



Operator Manual

For printer model:

S84 **ex** / S86 **ex**



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Before You Start

Thank you for purchasing this SATO S84-ex/S86-ex print engine (hereafter referred to as “the printer”). This manual supplies basic information on how to operate the printer. Read the manual carefully to understand each function before operation.

Features of the Product

This SATO S84-ex/S86-ex print engine is a high-performance, automated print/apply labeling system with a user-friendly design and equipped with versatile functions. This print engine has a durable design for non-stop operation.

The main features of the printer are as follows:

- Equipped with a two-color backlight LCD and a two-color status LED for improved monitoring of the printer status.
- Durable design for harsh environment.
- High-speed throughput printing with maximum 16 ips print speed and adjustable backfeed speed control.
- Print head can be replaced easily without using extra tools.
- New designed sensor cover with nonstick surface that can be easily removed and cleaned without any tools.
- Easily upload/download data to/from an SD card or USB memory, or by using the SATO All In One Tool application.
- Supports remote printer setting through the SATO All In One Tool application or a web browser.
- Supports a multi-language display menu and printing of Asian fonts.
- Supports emulations in standard firmware.
- Supports various communication interfaces.
- Supports SNTP protocol.

Safety Precautions







This section describes how to safely operate the printer. Be sure to read and understand all instructions carefully before you install and use the printer.








Pictographic Symbols

This operator manual and printer labels use a variety of pictographic symbols. These symbols show the safe and correct operation of the printer and how to prevent injury to others and property damage. The symbol explanations are as follows.

 Warning	The Warning symbol indicates that you can cause death or serious injury if you do not follow the instruction or procedure.
 Caution	The Caution symbol indicates that you can cause injury or property damage if you do not follow the instruction or procedure.

Example Pictographs

-  The  pictograph means “Caution is required”. The pictograph includes a specified warning symbol (for example, the left symbol shows electric shock).
-  The  pictograph means “Must not be done”. The pictograph includes a specified prohibited symbol (for example, the left symbol means “Disassembly prohibited”).
-  The  pictograph means “Must be done”. The pictograph includes a specified mandate action symbol (for example, the left symbol means “Disconnect the power plug from the outlet”).

 Warning	
<p>Place the printer on a stable area</p>  <ul style="list-style-type: none">Place the printer on a stable area. Do not place the printer on an unstable table, slanted surface or an area subject to strong vibration. If the printer falls off or topples, it could cause injury to someone.	<p>Do not place objects into the printer</p>  <ul style="list-style-type: none">Do not place metal or flammable objects inside the printer's opening. If a foreign object gets into the printer, immediately power off the printer and disconnect the power plug from the outlet. Then contact your SATO reseller or technical support center. If you operate the printer in this condition, it could cause a fire or electric shock.
<p>Do not place containers filled with liquid on the printer</p>    <ul style="list-style-type: none">Do not place flower vases, cups, or other containers filled with liquids, on the printer. If any liquid spills into the printer, immediately power off the printer and disconnect the power plug from the outlet. Then contact your SATO reseller or technical support center. If you operate the printer in this condition, it could cause a fire or electric shock.	<p>Do not use other than the specified voltage</p>  <ul style="list-style-type: none">Do not use other than the specified voltage. Doing so could cause a fire or electric shock.

⚠ Warning

Always ground connections



- Always connect the printer's ground wire to a ground. Not grounding the ground wire could cause an electric shock.



Handling of the power cord



- Do not break or change the power cord. Do not place heavy objects on the power cord, heat it, or pull it. Doing so could cause damage to the power cord and cause a fire or electric shock.



- If the power cord becomes damaged (core is exposed, wires broken, etc.), contact your SATO reseller or technical support center. Using the power cord in this condition could cause a fire or electric shock.



- Do not change, overly bend, twist, or pull the power cord. Using the power cord in such a way could cause a fire or electric shock.

When the printer has been dropped or broken



- If the printer is dropped or broken, immediately power off the printer and disconnect the power plug from the outlet. Contact your SATO reseller or technical support center. Using the printer in this condition could cause a fire or electric shock.



Do not use the printer when something is unusual about it



- Continuing to use the printer in the event something is unusual about it, such as smoke or unusual smells coming from it, could cause a fire or electric shock. Immediately power off the printer and disconnect the power plug from the outlet. Then contact your SATO reseller or technical support center for repairs. Under no circumstances should you attempt repairs on your own; it is too dangerous.



Do not disassemble the printer



- Do not disassemble or modify the printer. Doing so could cause a fire or electric shock. Contact your SATO reseller or technical support center to perform internal inspections, adjustments, and repairs.



Using the head cleaning fluid



- Use of flame or heat around the head cleaning fluid is prohibited. Do not heat it or subject it to flames.



- Keep the fluid out of reach of children. If a child accidentally drinks the fluid, immediately consult with a physician.

Print head



- The print head will become hot after printing. Be careful not to touch it when replacing media or cleaning immediately after printing, to avoid getting burned.



- Touching the edge of the print head immediately after printing could cause an injury. Use caution when replacing the media or cleaning the print head.
- Never replace the print head if you have not received the correct training.

⚠ Caution

Do not use in areas of high humidity



- Do not use the printer in areas of high humidity or where condensation forms. If condensation forms, immediately power off the printer and do not use the printer until it dries. Using the printer while condensation is on it could cause an electric shock.

Carrying the printer



- When moving the printer, always disconnect the power cord from the outlet and check to make sure that all external wires are disconnected before moving it. Moving the printer with the wires still connected could cause damage to the cords or connecting wires, resulting in a fire or electric shock.
- Do not carry the printer while it contains media. The media could fall out and cause an injury.
- When setting the printer on the floor or a stand, be sure not to get your fingers or hands pinched under the printer feet.

Power supply



- If your hands are wet, do not operate the power switch, connect the power cord or disconnect the power cord. Doing so could cause an electric shock.

Power cord



- Keep the power cord away from hot devices. Placing the power cord near hot devices could cause the cord's covering to melt and cause a fire or electric shock.
- When disconnecting the power cord from the outlet, be sure to hold the plug. Pulling the cord could expose or break the wires and cause a fire or electric shock.
- The power cord set that comes with the printer is designed especially for this printer. Do not use it with any other electrical devices.

Top cover



- Be careful not to get your fingers pinched when opening or closing the top cover. Also be careful that the top cover does not slip off and drop.

Loading media



- When loading a media roll, be careful not to get your fingers pinched between the media roll and the supply unit.

When not using the printer for a long time



- When not using the printer for a long time, disconnect the power cord from the outlet to maintain safety.

During maintenance and cleaning



- When maintaining and cleaning the printer, disconnect the power cord from the outlet to maintain safety.

Precautions for Installation and Handling

Printer operation can be affected by the printer environment.

Refer to the following instructions for installation and handling of the S84-ex/S86-ex printer.

Select a Safe Location

Place the printer on a surface that is flat and level.

If the surface is not flat and level, this may cause bad print quality. This may also cause a malfunction and decrease the life span of the printer.

Do not place the printer on a location that produces vibration.

Giving serious vibration or shock to the printer may cause a malfunction and shorten the life span of the printer.

Keep the printer out of high temperature and humidity.

Avoid locations subject to extreme or fast changes in temperature or humidity.

Do not place the printer in a location subject to water or oil.

Do not place the printer in a location where it will be exposed to water or oil. Water or oil entering inside the printer may cause a fire, electric shock or malfunction.

Avoid dust.

Dust build up may result in bad print quality.

Keep out of direct sunlight.

This printer has a built-in optical sensor. Exposure to direct sunlight will make the sensor less responsive and may cause the media to be sensed incorrectly. Close the top cover when printing.

Power Supply

This printer requires an AC power supply.

Be sure to connect the printer to an AC power supply.

Connect the power cord to a grounded power outlet.

Make sure that the printer is connected to a grounded power outlet.

Supply a stable source of electricity to the printer.

When using the printer, do not share its power outlet with other electrical devices that could cause power fluctuations and performance issues with your printer.

Regulatory Approval

FCC Warning

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

FCC Statement for Optional Wireless LAN

This device complies with RF radiation exposure limits set forth for an uncontrolled environment.

The antenna used for this transmitter must be installed to provide a separation distance of at least 20 cm from all people and must not be collocated or operating in conjunction with any other antenna or transmitter.

Bluetooth/Wireless Communication

Compliance Statement

This product has been certified for compliance with the relevant radio interference regulations of your country or region. To make sure continued compliance, do not:

- Disassemble or modify this product
- Remove the certificate label (serial number seal) affixed to this product

Use of this product near microwave and/or other wireless LAN equipment, or where static electricity or radio interference is present, may shorten the communication distance, or even disable communication.

Industry Canada (IC) Statement for Bluetooth

This device complies with Industry Canada license-exempt RSS standard(s).

Operation is subject to the following two conditions:

- This device may not cause interference
- This device must accept any interference, including interference that may cause undesired operation of the device

This equipment complies with IC radiation exposure limits set forth for an uncontrolled environment and meets RSS-102 of the IC radio frequency (RF) Exposure rules. This equipment should be installed and operated keeping the radiator at least 20 cm or more away from person's body (excluding extremities: hands, wrists, feet and ankles).

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :

- L'appareil ne doit pas produire de brouillage
- L'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement

Cet équipement est conforme aux limites d'exposition aux rayonnements énoncées pour un environnement non contrôlé et respecte les règles d'exposition aux fréquences radioélectriques (RF) CNR-102 de l'IC. Cet équipement doit être installé et utilisé en gardant une distance de 20 cm ou plus entre le dispositif rayonnant et le corps (à l'exception des extrémités : mains, poignets, pieds et chevilles).

Disposal of Old Electrical & Electronic Equipment (Applicable in the European Union and other European countries with separate collection systems)



A product marked with this symbol on itself or on its packaging shall not be treated as household waste. Instead it shall be handed over to an appropriate collection point for the recycling of electrical and electronic equipment in accordance with local regulations. Inappropriate waste handling of this product may cause detrimental consequences for the environment and damage to human health. The recycling of materials will help to conserve natural resources and contribute to your community. For more detailed information on recycling of this product, contact your local municipal organization, your household waste disposal service or the dealer where you purchased the product.

EN55022 Warning

This is a class A product.

In a domestic environment this product may cause radio interference, in which case the user may be required to take adequate measures.

EN55022 Warnung

Dies ist eine Klasse A Produkt.

In einer häuslichen Umgebung verursacht dieses Produkt vielleicht Radioeinstrahlung in dem Fall, der vom Benutzer vielleicht verlangt wird, adäquate Maßnahmen zu ergreifen.

机器名称: 条形码打印机

部件名称	有毒有害物质或元素					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr6+)	多溴联苯 (PBB)	多溴二 苯醚 (PBDE)
印刷电路板	×	○	○	○	○	○
电源、交流转换器 电池	×	○	○	○	○	○
热敏头、液晶显示屏	×	○	○	○	○	○
电动机、切纸机	×	○	○	○	○	○
树脂 (ABS、PC等)	×	○	○	○	○	○
金属 (铁、非铁金属)	×	○	○	○	○	○
电缆等	○	○	○	○	○	×
包装材料 (纸盒等)	○	○	○	○	○	○

- ：表示该有毒有害物质在该部件所有均质材料中的含量均在SJ/T11363-2006 “电子信息产品中有毒有害物质的限量要求” 的标准规定以下。
- ×：表示该有毒有害物质至少在该部件的某一均质材料中的含量超出SJ/T11363-2006 “电子信息产品中有毒有害物质的限量要求” 的标准规定。

环保使用期限



本标志中的年数，是根据2006年2月28日公布的“电子信息产品污染防治管理办法”和SJ/T11364-2006“产品污染防治标识要求”，适用于在中华人民共和国（除台湾、香港和澳门外）生产或进口的电子信息产品的“环保使用期限”。在遵守使用说明书中记载的有关本产品安全和使用上的注意事项、且没有其他法律和规定的免责事由的情况下，在从生产日开始的上述年限内，产品的有毒、有害物质或元素不会发生外泄或突变，使用该产品不会对环境造成严重污染或对使用者人身、财产造成严重损害。

- 注1): “环保使用期限”不是安全使用期限。尤其不同于基于电气性能安全、电磁安全等因素而被限定的使用期限。产品在经适当使用后予以废弃时，希望依照有关电子信息产品的回收和再利用的法律与规定进行处理。
- 注2): 本标志中的年数为“环保使用期限”，不是产品的质量保证期限。对于同一包装内包含电池、充电器等附属品的产品，产品和附属品的环保使用期限可能不同。

1

Parts Identification

1.1 Printer Orientation

This printer has two types of orientation as below. The media feed direction varies depending on the type of orientation.



