to make sure that the USB cable is connected properly. • Check the details of the host application program. • Check the details of the controller for the relevant application.
Parameter error	A non-specified parameter was received.	F6	
Protocol error	While processing a command, another command was received	F7	

*If a communication system error occurs, all data received by the OMR at that time will be invalid.

(3) Cover open errors

Error	Explanation	Code	Procedures for Resolving and Clearing Errors
Cover open	The cover of the main body unit is open.	G1	Make sure to firmly and securely close the top cover on the device.
Select stacker unit cover open	Front door of the select stacker unit is open.	G2	Make sure that the front door on the select stacker unit is firmly and securely closed.

*When the cover is closed, errors and warnings other than hardware errors will be cancelled.

(4) Jam errors
[Main body unit]

Error	Explanation	Code	Procedures for Resolving and Clearing Errors
No feed	Paper is not feeding though paper-feeding operation has started.	H1	<ul style="list-style-type: none"> Reset paper. Press the (CLEAR) switch (or execute the clear error command). Clean the rollers.
Jam at paper-feeding detection sensor	A paper jam occurred at the paper-feeding detection sensor.	H2	<ul style="list-style-type: none"> Remove any sheets that have become jammed or sheets inside the device.
Jam at reading start detection sensor	A paper jam occurred at the reading start detection sensor.	H3	<ul style="list-style-type: none"> Press the (CLEAR) switch (or execute the clear error command).
Jam at reading start detection sensor	A paper jam occurred at the main body unit paper discharge detection sensor.	H4	<ul style="list-style-type: none"> Clean the rollers. Check to make sure there are no foreign objects within the machine and remove as necessary
Device sheet interval error	The sheet interval is below the set interval.	H5	

[Select stacker unit]

Error	Explanation	Code	Procedures for Resolving and Clearing Errors
Jam at printing start detection sensor	A paper jam occurred at the printing start detection sensor.	I1	<ul style="list-style-type: none"> Remove any sheets that have become jammed or sheets inside the device Press the (CLEAR) switch (or execute the clear error command). Clean the rollers. Check to make sure there are no foreign objects within the machine and remove as necessary
Jam at main paper discharge sensor	A paper jam occurred at the main paper discharge sensor.	I2	
Jam at selected paper discharge sensor	A paper jam occurred at the selected paper discharge sensor.	I3	
Paper jam in the top paper feed route	A paper jam occurred in the top paper feed route.	I4	
Paper jam in the bottom paper feed route	A paper jam occurred in the bottom paper feed route.	I5	
Stacker sheet interval error	The sheet interval is too low.	I6	

2. Warnings

(1) Components

Error	Explanation	Code	Procedures for Resolving and Clearing Errors
Back side reading unit unconnected	Back surface reading unit is not installed.	P1	<ul style="list-style-type: none"> • Check if the back side reading unit is installed. • Press the (CLEAR) switch (or execute the clear error command).
Barcode unit not connected	The barcode unit is not connected to the device.	P2	<ul style="list-style-type: none"> • Check to see if the barcode unit is connected to the unit. • Press the (CLEAR) switch (or execute the clear error command).
Printer unit unconnected	Printer cartridge is not installed.	P3	<ul style="list-style-type: none"> • Press the (CLEAR) switch (or execute the clear error command). • Set printer control invalid. • Check if the ink cartridge is installed. • Check if the printer connector is connected. • Remove the ink cartridge once and reinstall.
Select stacker unit unconnected	Select stacker unit is not connected.	P4	<ul style="list-style-type: none"> • Check if the Select stacker unit is connected. • Press the (CLEAR) switch (or execute the clear error command).

(2) Paper feeding

Error	Explanation	Code	Procedures for Resolving and Clearing Errors
Sheet empty	There is no paper in the hopper or the internal units.	Q1	<ul style="list-style-type: none"> Press the CLEAR switch (or execute the clear error command). Place paper back on the hopper.
Double feed error	Two or more sheets were fed simultaneously.	Q2	<ul style="list-style-type: none"> Press the CLEAR switch (or execute the clear error command). Separate the sheets to loosen them before placing them on the hopper to prevent jams. Check the setting for the paper weight dial. The setting of the double-feed sensor may be too low for ream weight of the mark sheet. Check the ream weight setting from the operation panel of the main unit. (Reference) [■ Setting paper weight [Paper Weight]] P.32)
Left end skew error	Paper was fed crooked.	Q3	<ul style="list-style-type: none"> Press the CLEAR switch (or execute the clear error command). Check the position of the paper guide and make sure that positioned so as to ensure that the sheets are be lined up properly. Clean the image reading sensor on the back of the reading lens with ethanol. (Reference) [Error displays and countermeasures] P.83

(3) Operation errors

Error	Explanation	Code	Procedures for Resolving and Clearing Errors
Hopper stops	Interlock on the side of the paper-feeding roller operated.	R1	<ul style="list-style-type: none"> Release the interlock switch. Press the CLEAR switch (or execute the clear error command).
Drawing out error	Sheet was pulled out after it was fed.	R2	<ul style="list-style-type: none"> Place paper back on the stacker. Press the CLEAR switch (or execute the clear error command).
Timing mark error	Only three or fewer timing marks were detected on the front side of the read sheet.	R4	<ul style="list-style-type: none"> Check the orientation of the sheets. Check the specifications of the paper. Press the CLEAR switch (or execute the clear error command).
	Only three or fewer timing marks were detected on the back side of the read sheet.		
Setting error	When reading front side marks using a timing control type, the next timing mark is detected within the area set by the control multiple number.	R5	<ul style="list-style-type: none"> Set a reading type and a control multiple number according to paper specifications. Check the specifications of the paper. Press the CLEAR switch (or execute the clear error command).
	When reading back side marks using a timing control type, the next timing mark is detected within the area set by the control multiple number.		
Image memory overflow	A sheet longer than specified was read.	R6	<ul style="list-style-type: none"> Press the CLEAR switch (or execute the clear error command).
USB connection error	An error occurred in the USB connection.	R7	<ul style="list-style-type: none"> Make sure USB port of PC and USB cable are USB3.0-compliant. Turn off the device and reconnect the USB cable. Then turn on the device.
Sheet size setting error	A sheet with dimensions outside of the set range was fed into the device.	R8	<ul style="list-style-type: none"> Remove any sheets from inside the device. Press the CLEAR switch (or execute the clear error command). Configure the sheet size settings to match the dimensions of the sheet being read by the device.