Media feed direction

Americas: Standard/Right Hand
Europe/Asia: Left Hand



Media feed direction

Americas: Opposite/Left Hand
Europe/Asia: Right Hand

Note

The pictures in this manual show the S84-ex (Americas: Standard/Right Hand, Europe: Left Hand) printer, unless otherwise stated.

When using the right hand (Americas: Opposite/Left Hand, Europe: Right Hand) model, the picture on the right shows a symmetrical opposite view of your printer.

When using the S86-ex printer, the dimension of the media compartment is larger.

1.2 Parts Identification of the Printer

1.2.1 Front View



① **Operator panel**

② **LCD**

③ **Top cover**

④ **Power (I/O) switch**

Press this switch to power on (I) or power off (O) the printer.

⑤ **Media discharge outlet**

1.2.2 Rear View



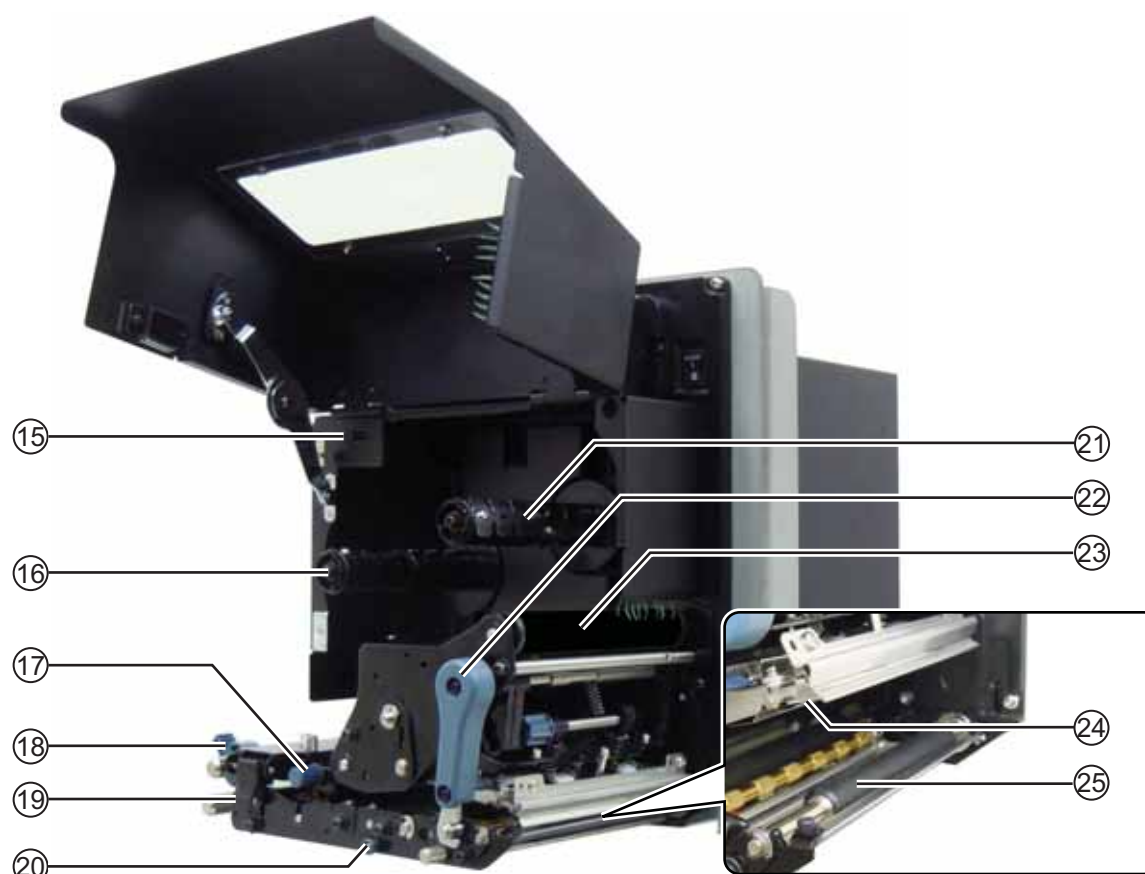
S84-ex/S86-ex
(Americas: Opposite/Left Hand,
Europe/Asia: Right Hand) printer

S84-ex/S86-ex
(Americas: Standard/Right Hand,
Europe/Asia: Left Hand) printer

- | | |
|---|--|
| <p>⑥ Wireless LAN (optional) antenna
To install the optional wireless LAN antenna.</p> <p>⑦ Fan filter
To prevent dust from entering the printer.</p> <p>⑧ AC input terminal
Supplies power to the printer through the inserted power cord.

Before connecting, make sure that the AC voltage of your region is in the range of AC 100 to 240 V, 50 to 60 Hz.</p> <p>⑨ RS-232C connector
To connect the printer to the host computer using the RS-232C serial interface.</p> <p>⑩ IEEE1284 connector
To connect the printer to the host computer using the IEEE1284 interface.</p> | <p>⑪ LAN connector
To connect the printer to the host computer using the LAN interface.</p> <p>⑫ SD CARD slot
To install an SD card for additional memory.</p> <p>⑬ USB connector (Type B)
To connect the printer to the host computer using the USB interface.</p> <p>⑭ EXT connector (External signal interface)
Interface connector for external signals.
Connect the optional applicator to this terminal.</p> |
|---|--|

1.2.3 Internal View



⑮ **USB connector (Type A)**
For connecting to optional USB memory.

⑯ **Ribbon supply spindle**

⑰ **Media sensor adjustment knob**
Used to adjust the position of the media sensor.

⑱ **Media guide**

⑲ **Feed lock latch**
Used to open the feed roller and the media sensor assembly.

⑳ **Pressure roller release tab**
Used to release the pressure plate.

㉑ **Ribbon rewind spindle**

㉒ **Head lock lever**
Used to release the print head assembly.

㉓ **Ribbon roller**

㉔ **Print head (Consumables)**
The part to print on the media. Perform regular maintenance.

㉕ **Platen roller (Consumables)**

1.3 Parts on the Operator Panel

1.3.1 Operator Panel




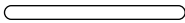


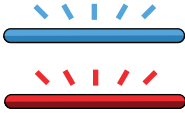
Note: Remove the protective sheet from the operator panel before use.

- | | |
|--|--|
| <p>① LINE button
Toggle between online/offline mode.</p> <p>② LCD</p> <p>③ FEED button
Feed a piece of media when the printer is in offline mode.</p> <p>④ LED indicator</p> <p>⑤ FUNCTION button
Operates the set function when the printer is in normal mode.
Return to the setting mode menu from the setting screens.</p> <p>⑥ ENTER button
Enter the setting mode menu when the printer is in offline mode.
Confirm the selected item or the setting value when the printer is in setting mode.</p> | <p>⑦ X CANCEL button
Go to the CANCEL PRINT JOB screen when the printer is in offline mode.
Return to the previous setting screen when the printer is in setting mode.</p> <p>⑧ ◀/▶/▲/▼ Arrow buttons
Navigate the selection or set numbers in the screen menu.

Press the ▲ button to adjust the buzzer volume when the printer is in normal mode.

Press the ▲ and ▼ buttons for one second to enter the adjustment mode when the printer is in normal mode.</p> |
|--|--|

1.3.2 LED Indicator

LED Indicator	Color	Description
	Blue	Power on or online mode
	(Light off)	Power off or offline mode
	Red	Printer error (For example, when a machine error is detected)
 Flashes at intervals of two seconds.	Red	Printer error (For example, when the ribbon runs out)
 Alternately flashes blue and red.	Blue and red	Printer error (For example, when a communication error has occurred)

2

Installing the Printer

2.1 Installation Precautions

Install this printer in a location as follows:

- A location that is horizontal and stable.
When you install the printer onto a support structure/applicator, the complete assembly must be sturdy and stable.
Attach the support structure firmly to the floor or on production machinery.
- A location that has sufficient space for operating the printer.
Install the printer so that the media dispenser side is within the designated distance and height relative to the applicator.
Install the media supply dispensers with an operational distance to the printer's input side.

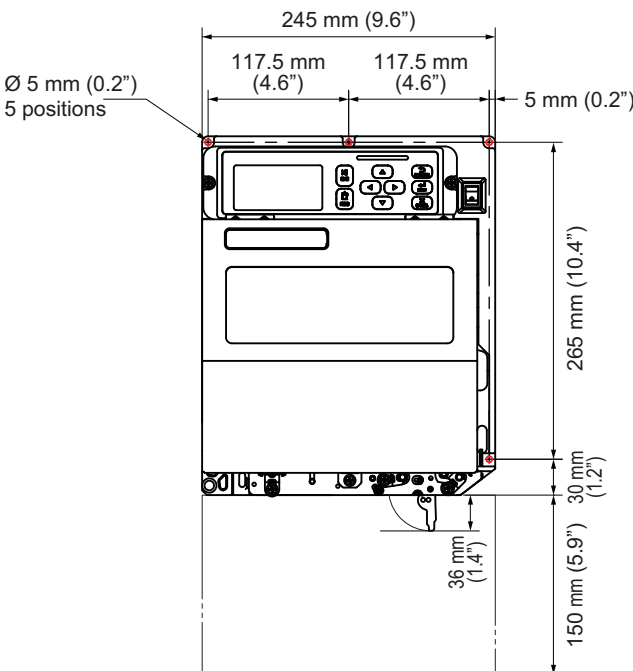
Do not install this printer in a location as follows. Doing so could cause the printer to malfunction.

- A location that is subject to vibration
- A location with high temperature and humidity
- A dusty location
- A location exposed to direct sunlight
- A location with a lot of electrical noise
- A location with a large fluctuation in power

2.2 Installation Space

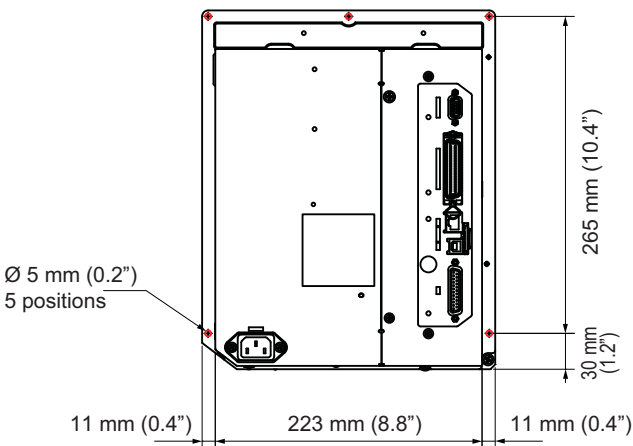
For easy operation and correct airflow, make sure that there is sufficient space around the printer. The illustrations in this section show the printer from different angles, providing dimensions and spacial requirements.