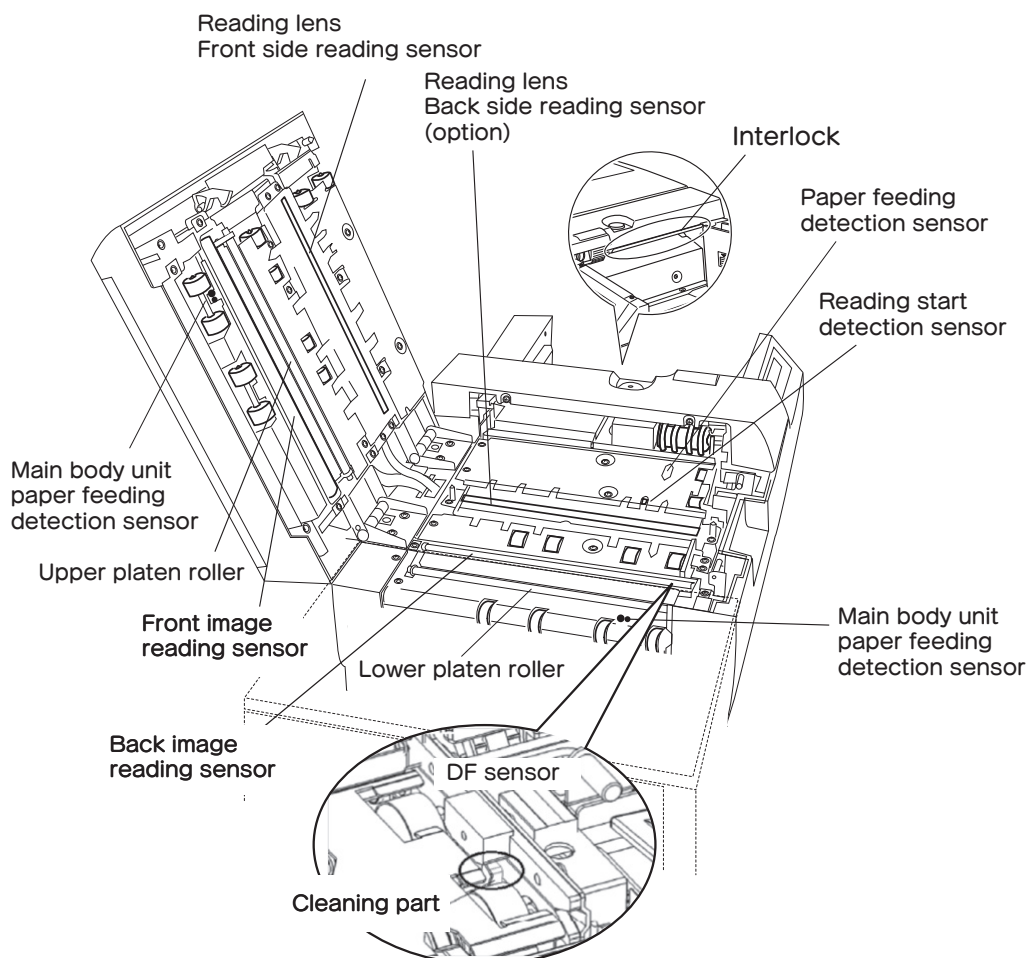
Error	Explanation	Code	Procedures for Resolving and Clearing Errors
Sheet layout error	The next sheet was detected before the barcode on the previous sheet finished being read due to the barcode being located within the clear area for the rear edge on a sheet fed horizontally.	R9	<ul style="list-style-type: none"> • Use with sheets positioned within the reading area for barcodes on sheets fed horizontally. • Press the (CLEAR) switch (or execute the clear error command).
Black level error	There is light colored stain on the front side reading unit.	S2	<ul style="list-style-type: none"> • Check the reader unit for dirt and other contamination and clean as necessary. • Press the (CLEAR) switch (or execute the clear error command).
	There is light colored stain on the back side reading unit.		
Reading start detection sensor soiling error	There is stain on reading start detection sensor.	S3	<ul style="list-style-type: none"> • After cleaning off the sensor, turn the power back on.
Sheet edge detection error	An error has occurred in the edge detection of a sheet.	S5	<ul style="list-style-type: none"> • Check the image reading sensor and clean it if it is dirty. • Check to see if the sheet is dirty. • Press the (CLEAR) switch (or execute the clear error command).
Barcode control error	An error occurred in barcode recognition.	S6	<ul style="list-style-type: none"> • Review the barcode setting. • Check if the barcode setting and the form are correct. • Press the (CLEAR) switch (or execute the clear error command).

OPTICAL MARK READER SR-8000 HYBRID

Error displays and countermeasures

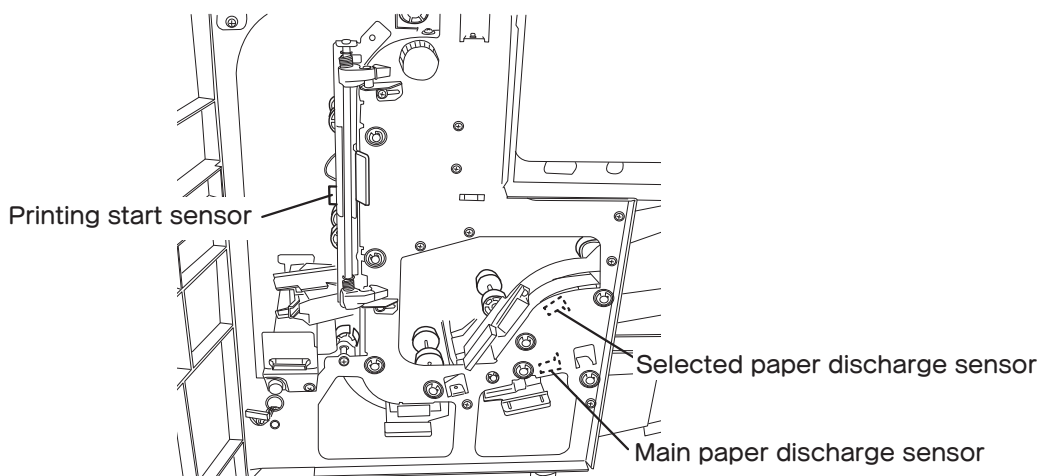
[Main body unit]

Error	Explanation	Code	Procedures for Resolving and Clearing Errors
Form left in hopper	A sheet remained in the paper feeding detection sensor	T1	<ul style="list-style-type: none"> Remove leftover sheets of paper from the device. Press the CLEAR switch (or execute the clear error command).
	The output abnormality of the DF sensor is detected.		
Form left in reading sensor	A sheet remained in the reading start detection sensor.	T2	<ul style="list-style-type: none"> When a sheet is not left, sensor abnormality is thought about. Clean the sensor T1:DF sensor T2:Start detection sensor * When it is not improved by cleaning → Cannot be resolved *1
Form left in end of main body	A sheet remained in the main body unit paper discharge detection sensor.	T3	



[Select stacker unit]

Error	Explanation	Code	Procedures for Resolving and Clearing Errors
Form left in printer printing sensor	A sheet remained in the printer printing start detection sensor.	T4	<ul style="list-style-type: none"> Remove leftover sheets of paper from the device. Press the CLEAR switch (or execute the clear error command).
Form left in main paper discharge sensor	A sheet remained in the main paper discharge sensor.	T5	
Form left in selected paper discharge sensor	A sheet remained in the selected paper discharge sensor.	T6	



OMR glossary

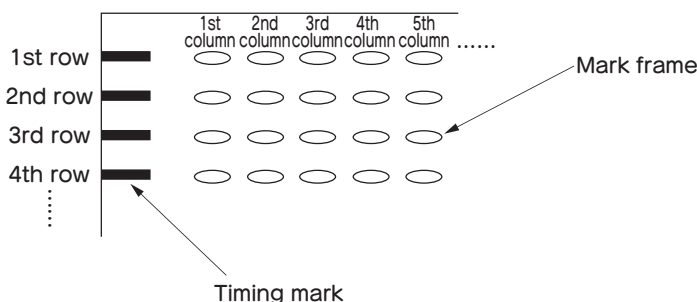
Optical Answer (OMR Sheets)

[form]

- (1) OCR paper (optical character recognition paper)
Paper for data processing to optically read letters and symbols.
It should not be dusty, and it should be smooth, stiff, abrasion resistant, and antistatic.
JIS X 9004 (printing specifications for optical character recognition)
- (2) Bond paper
Paper made from pure chemical pulp. Used for printing and writing.
JIS P 3101 (printing paper) JIS P 3201 (writing paper)
- (3) Paper weight
Paper is categorized by weight.

[Column and Row]

Marking frames are placed in rows, and timing marks in columns.



[Dropout color]

Refers to colors pre-printed or written on documents that people can see but it don' t appear when read with an image scanner or other devices.

- (1) Print darkness of dropout colors is controlled with PCS values.
- (2) Dropout colors are used for printing within reading areas and clear areas.



Appendix ■ Sheet creation reference - [(6) C I e a r areas] P.ii

- (3) Dropout colors are selected based on the light source wavelength of the scanner sensor used for OMR.
- (4) A peak sensitivity wavelength different from print colors shall be selected when you do not want to drop out character frames or other elements during image scanning.

Light source wavelength and dropout color

reading sensor	Light source for the reading sensor		Dropout colors	Readable colors
	Wavelength (nm)	Colors		
mark	940 (standard)	Infra red light	Colors except readable colors	Black (pencil)
	660 (optional)	Red	Reddish tone	Colors except dropout colors
image	650	Red	Reddish tone	Colors except dropout colors
	545	Green	Greenish tone	
	465	Blue	Bluish tone	

PCS [Printed Contrast Signal]

Refers to the reflectance ratio (contrast) of printed marks, symbols, and letters as opposed to reflectance of non-printing areas.

The calculation formula is as follows.

$$PCS = \frac{\text{White reflectance} - \text{black reflectance}}{\text{White reflectance}}$$

When reflectance of non-printing areas is 70%, and reflectance of printed marks, symbols, and letters is 10%, the PCS will be 0.857.

*There are two measures for measuring a PCS value: black backing method and white backing method. All PCS values shown in this document have been measured using the black backing method, which uses a black board. The black backing method is a technique that uses a black board whose reflective rate is 0.5% or less for backing of a specimen.