2.2.1 Front View (S84-ex/S86-ex printer)



Americas: Standard/Right Hand
Europe/Asia: Left Hand

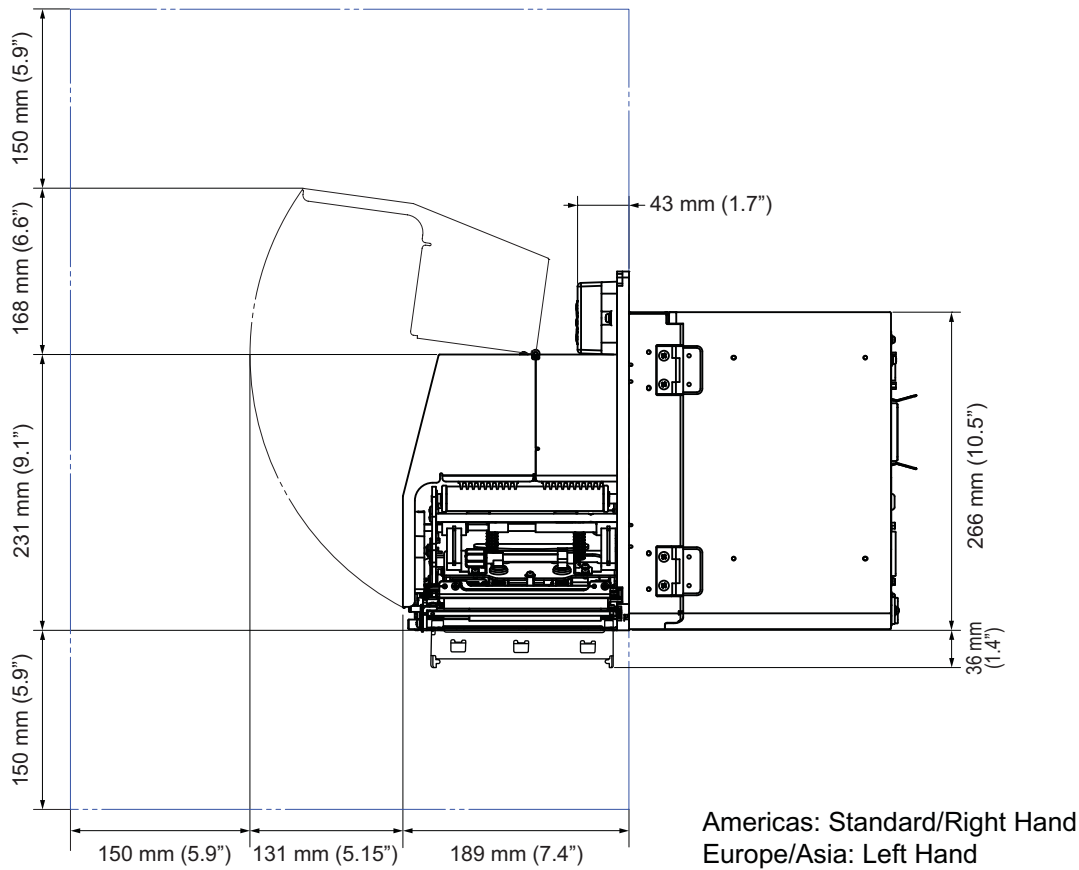
2.2.2 Rear View (S84-ex/S86-ex printer)



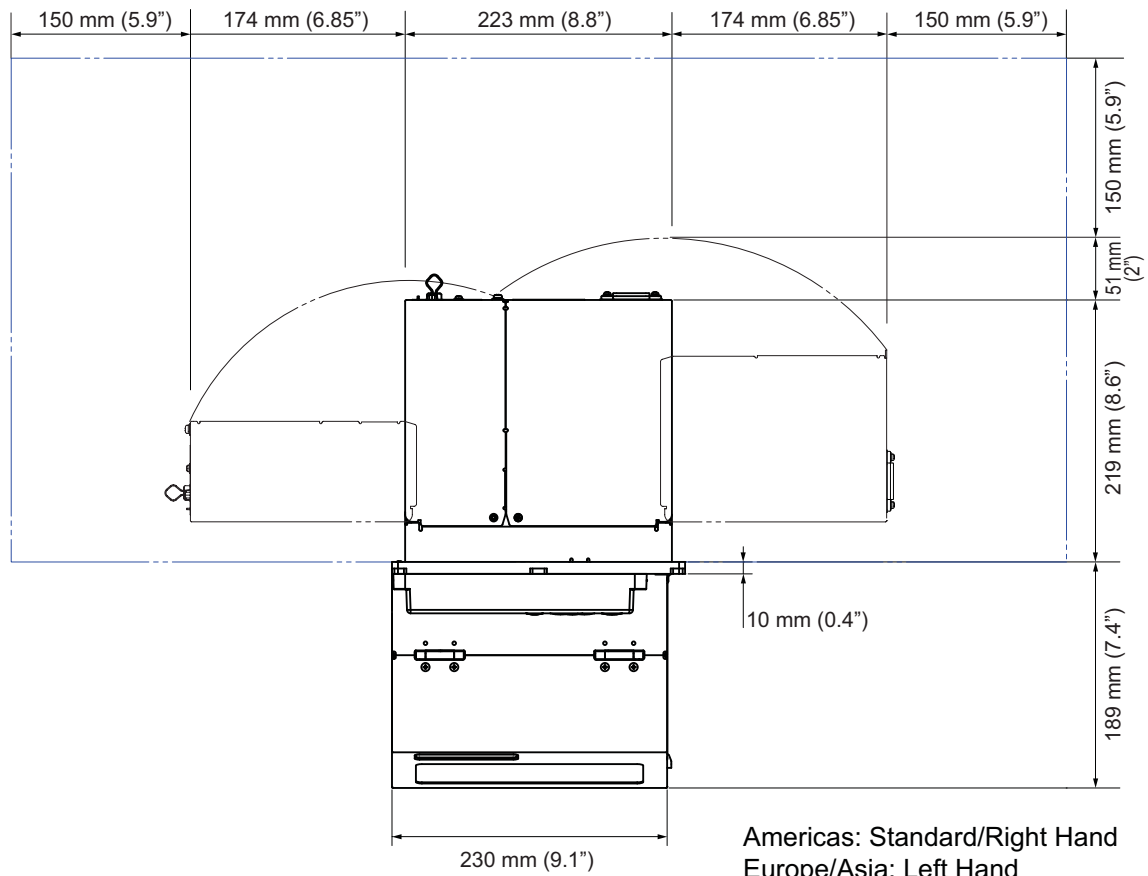
○ indicates five positions of bores for installing the printer to a support structure.

Americas: Standard/Right Hand
Europe/Asia: Left Hand

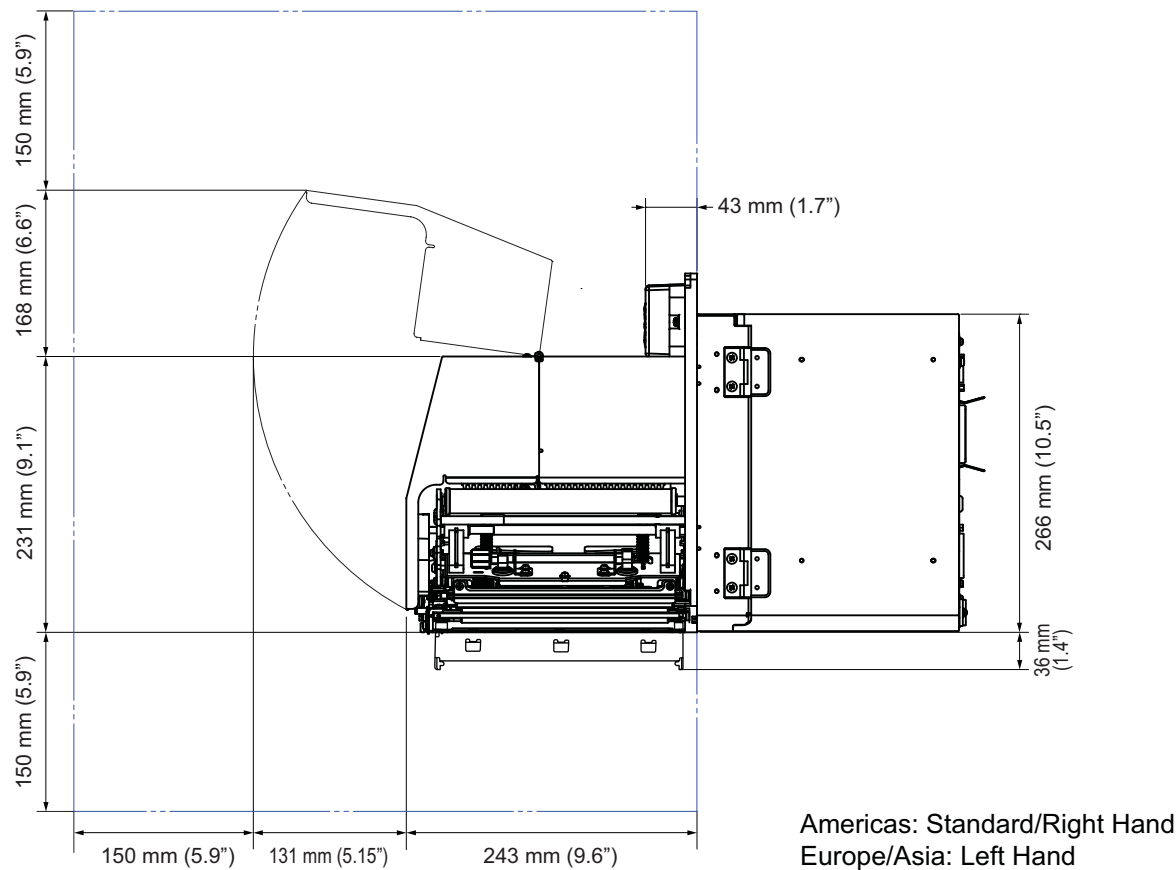
2.2.3 Media Dispensed View (S84-ex printer)



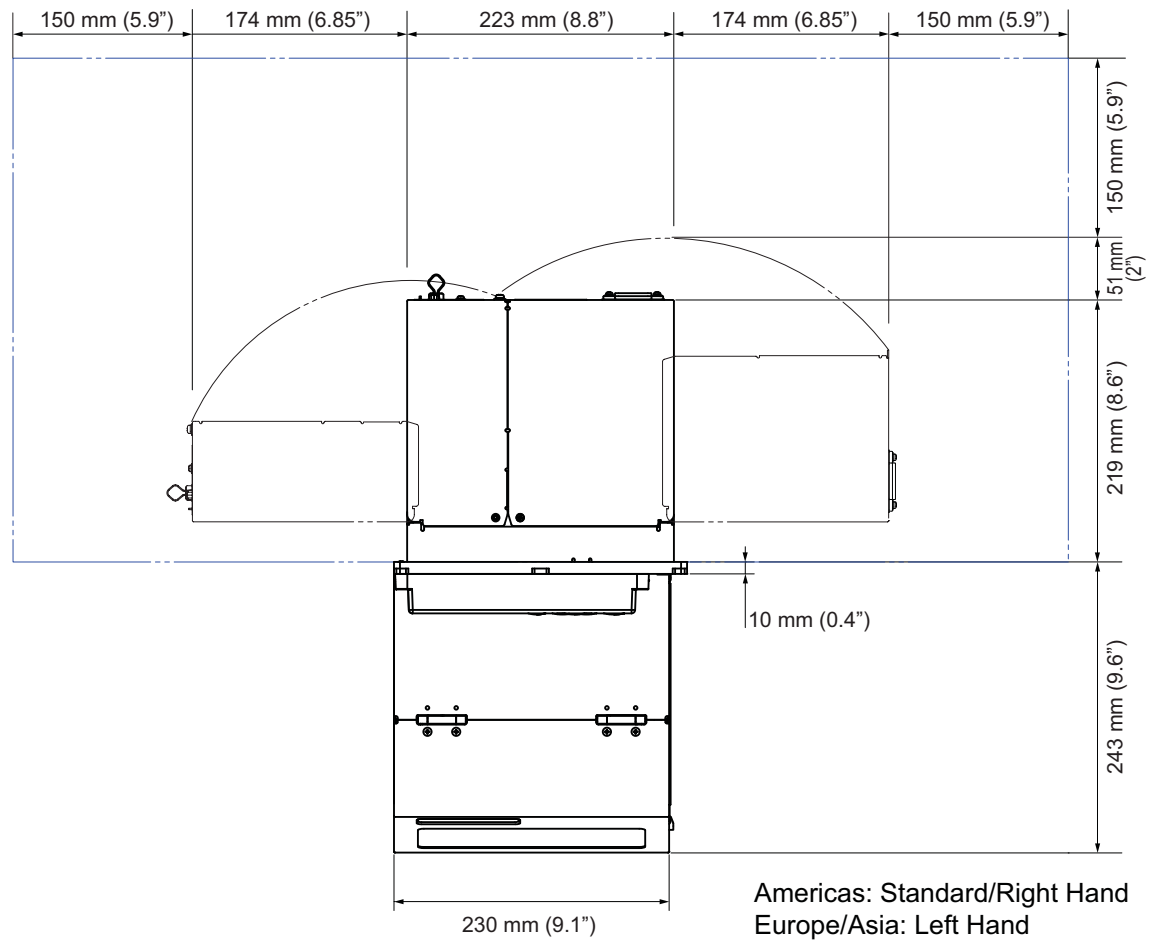
2.2.4 Top View (S84-ex printer)



2.2.5 Media Dispensed View (S86-ex printer)



2.2.6 Top View (S86-ex printer)



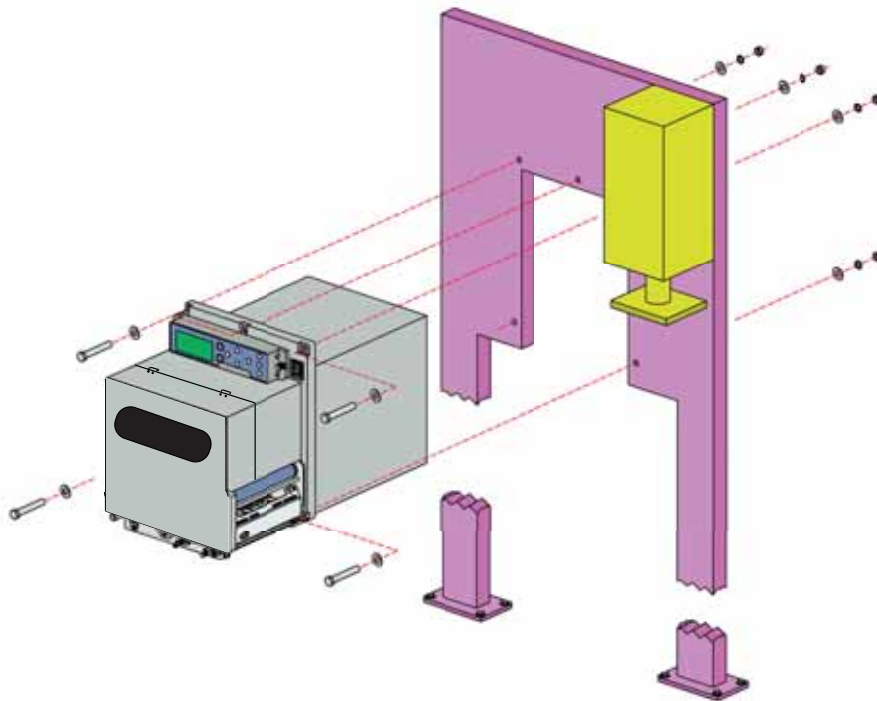
2.3 Installing the Printer onto a Support Structure/Applicator

This printer must be installed onto a support structure/applicator for correct operation. The printer has five bores on the center frame for installing to a support structure. Attach five bolts to the five bores on the center frame to install the printer onto the support structure.