[Timing control type]

If paper has pre-printed timing marks, the scanning area (reading area) of targeted mark frames will be determined by such timing marks.

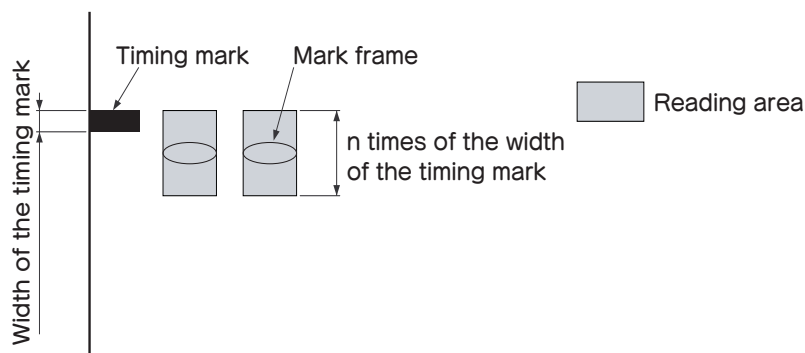
Timing control type is a method to determine the reading area based on the timing mark width. Other methods include direct under type, mark to mark type, and FACOM type.

Example: Timing control type to scan N time (*1) the timing mark width.
Set multiple numbers by using the software controlling OMR.

*1: n=Settings to OMR.

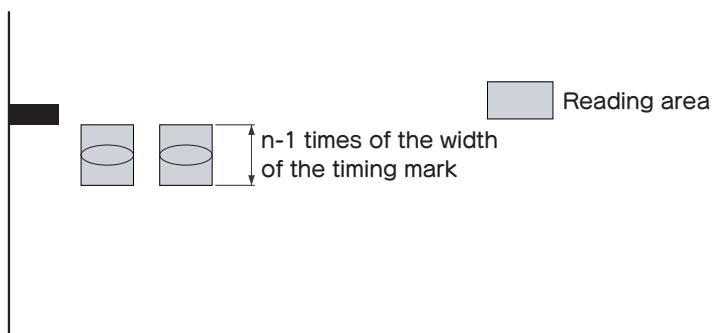
● Top-end timing control type:

Reads n times of the width of a timing mark from the beginning of the timing mark.



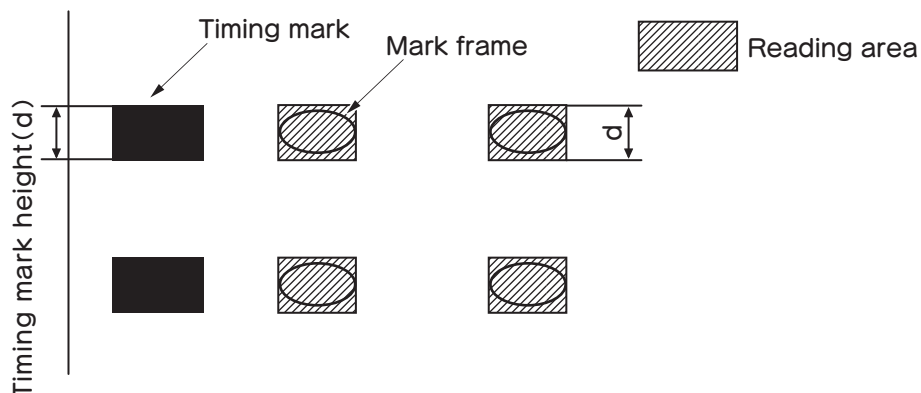
● Bottom-end timing control type:

Reads n-1 times of the width of a timing mark from the end of the timing mark.



[Direct under type]

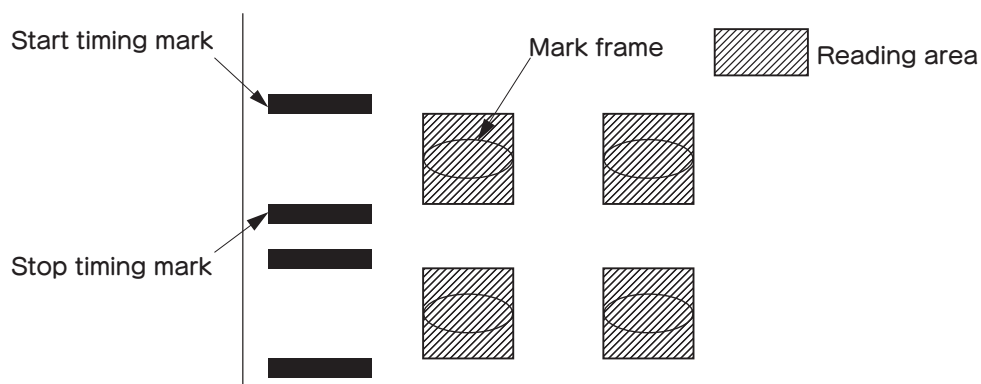
If paper has pre-printed timing marks, the scanning area (reading area) of targeted mark frames will be determined by such timing marks. Direct under type is a method of reading an area that is the same as the timing mark height.



["FACOM" type]

If paper has pre-printed timing marks, the scanning area (reading area) of targeted mark frames will be determined by such timing marks.

FACOM type is a method of determining the reading area based on a pair of start timing and stop timing marks. Other methods include timing control type, direct under type, and mark to mark type.