WARNING

Make sure that you use the designated bolts that can accommodate the weight of the printer. If you do not install the printer correctly, it could fall out of the support structure. This may cause injury.

The picture below shows the installation of the printer onto the support structure.



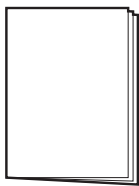
Note

This picture is for an instructional display purpose only and is not to be interpreted as a precise example.

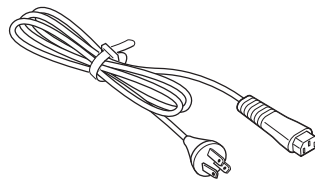
2.4 Checking the Bundled Accessories

After unpacking the printer, make sure that you have all the bundled accessories. If there are missing items, contact the SATO reseller where you purchased the printer.

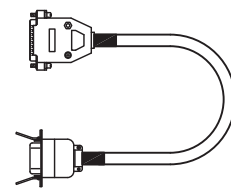
User documents
(Quick guide, Warranty, etc.)



AC power cord*



14pin conversion cable



Ribbon core



* The shape of power plug varies depending on the region in which it was purchased.

Note

Keep the packaging box and the cushioning material after installing the printer. You can pack the printer with this packaging box for shipment when requesting for repairs.

2.5 Connecting the Interface Cable

The connection of the interface cable is explained as follows:

2.5.1 Available Interfaces

This printer supports the following interfaces.

Furthermore, a printer connected with multiple interface cables can continue to operate when receiving data.

*You cannot receive data from more than one interface at a time.

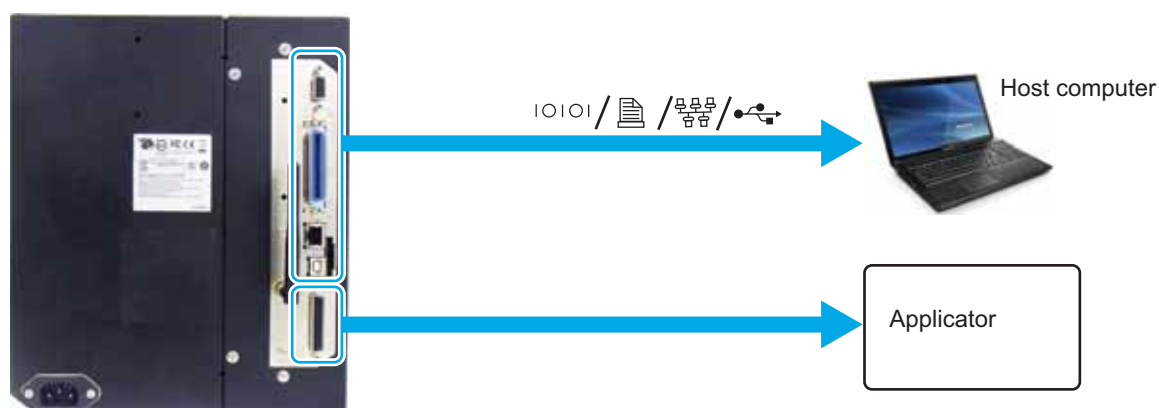
*You cannot use the USB interface when you have installed the optional wireless LAN.

- USB
- LAN
- RS-232C
- IEEE1284
- Bluetooth
- Wireless LAN (WLAN)
- External signal (EXT)

Note

The wireless LAN interface and Bluetooth interface are optional.

2.5.2 Interface Connections



- 1 Make sure that the printer, host computer and applicator are powered off.
Set the power switch of the printer to the “O” position.

- 2 Connect the printer to a host computer with one or more of the available interface connections.

Use a cable that is compatible with the standard of the interface board as stated in [Section 7.12 Interface Specifications](#). Check the orientation of the connector before you make the connection.

- 3 Connect the applicator cable from the **EXT** connector of the printer to the applicator.
Use a cable that is compatible with the standard of the interface board as stated in [Section 7.12 Interface Specifications](#). Check the orientation of the connector before you make the connection.

CAUTION

Do not connect or disconnect the interface cables (or use a switch box) with power supplied to either the printer or the computer. This action may cause damage to the interface circuitry in the printer or computer. The warranty does not cover such damages.

2.5.3 Interface Settings

You can set the various interface settings of the printer through the interface mode menu. For details, refer to [Section 4.2.10 Interface Mode](#).

In interface mode, you need to configure both the data port and the sub port. An overview of each port is shown below.

Data port

When the interface is set to the data port, it can receive various SBPL commands and receive print data from the host computer.

Data port selection: USB, LAN, RS-232C, IEEE1284, Bluetooth, WLAN (Wireless LAN)

The optional Bluetooth and optional wireless LAN are available when you have installed them.

* You cannot select the interface that has already been set for the SUB PORT.

Sub port

This port is for monitoring the printer status.

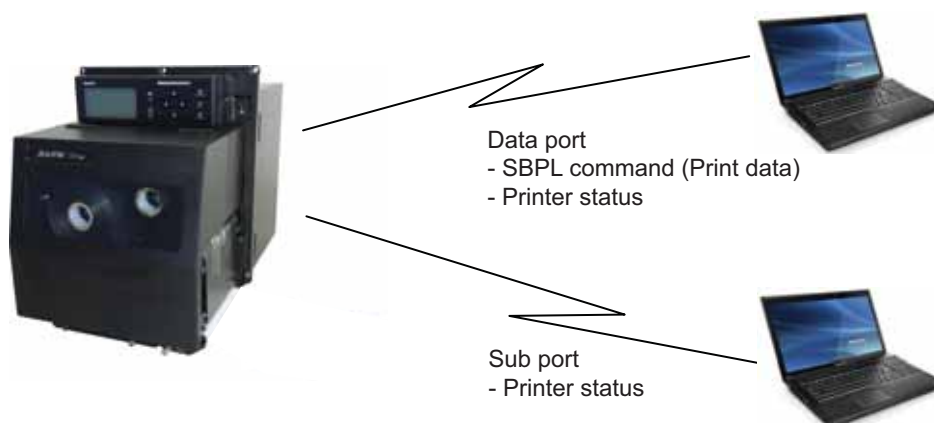
Sub port selection: NONE, USB, LAN, RS-232C, IEEE1284, Bluetooth, WLAN (Wireless LAN)

The optional Bluetooth and optional wireless LAN are available when you have installed them.

* You cannot select the interface that has already been set for the DATA PORT.

Note

The main port and sub port cannot simultaneously use the same interface.



2.5.4 Interface Combination

The interface combinations that can be used for the data port and the sub port are as follows.

		Data Port					
		USB	LAN	RS-232C	IEEE1284	Bluetooth	WLAN
Sub Port	USB	x	o	o	o	o	x
	LAN	o	x	o	o	o	o
	RS-232C	o	o	x	o	o	o
	IEEE1284	o	o	o	x	o	o
	Bluetooth	o	o	o	o	x	o
	WLAN	x	o	o	o	o	x
	NONE	o	o	o	o	o	o

[o: configurable, x: not configurable]

Notes

- The optional Bluetooth and optional wireless LAN are available when you have installed them.
- Do not select the same interface for the data port and sub port.
- When you have installed the optional wireless LAN, you cannot use the USB interface. The optional wireless LAN is connected to the printer through the USB.
- The sub port cannot be used when you have set ENABLE in the INTERFACE AUTO SELECT screen.
- When WLAN is configured for the data port or the sub port, but the printer is powered on without the wireless LAN adapter, the configured interface setting is changed from WLAN to USB. When USB is configured as the data port or the sub port, but the wireless LAN adapter is connected, the configured interface setting is changed from USB to WLAN.

2.6 Connecting the Power Cord

WARNING

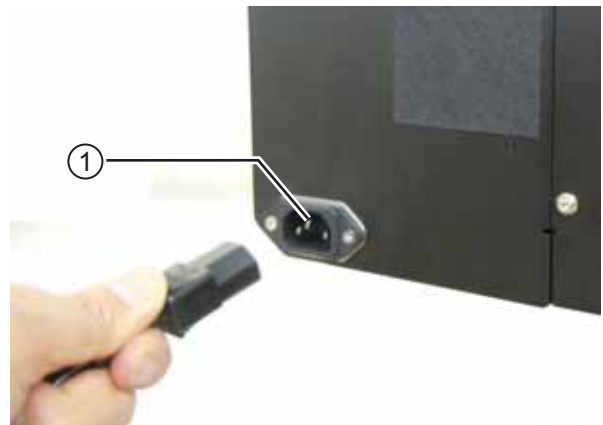
- Do not touch the power switch, or connect or disconnect the power cord while your hands are wet. Doing so could cause an electric shock.
- Always connect the ground wire to a ground terminal. Electric shock could occur if you do not.

Notes

- The attached power cord is designed exclusively for this printer.
- Do not use the attached power cord with other devices.

1 Connect the power cord to the **AC input terminal** ① at the rear of the printer.

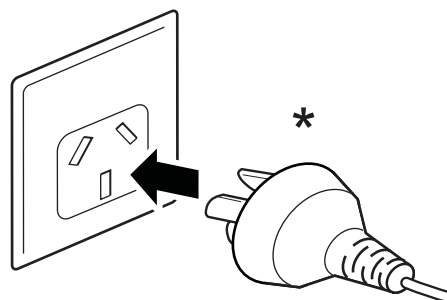
Take note of the orientation of the connector.
Secure the printer with one hand, and insert the connector tightly.



2 Insert the power plug into an AC outlet.

Make sure that the AC voltage of your region is in the range of AC 100-240 V, 50-60 Hz. If your local voltage is not in the stated range, contact your SATO reseller or technical support center.

*The shape of the power plug varies depending on the region in which it was purchased.



Note

This product is also designed for IT power distribution system with phase-to-phase voltage 230 V.

2.7 Power On/Off the Printer

WARNING

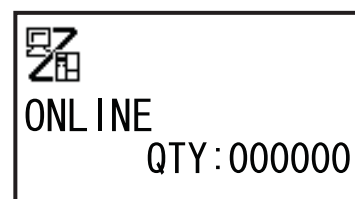
Do not touch the power switch, or connect or disconnect the power cord while your hands are wet. Doing so could cause an electric shock.

2.7.1 Power On the Printer

- 1 Press the power switch on the operator panel to "I" position.

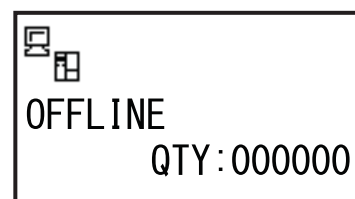


- 2 **ONLINE** shows on the screen and the LED lights blue.



2.7.2 Power Off the Printer

- 1 Make sure that the printer is in offline mode before you power off.
If **ONLINE** shows on the screen, press the **▶|| LINE** button to change to offline mode.



- 2 Press the power switch on the operator panel to "O" position.



2.8 Installing Optional Memory Storage

The optional SD card or USB memory can be used for uploading and downloading data (print format, graphics, extended characters) registered in the printer and the printer firmware.