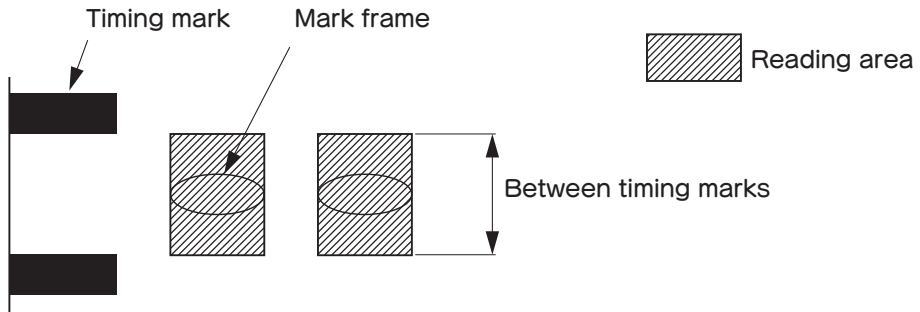
[Mark to mark type]

If paper has pre-printed timing marks, the scanning area (reading area) of targeted mark frames will be determined by such timing marks.

Mark to mark type is a method to read areas between two timing marks.

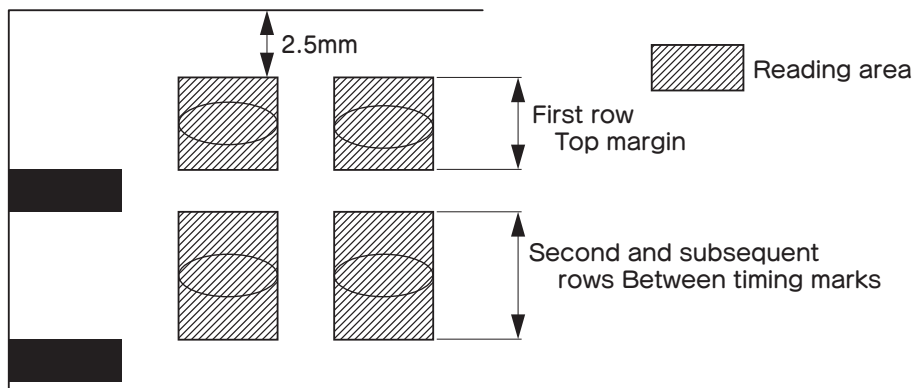
● Mark to mark type (without top-end margin reading) :

Reads area between timing marks.



● Mark to mark type (with top-end margin reading) :

Reads the front margin of the sheet as the first row, and area between timing marks as the second and subsequent rows.



Errors

[Jam]

A paper jam error caused by media when paper is being fed.

There are two kinds of jams: static jams detected when the device is at rest, and operational jams is detected while the device is running.

Operational jams include double-feeding jams and no-feeding jams.

[Skew]

Refers to paper that is slanted against the paper feeding standard.

Perforated paper, paper unevenly cut, and curled or bent paper is likely cause skew errors.

[No feed]

Refers to paper doesn't get fed during paper feeding operations.

If such an error occurs, the device assesses it as a paper feeding error, and notifies user of the error.

[Double-feeding]

Refers to two or more sheets being fed at the same time during paper feeding operation. If such an error occurs, the device assesses it as a paper feeding error, and notifies users of the error.

Equipment

[Hopper]

A place to put sheets to be processed for marking and compilation.

[Stacker]

This refers to the place that sheets that have been read are temporarily stacked.

Stacker volume refers to the number of sheets that can be accommodated.

Example : stacker volume 200 sheets.

[Transmission interface]

A hardware device that works as an interface connecting together a computer and an OMR.

[Writing implements]

Readable marks and unreadable marks depend on the writing instruments used.

This can also differ according to the light source that the reading sensor uses.

Relationships between sensors used for OMR (light source) and writing implements.

Readable mark colors and writing implement	Readable mark colors	Light source for the reading sensor	
		Wavelength (nm)	Colors
Pencil	Black	940 nm (Standard)	Infra red light
Pencil, fountain pen, water/oil base ballpoint pen, water/oil base marker	Black, blue	660 nm (Option)	Red (Visible light)

Appendix

■ Sheet creation reference

You can use paper that you make yourself with this device in addition to the optional paper that we offer. If you make your own paper, follow the specifications below.

(1) Sheet size

Height 110 to 355.6 mm Width 63.5 to 228.6 mm

Do not cut or round the corners on the reference side (timing mark side).

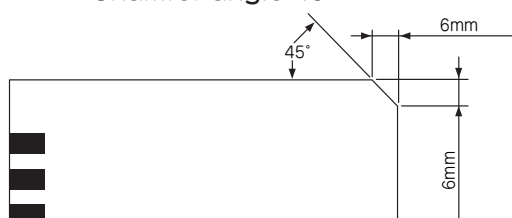
*Cut corners and round corners

They help you to easily check if paper is placed in the right direction, and help you to manage paper and keep it orderly.

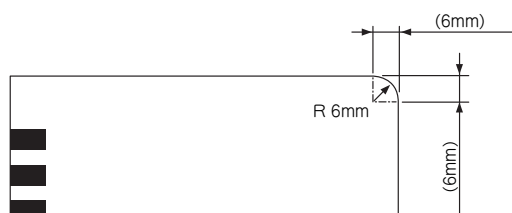
Cut paper corners straight or rounded according to the specifications shown below.

Straight cut corners: standard 6mm or less.

Chamfer angle 45°



Round corners: R 6mm



(2) Weight and thickness

kg (ream weight)	72 to 135
g/m ² (grams per sheet)	84 to 157
mm (thickness)	0.1 to 0.19

(3) Paper quality

OCR paper, bond paper, or recycled OCR paper (recycled OCR paper composition 50%).

(4) Printing (printing surrounding mark fields)

① Near-infrared sensor (for pencil marks)

i. Printing of marking frames and dotted lines: Print at a PCS value of 0.15 or below. (The black backing method shall be employed for measurement.)

ii. Printing of timing marks and ID marks : Print using ink with a PCS value of 0.85 or higher.