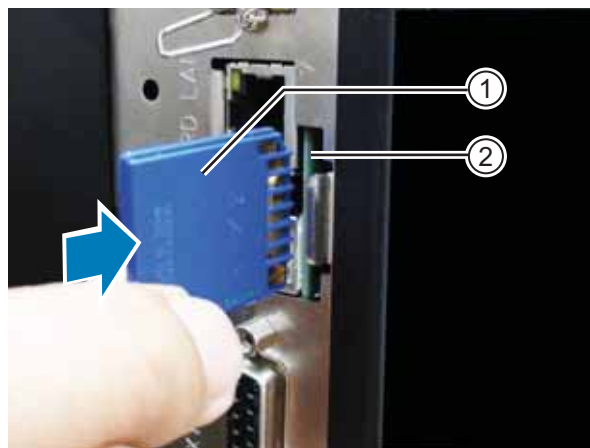
Contact your SATO reseller or service center for the recommended SD card or USB memory.

2.8.1 Installing the Optional SD card

You can install an optional SD card into the SD card slot located on the rear of the printer. When using the SD card for the first time, format the SD card in the memory card mode. Refer to [Section 4.2.11 Memory Mode](#) for details.

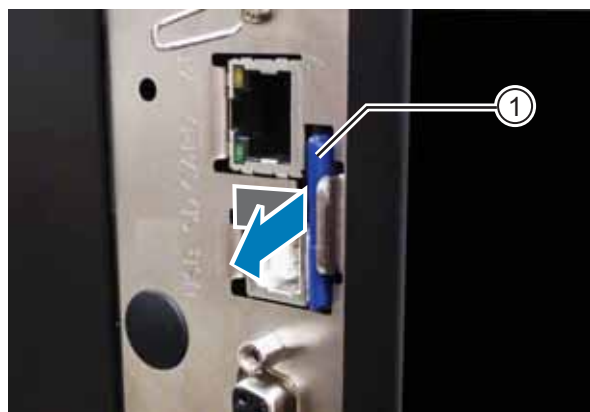
- 1 Power off the printer.
- 2 Insert the optional **SD card** ① into the **SD card slot** ② with the orientation the same as shown in the picture.
Contact your SATO reseller for the recommended SD card.
- 3 To seat the **SD card** in the **SD card slot**, push it in until it makes a slight clicking sound and is almost completely inside the printer.

When seated and ready to operate, only a very small portion protrudes, approximately 3.18 mm (0.125").



2.8.2 Removing the Optional SD card

- 1 Power off the printer.
- 2 Press the card edge slightly to release the SD card from the SD card slot. The SD card slot will immediately release the **SD card** ①.



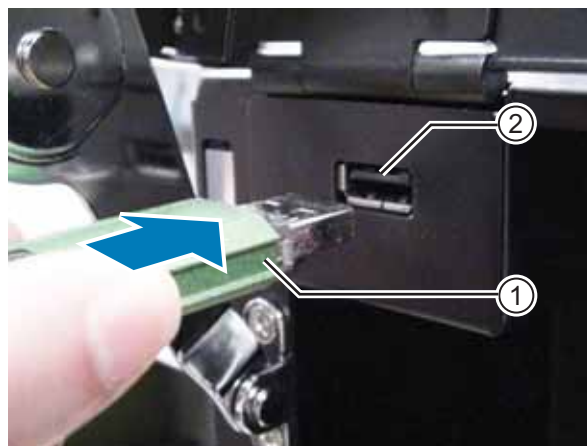
CAUTION

Do not remove the SD card while the printer is accessing the data in the SD card. Doing so may result in data corruption.

2.8.3 Installing the Optional USB Memory

When using the USB memory for the first time, format the USB memory in the memory card mode. Refer to [Section 4.2.11 Memory Mode](#) for details.

- 1** Power off the printer.
- 2** Open the **top cover**.
- 3** Insert the optional **USB memory** ① into the **USB connector** (Series A plug, 2.0 High-speed) ② on the front of the printer.
Contact your SATO reseller for the recommended USB memory.
- 4** Close the **top cover**.



To remove the USB memory from the printer

Power off the printer before removing the USB memory.

CAUTION

Do not remove the USB memory while the printer is accessing the data in the USB memory. Doing so may result in data corruption.

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3

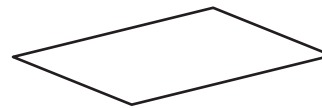
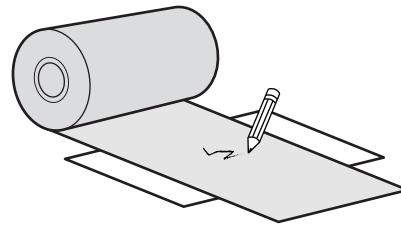
Loading the Ribbon and Media

This printer supports two types of print methods, namely thermal transfer and direct thermal. Thermal transfer is a print method that transfers the ink of the ribbon to the media using the heat of the print head. Direct thermal is a print method that creates the image on direct thermal media using the heat of the print head. Ribbon is not necessary if you are using the direct thermal media.

3.1 Checking the Ink Side of the Ribbon

There are two wind directions for the ribbon. Face-out means the ink is on the outer side and Face-in means the ink is on the inner side. This printer supports both wind directions. You can examine the ink side of the ribbon using the following procedure:

- 1** Place the outer side of the ribbon onto the media (touching).
- 2** Scratch the inner side of the ribbon with your fingernail or a pointed object.
- 3** If there is a mark on the media, the ink is coated on the outer side of the ribbon.



The ink is coated on the inner side. (Face-in ribbon)



The ink is coated on the outer side. (Face-out ribbon)

3.2 Loading the Ribbon

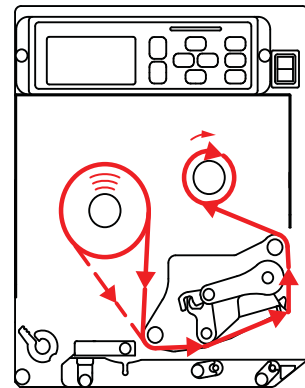
Use genuine media and ribbons for the printer, for optimum print quality.

CAUTIONS

- The print head and its surroundings are hot after printing. Be careful not to touch it, to avoid being burned.
- Touching the edge of the print head with your bare hand could cause injury.

The routing path of the ribbon is shown in the right picture.

-  Face-in ribbon
-  Face-out ribbon



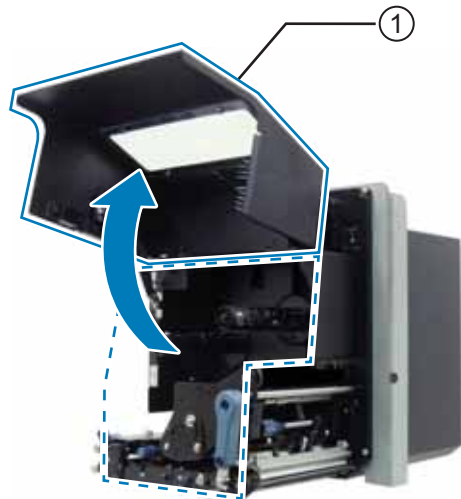
Note

You can also refer to the sticker located on the inner side of the top cover.

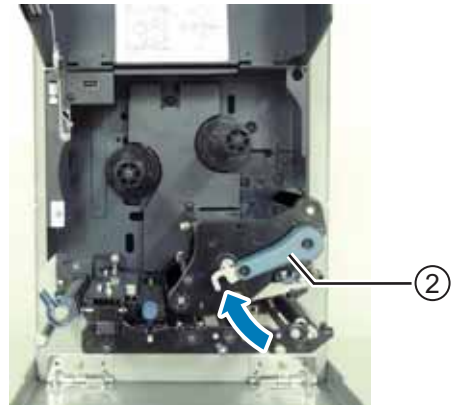
1 Open the **top cover** ①.

CAUTION

Open the top cover fully to prevent accidental drop of the cover.



- 2** Turn the **head lock lever** ② clockwise to unlock the print head.



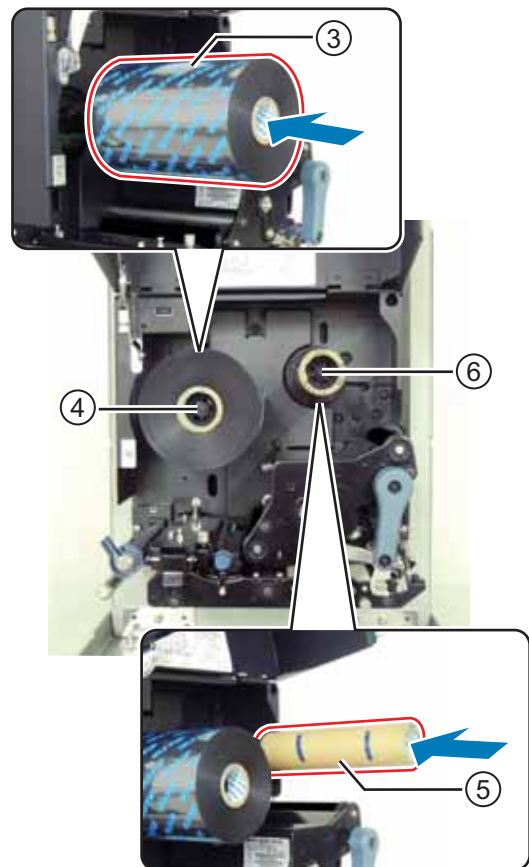
- 3** Load the **ribbon** ③ onto the **ribbon supply spindle** ④.

While taking note of the wind direction, insert the ribbon all the way in.

Make sure that the ink side of the ribbon is facing down when passing it below the print head.

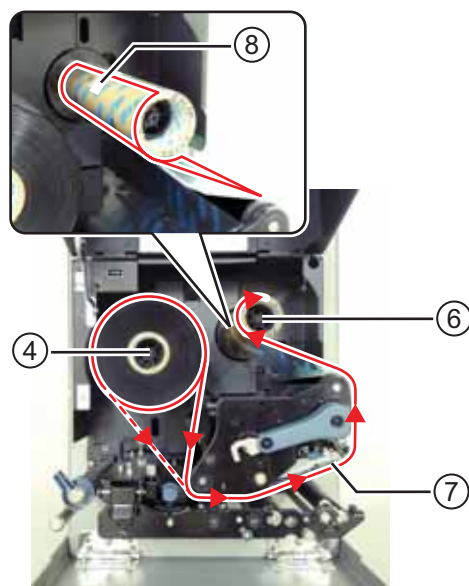
- 4** Load an **empty ribbon core** ⑤ onto the **ribbon rewind spindle** ⑥.

Insert the core all the way in.

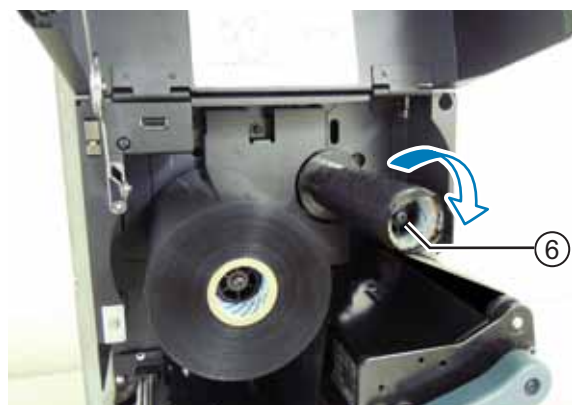


5 From the **ribbon supply spindle** ④, pass the ribbon below the **print head** ⑦ and to the **ribbon rewind spindle** ⑥.

6 Wind the ribbon clockwise around the **empty ribbon core** ⑤ on the **ribbon rewind spindle** ⑥. Attach the free end of the ribbon to the core with adhesive tape ⑧.



7 Turn the **ribbon rewind spindle** ⑥ clockwise for several rounds, to wind the ribbon.



8 If the media is already loaded, turn the **head lock lever** ② counterclockwise to lock the print head.
If the media is not loaded, continue with [Section 3.5 Loading Media](#).

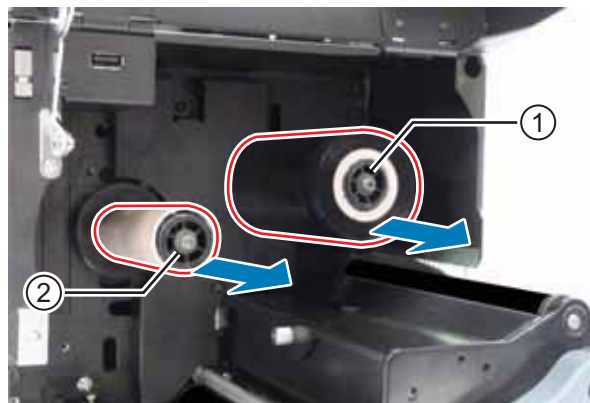
9 Close the **top cover**.