*PCS values are measured at a spectral band of B900 with a read sensor with a wavelength of 940 nm.

② Visible light sensor (for pencil or ball-point pen marks)

i. Printing of marking frames and dotted lines: Print at a PCS value of 0.15 or below. (The black backing method shall be employed for measurement.)

ii. Printing of timing marks and ID marks : Print using ink with a PCS value of 0.85 or higher.

*PCS values are measured at a spectral band of B900 with a read sensor with a wavelength of 660 nm.

(5) Printing position accuracy

Parallelism: Adjust printing parallelism for timing marks and data marks 0.2 mm or less based on the cutting edge of the timing mark side.

Perpendicularity: Adjust printing perpendicularity for timing marks and data marks 0.2 mm or less based on the cutting edge of the timing mark side.

Other: Adjust to ± 0.2 mm or less of specified measurements unless otherwise specified.

(6) Clear areas

Printing is forbidden for the areas from ① to ⑤ below. Do not attempt to print in any colors except the dropout colors (PCS value is 0.15 or below).

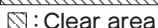
① Areas between timing marks and between the top end (bottom end) timing mark and the top end (bottom end) timing mark.

② Top margin :Area between the sheet end to the first timing mark (9mm or more).

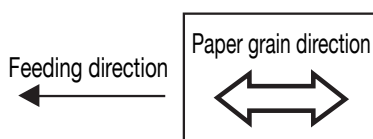
③ Bottom margin :Area between the sheet end to the first timing mark (9mm or more)

④ Side margin :Area of 4 mm in the opposite side of the sheet timing mark.

- *The top margin is 5mm or more and the bottom margin is 6mm or more for an IBM card size paper.



- Feed paper in the direction of its grain to eliminate curling.



- Descriptions, etc. can be printed in areas clear areas. However, never print anything at PCS 0.15 or more other than timing marks in timing mark columns from the top edge of sheet to the bottom edge on either side of the paper.

- You can print on the back surface except in clear areas. However, do not print at PCS exceeding 0.15 in clear areas on the front surface in case of bleeding through from the back.

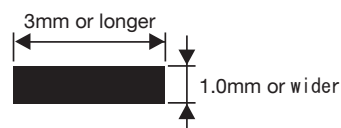
- Set an ID mark for identification as necessary.

Size : 1.0 mm or wider x 3 mm or longer.

Reading darkness : PCS 0.85 or higher

Angle : ± 5 degree or less

(against the line perpendicular to the standard side)



(11) Mark frame

Rectangles, ovals, and circle shapes have been conventionally used for mark frames.

Frame size should be smaller than the reading area in various reading methods (direct under type, timing control type, mark to mark type, and FACOM type).

Recommended sizes are as follows.

Rectangles : Vertical (V) 1.5 to 2.5 mm Horizontal (H) 3 to 4.3 mm

Ovals : Vertical (V) 0.8 to 1.5 mm Horizontal (H) 3 to 3.5 mm

Circles : Diameter 3.0 to 3.5 mm

*Maximum horizontal length differs depending on sensor pitch.

P (inch)	1/6"	0.2"	0.25"	0.3"
Sensor pitch (mm)	4.23	5.08	6.35	7.62
length Sensor pitch (mm)	3.53	4.38	5.65	6.92

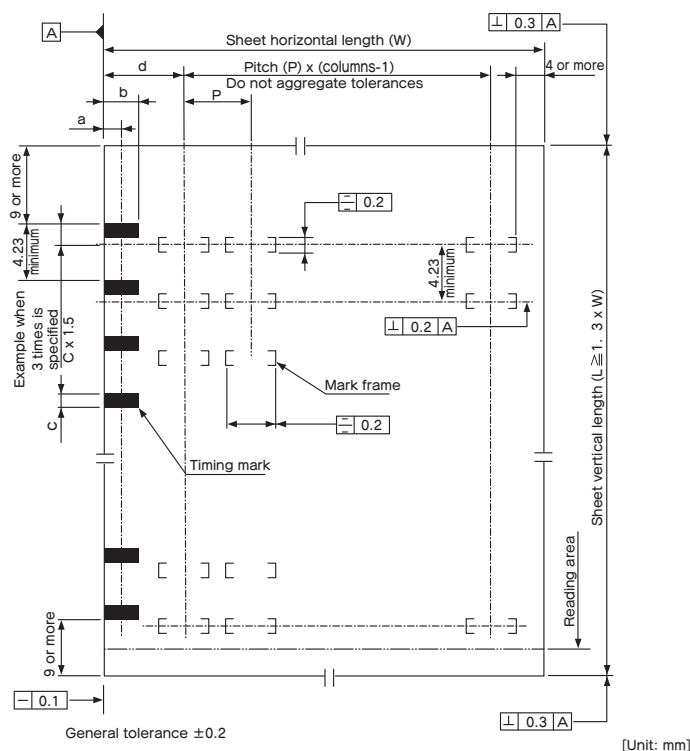
*Printing color: print at PCS 0.15 or less in dropout color.

(12) Required number of timing marks

An error will occur unless at least four timing marks are printed.

(On both sides for double-sided printing.)