3.3 Removing the Ribbon

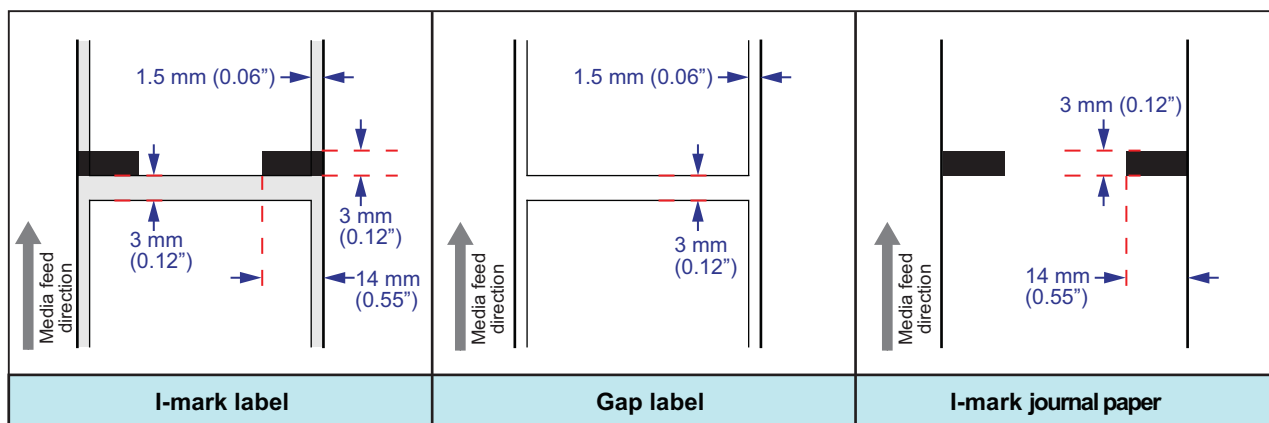
- 1** Open the **top cover**.
- 2** Turn the **head lock lever** clockwise to unlock the print head.
- 3** Pull to remove the used ribbon from the **ribbon rewind spindle** ①.
- 4** Pull to remove the empty core from the **ribbon supply spindle** ②.

You can use this empty core again when you load a new ribbon roll. Load this empty core onto the ribbon rewind spindle.



3.4 Usable Media

This printer can print on two types of media; media roll and fan-fold media. The printer uses sensors to detect I-marks or Gaps on the media in order to precisely print the content.



3.4.1 Adjusting the Position of the Media Sensor

Nonstandard media are media with printing on the reverse side, or media with special shapes. When using nonstandard media, make sure that the media sensor position is aligned with the I-mark or gap of the media.

The I-mark sensor of the printer has a fixed position of 5 mm (0.2") measured from the printer's center frame.

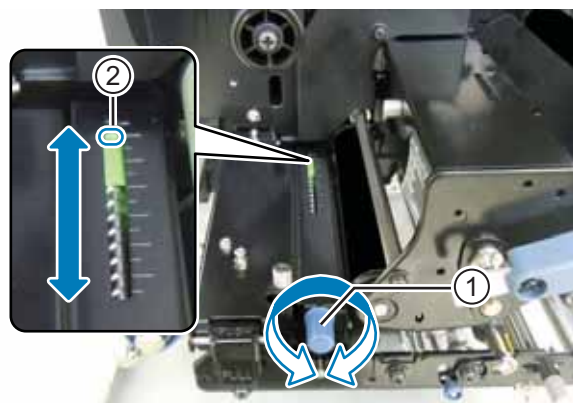
The position of the gap sensor is adjustable. You can adjust the gap sensor position in the following range.

S84-ex printer: 5 mm to 66 mm (0.2" to 2.6") measured from the printer's center frame.

S86-ex printer: 5 mm to 81 mm (0.2" to 3.2") measured from the printer's center frame.

- 1 Open the **top cover**.
- 2 Turn the **media sensor adjustment knob**
 - ① clockwise or counterclockwise to adjust the gap sensor position.

The green indicator ② on top of the media sensor assembly shows the position of the gap sensor.



3.5 Loading Media

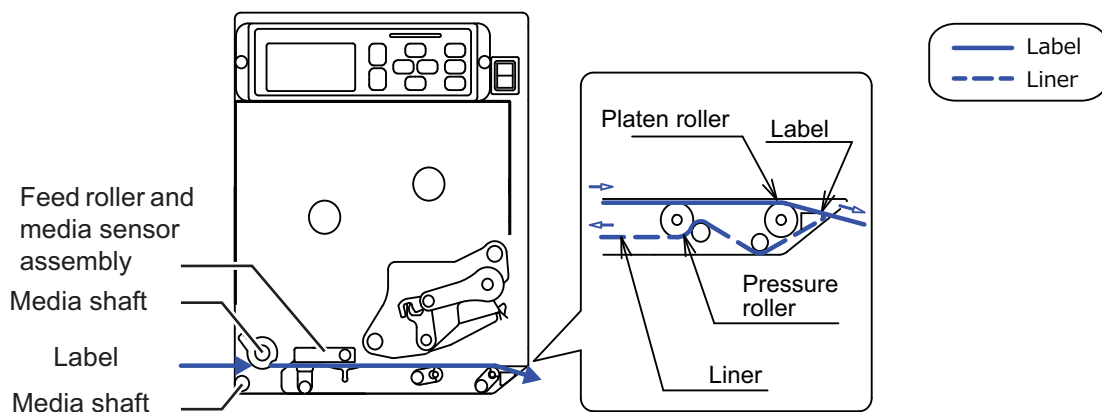
Use genuine media and ribbons for the printer, for optimum print quality.

CAUTIONS

- The print head and its surroundings are hot after printing. Be careful not to touch it, to avoid being burned.
- Touching the edge of the print head with your bare hand could cause injury.

3.5.1 Loading Label with Dispenser

This section describes the procedures to dispense the label and eject the liner out of the printer. The routing path of the label is shown below. When loading the media, make sure that the print side is facing up.

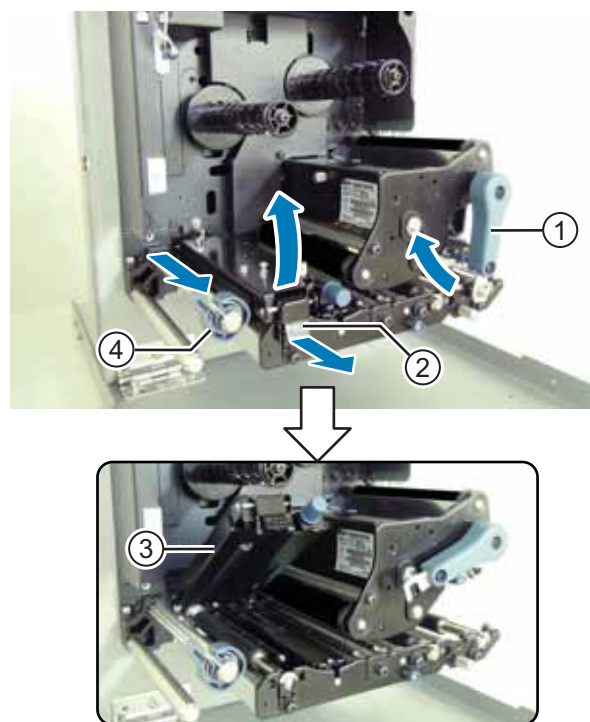


1 Open the **top cover**.

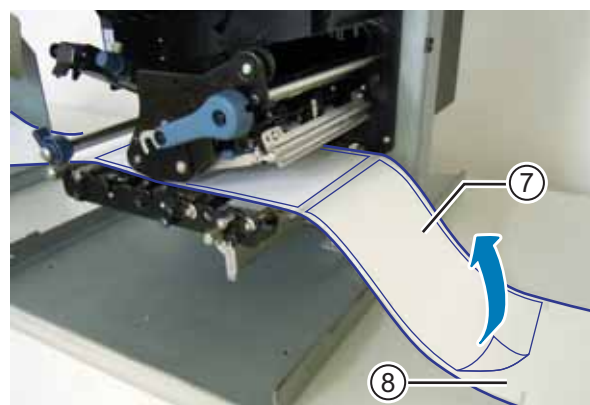
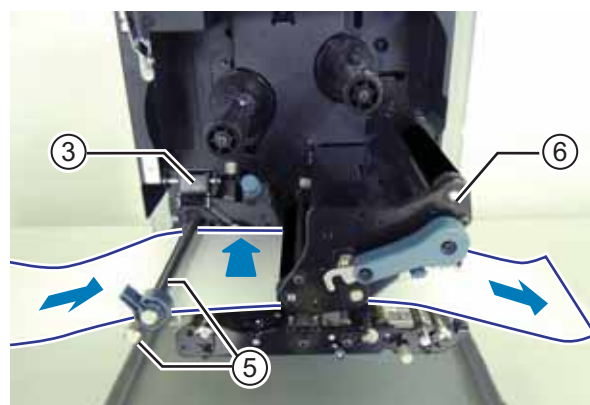
CAUTION

Open the top cover fully to prevent accidental drop of the cover.

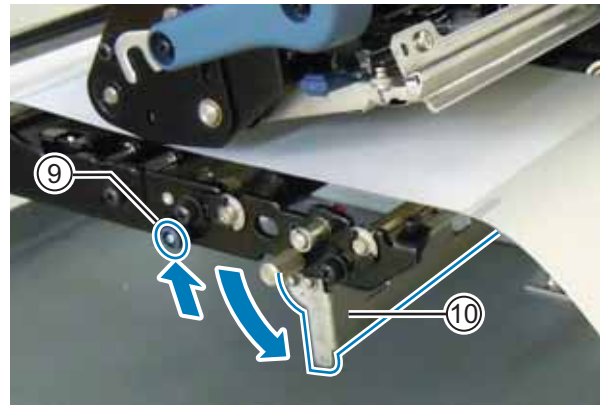
- 2** Turn the **head lock lever** ① clockwise to unlock the print head.
- 3** Pull the **feed lock latch** ② to unlock the **feed roller and media sensor assembly** ③.
The feed roller and media sensor assembly will flip open.
- 4** Pull the **media guide** ④ away from the printer.



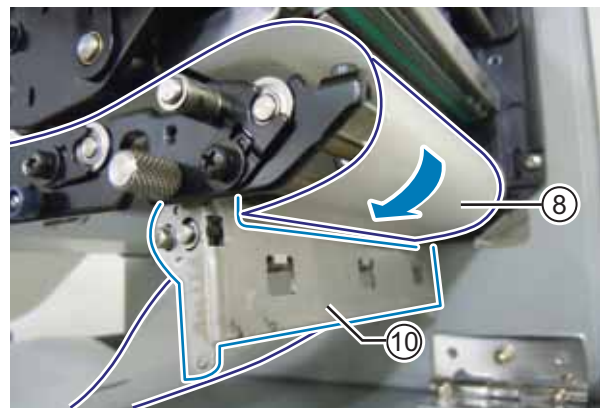
- 5** Pass the media between the **media shaft** ⑤, below the **feed roller and media sensor assembly** ③, and the **print head assembly** ⑥ and extend it out the discharge outlet.
Make sure that the end of the media extends out the discharge outlet.
- 6** Push the media until the innermost edge of the media lightly touches the printer center frame.
- 7** Pull the label out from the discharge outlet. Remove about 30 cm (11.8") of **labels** ⑦ from the **liner** ⑧.



- 8** Push the **pressure roller release tab** ⑨ up to release the **pressure roller plate** ⑩.



- 9** Pass the **liner** ⑧ through the gap of the **pressure roller plate** ⑩.



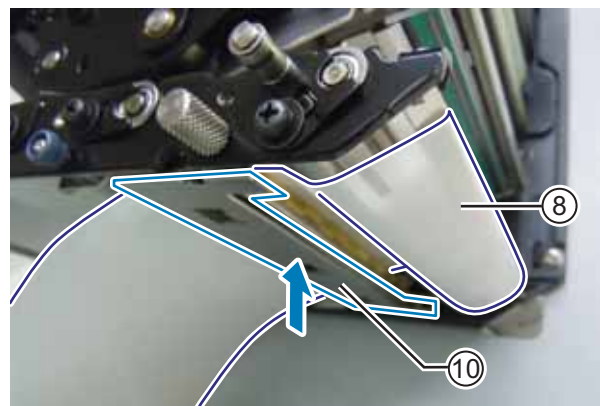
- 10** Push the center of the **pressure roller plate** ⑩ to latch it in place.

- 11** Turn the **head lock lever** counterclockwise to lock the print head.

- 12** Close the **top cover**.

- 13** After loading the media and ribbon, perform a test print to make sure that the media is loaded correctly.

Refer to the [Section 4.2.16 Test Print Mode](#) for details on how to perform a test print.



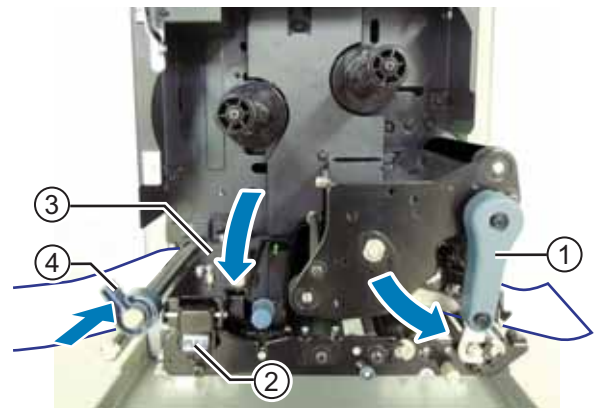
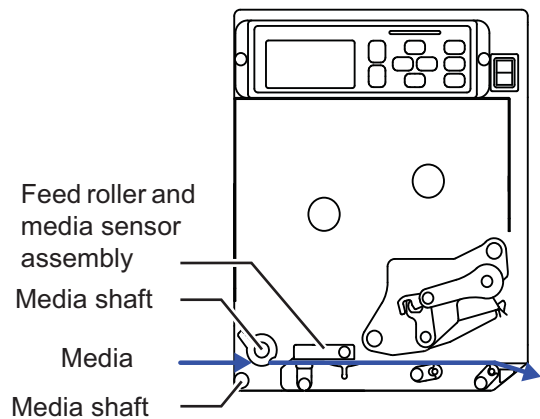
⚠ CAUTION

- When closing the top cover, be careful not to pinch your fingers.

3.5.2 Loading Media without Using Dispenser

This section describes the procedures to just load the media without using the dispenser. The routing path of the media is shown in the right picture. When loading the media, make sure that the print side is facing up.

- 1** Refer to steps 1 through 6 of [Section 3.5.1 Loading Label with Dispenser](#) to load the media.
- 2** Turn the **head lock lever** ① counterclockwise to lock the print head.
- 3** Press down on the **feed roller and media sensor assembly** ③ until the **feed lock latch** ② is locked.
- 4** Push the **media guide** ④ lightly against the outermost edge of the media.
- 5** Close the **top cover**.
- 6** After loading the media and ribbon, perform a test print to make sure that the media is loaded correctly.
Refer to the [Section 4.2.16 Test Print Mode](#) for details on how to perform a test print.



CAUTION

- When closing the top cover, be careful not to pinch your fingers.

4

Operation and Configuration

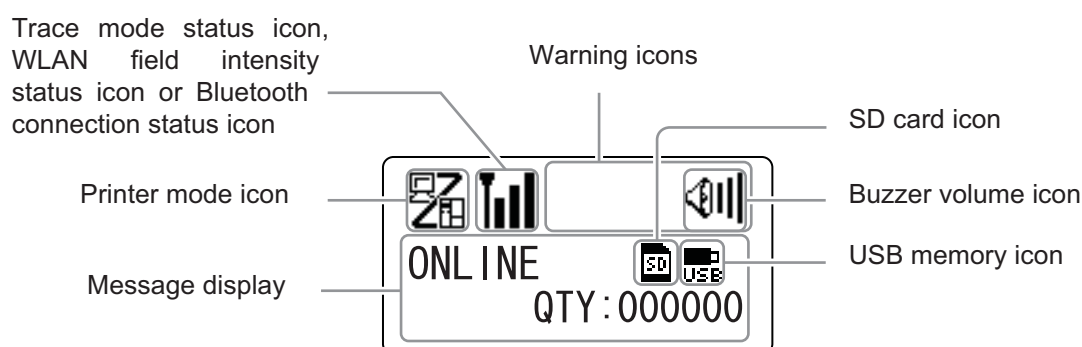
4.1 Display and Operation

The display of the printer varies depending on the following modes:

- Normal mode: refer to [Section 4.1.1 Normal Mode Display and Icons](#).
- Setting mode menu: refer to [Section 4.1.2 Setting Mode Menu and Icons](#).
- Error display: refer to [Section 4.1.3 Error Display and Icons](#).
- Setting display: refer to [Section 4.1.4 Setting Display](#).

4.1.1 Normal Mode Display and Icons




In normal mode, the screen shows the following printer status.








- Printer mode

Icon	Description
	Shows when the printer is in online mode.
	Shows when the printer is in offline mode.
	Shows when the printer is in test print mode and hex dump print mode.
	Shows when the printer is in download mode.
	Shows when the printer is in upload mode.
	Shows when the printer is in memory mode.



- Trace mode status

Icon	Description
	Shows after receiving any data while trace mode is ENABLE.
	Shows after receiving ESC(1BH) A while trace mode is ENABLE.
	Shows after print operation while trace mode is ENABLE.





- WLAN field intensity status

Icon	Description	Infrastruc- ture Mode	Ad Hoc Mode
	The meaning of this icon differs depending on the wireless LAN mode. In Infrastructure mode Shows when the field intensity is more than level 3 and the printer is connected to an access point. In Ad Hoc mode Always shows when the printer is connected.	<input type="radio"/>	<input type="radio"/>
	Shows when the field intensity is between levels 2 and 3, and the printer is connected to an access point.	<input type="radio"/>	Not used
	Shows when the field intensity is between levels 1 and 2, and the printer is connected to an access point.	<input type="radio"/>	Not used
	The meaning of this icon differs depending on the wireless LAN mode. In Infrastructure mode Shows when the field intensity is less than level 1 and the printer is connected to an access point. However, it may be possible to communicate depending on the environment. In Ad Hoc mode Always shows when the printer is not connected.	<input type="radio"/>	<input type="radio"/>
	Shows when the printer is not connected to an access point.	<input type="radio"/>	Not used






- Bluetooth connection status

Icon	Description
	Shows when Bluetooth is connected.
	Shows when Bluetooth is disconnected.



- Buzzer volume

Icon	Description
	Shows when the volume is level 3 (Loud).
	Shows when the volume is level 2 (Medium).
	Shows when the volume is level 1 (Low).
	Shows when the volume is level 0 (Mute).

- Warning Icons

Icon	Description
	Shows when a ribbon "near end" is detected.
	Shows when a label "near end" is detected.
	Shows when a command error is detected.
	Shows when a receive buffer "near full" is detected.
	Shows when print head damage is detected.

- Memory card status

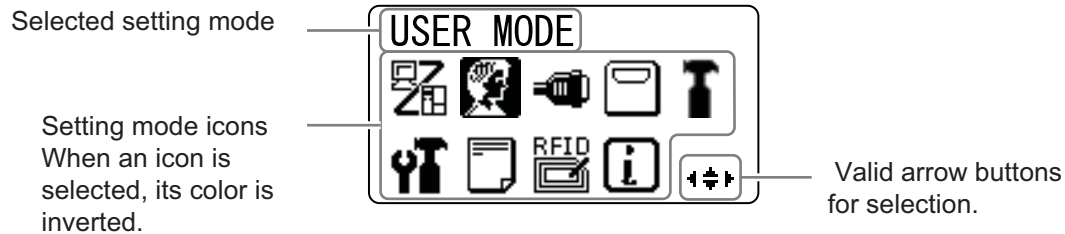
Icon	Description
	Shows when an SD card is inserted.
	Shows when a USB memory is inserted.

Notes:

- These icons show only when the SD card or USB memory is connected.
- These icons do not show when the printer is in an error mode.
- These icons do not show when the trace mode is enabled.
- These icons do not show when the ESC+IM command (for specifying LCD display) is in use.
- These icon colors are inverted when the SD card or USB memory is being accessed.

4.1.2 Setting Mode Menu and Icons

In the setting mode menu, the screen is shown as follows.



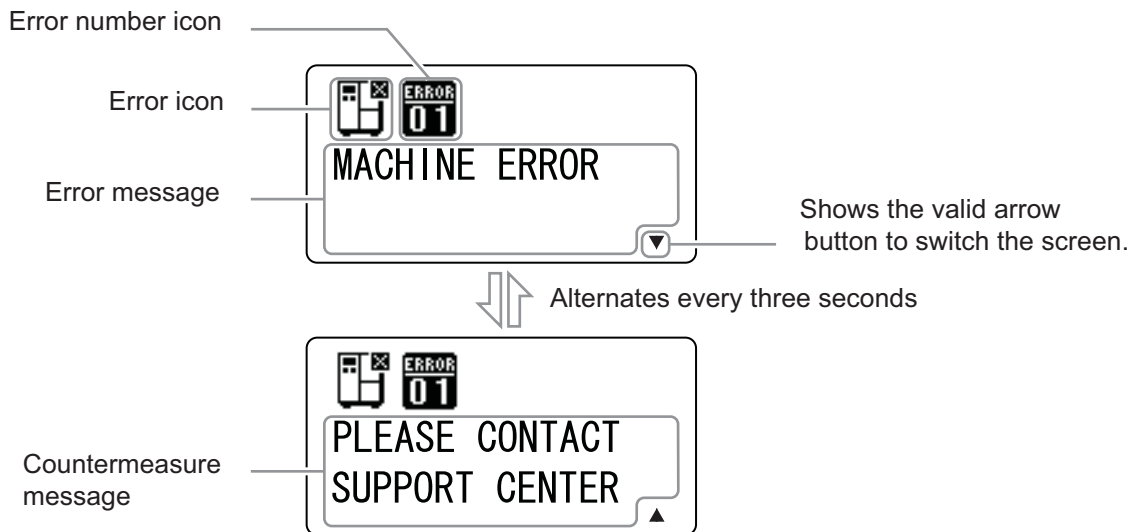
Refer to [Section 4.2.8 Setting Mode Menu](#) for more details.

- Setting Mode

Icon	Description
	The printer enters the normal mode.
	The printer enters the user mode.
	The printer enters the interface mode.
	The printer enters the memory mode.
	The printer enters the service mode.
	The printer enters the advanced mode.
	The printer enters the hex dump print mode.
	The printer enters the RFID mode. * Shows only if you have installed the optional RFID kit and enabled the RFID mode.
	The printer enters the printer information mode.






4.1.3 Error Display and Icons

When a printer error occurs, the screen shows the following error messages and icons.