(13) Paper dimensions [Direct under type sheet]



	1/6	0.2	0.25	0.3	0.2C	Size	W×L (mm)	Maximum number of columns				Maximum number of rows [Note 2]
P (in.)	1/6"	0.2"	0.25"	0.3"	0.2" C			1/6"	0.2"	0.25"	0.3"	
(Converted to mm)	4.23	5.08	6.35	7.62	5.08	Postcard	100×148	20	17	14	11	31
a	6.99	1.91	1.78	2.50	5.08	A5	148×210	31	26	22	17	46
b	3.81	3.81	3.56	5.00	5.08	B5	182×257	39	33	27	22	57
c [Note1]	1.27	1.27	1.27	1.27	2.2	A4	210×297	46	38	32	25	66
d	11.43	11.75	6.35	14.50	13.97	8.5"	216×279	47	40	33	26	62
						9"	228.6×355.6	48	40	33	27	80

*Printing specifications for IBM card sizes are given on the next page.

【Note 1】 Height of timing mark: Maximum size of C is 12 mm.

【Note 2】 Maximum number of rows indicates the number of timing marks.

【Note 3】 a=Sheet size is between the left end (according to the figure above) and the center of the timing mark.

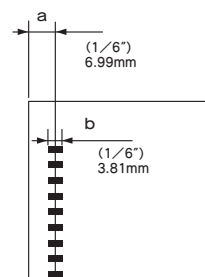
b=Indicates a timing mark width.

Thus the timing mark will be off the left end of a sheet when $a > b/2$.

[1/6, 0.2C sheet]

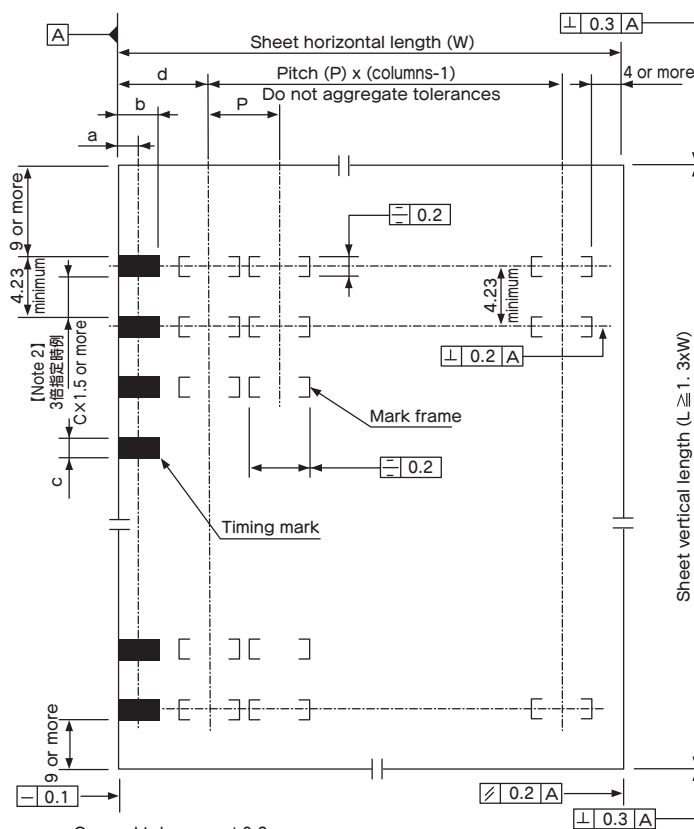
The sheet coincides with the left end of the timing mark when $a = b/2$. (0.2, 0.25, or 0.3 sheet)

【Note 3】
When $a > b/2$



[illegible]

[Timing control type sheet]



General tolerance ± 0.2

[Unit: mm]

	1/6	0.2	0.25	0.3	0.2C
P (in.)	1/6"	0.2"	0.25"	0.3"	0.2"
(Converted to mm)	4.23	5.08	6.35	7.62	5.08
a	6.99	1.91	1.78	2.50	5.08
b	3.81	3.81	3.56	5.00	5.08
c	0.89	0.89	0.89	0.89	0.89
d	11.43	11.75	6.35	14.50	13.97

Size	W×L (mm)	Maximum number of columns				Maximum number of rows [Note 1]
		1/6"	0.2"	0.25"	0.3"	
IBM*	82.55×187.3	16	13	12	9	40
Postcard	100×148	20	17	14	11	31
A5	148×210	31	26	22	17	46
B5	182×257	39	33	27	22	57
A4	210×297	46	38	32	25	66
8.5"	216×279	47	40	33	26	62
9"	228.6×355.6	48	40	33	27	80

【Note 1】 Maximum number of rows indicates the number of timing marks.

【Note 2】 Set magnification values in order for the gap to be possible 1.4 mm or more from the top-end of next timing mark.

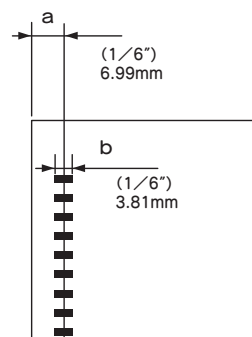
[Note 3] a=Sheet size is between the left end (according to the figure above) and the center of the timing mark. b=Indicates a timing mark width. Thus the timing mark will be off the left end of a sheet when $a > b/2$.

[1/6, 0.2C sheet)]

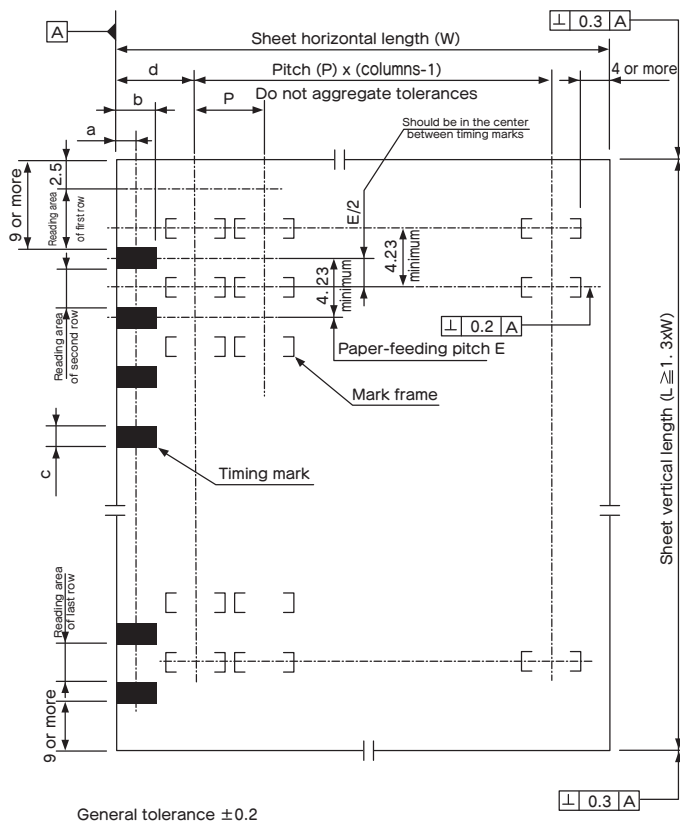
The sheet coincides with the left end of the timing mark when $a=b/2$. (0.2, 0.25, or 0.3 sheet)

【Note 3】

When $a > b/2$



[Mark to mark type sheet]



General tolerance ± 0.2

[Unit: mm]

	1/6	0.2	0.25	0.3	0.2C	Size	W×L (mm)	Maximum number of columns				Maximum number of rows (Note 1)
P (in.)	1/6"	0.2"	0.25"	0.3"	0.2"			1/6"	0.2"	0.25"	0.3"	
(Converted to mm)	4.23	5.08	6.35	7.62	5.08	Postcard	100×148	20	17	14	11	31
a	6.99	1.91	1.78	2.50	5.08	A5	148×210	31	26	22	17	46
b	3.81	3.81	3.56	5.00	5.08	B5	182×257	39	33	27	22	57
c	1.50	1.50	1.50	1.50	1.50	A4	210×297	46	38	32	25	66
d	11.43	11.75	6.35	14.50	13.97	8.5"	216×279	47	40	33	26	62
						9"	228.6×355.6	48	40	33	27	80

*Printing specifications for IBM card size are described on the next page.

[Note 1] Maximum number of rows indicates the number of timing marks.

[Note 2] a = Sheet size is between the left end

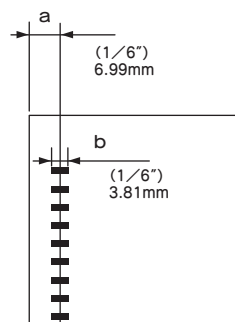
(according to the figure above) and the center of the timing mark. b=Indicates a timing mark width. Thus the timing mark will be off the left end of a sheet when $a > b/2$.

[1/6, 0.2C sheet]

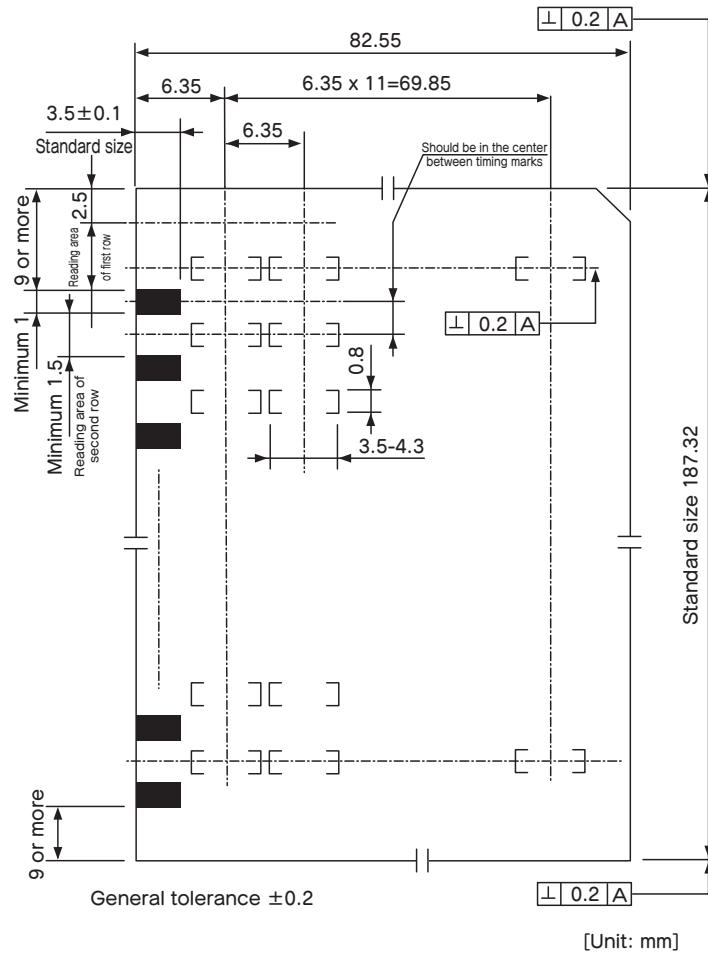
The sheet coincides with the left end of the timing mark when $a = b/2$. (0.2, 0.25, or 0.3 sheet)

[Note 2]

When $a > b/2$



[Mark to mark type card (0.25" IBM card size)]





SEKONIC CORPORATION

Address : 7-24-14, Oizumi-Gakuen-Cho, Nerima-ku, Tokyo
178-8686, Japan
Telephone: +81-3-3978-2375 Fax: +81-3-3922-2144