- Error Icon

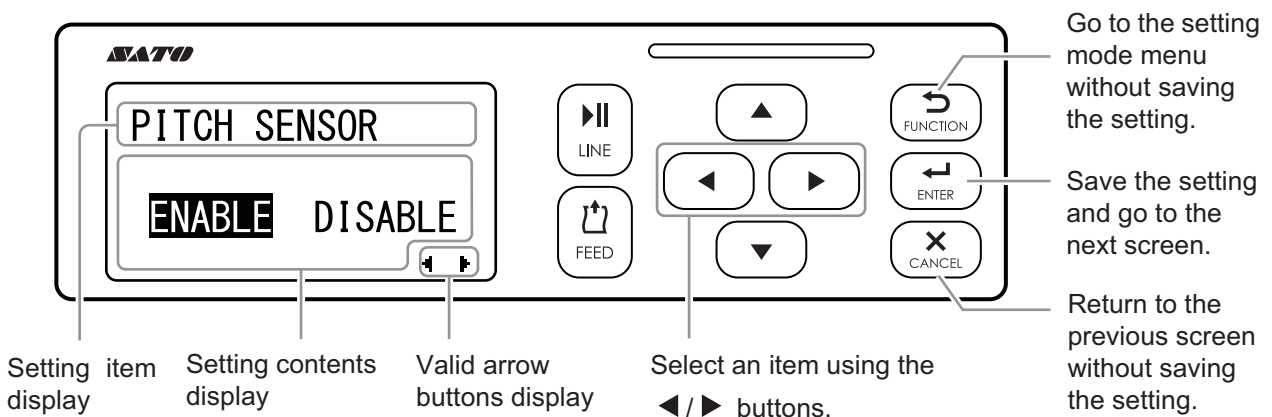
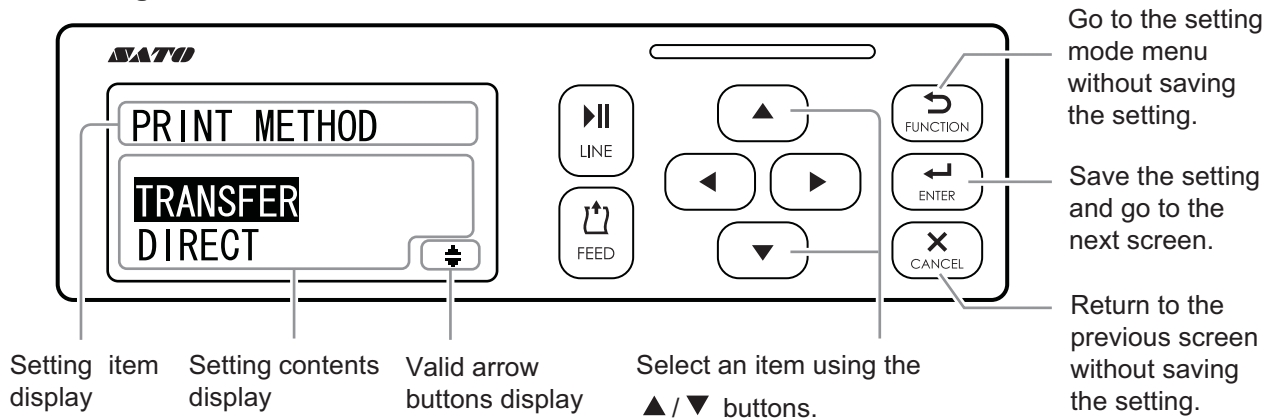
Icon	Description
	Label end or media end is detected
	Ribbon end is detected
	Sensor error is detected
	Print head is unlocked.
	Filament disconnection of the print head is detected
	Communication error is detected
	Receive buffer over is detected
	Item No. error or BCC error is detected
	Memory card is not accessible or there is no free space in the memory card
	Writing to the ROM failed or kanji data error is detected

Icon	Description
	Calendar error is detected
	Writing information to the RFID tag failed
	Wireless LAN setting error is detected
	Any printer error other than above is detected
	Error number according to the errors

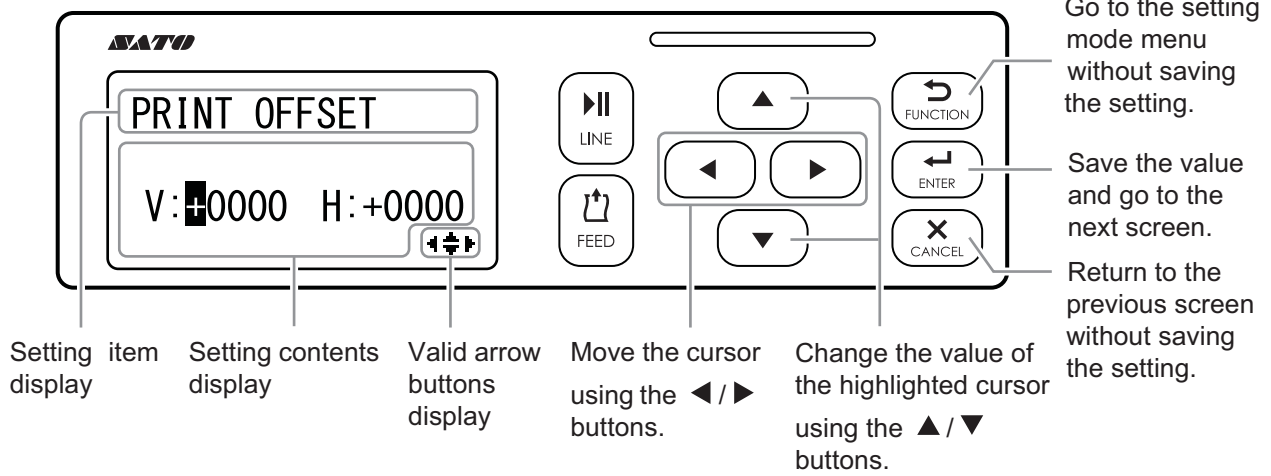
4.1.4 Setting Display

In various setting mode, the setting display is shown as follows. This section also describes the functions of the buttons in setting mode.

• Selecting an item



- Setting values



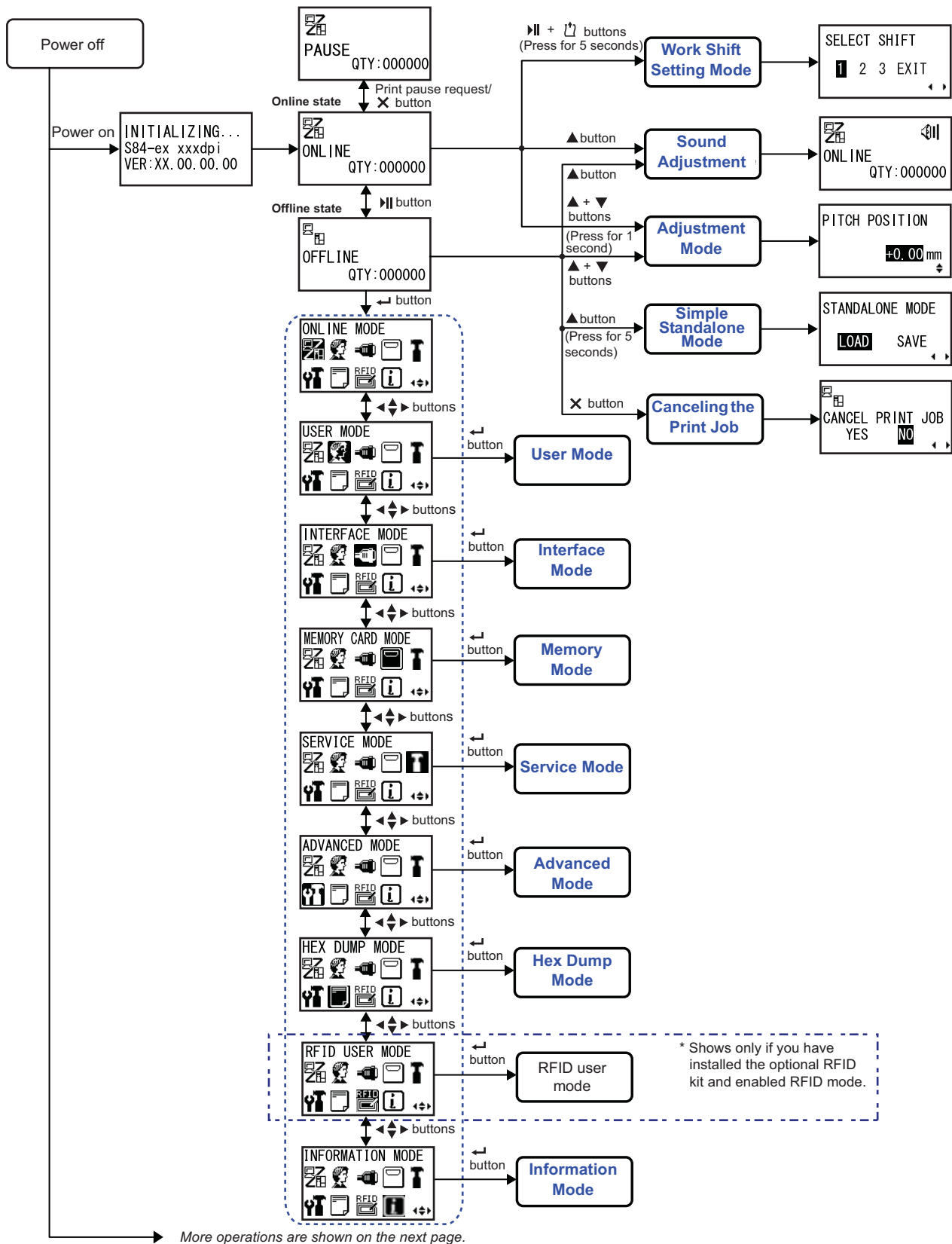
4.2 Operating Modes

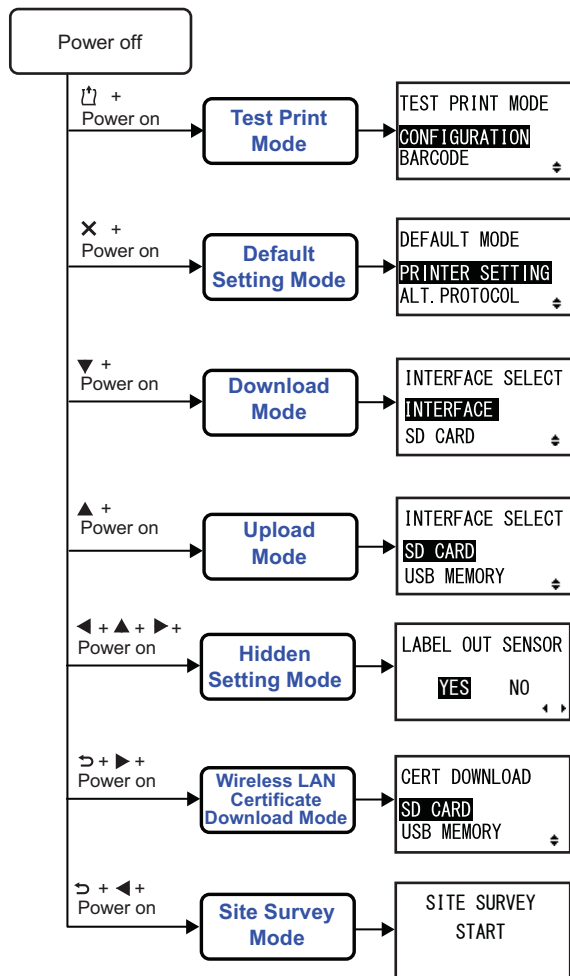
The printer contains a variety of operating modes as follows:

Click on the blue links below to go directly to the details of the selected operating mode.

- [Online Mode/Pause Mode/Offline Mode](#)
- [Adjusting the Display Brightness](#)
- [Adjusting the Buzzer Volume](#)
- [Canceling the Print Job](#)
- [Adjustment Mode](#)
- [Work Shift Setting Mode](#)
- [Simple Standalone Mode](#)
- [Setting Mode Menu:](#)
 - [User Mode](#)
 - [Interface Mode](#)
 - [Memory Mode](#)
 - [Service Mode](#)
 - [Advanced Mode](#)
 - [Hex Dump Mode](#)
 - [Information Mode](#)
- [Test Print Mode](#)
- [Default Setting Mode](#)
- [Download Mode](#)
- [Upload Mode](#)
- [Hidden Setting Mode](#)
- [Wireless LAN Certificate Download Mode](#)
- [Site Survey Mode](#)

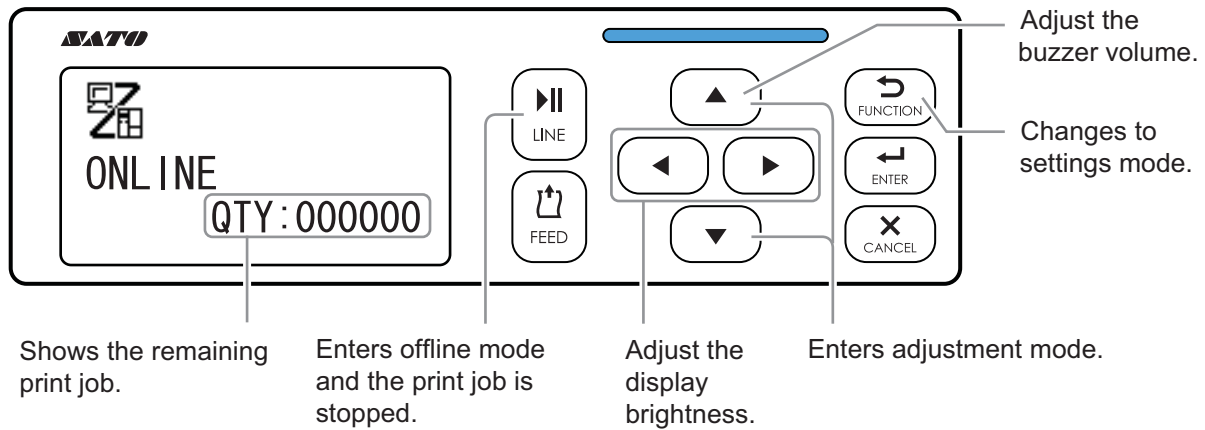
The flow chart provides a clear summary of all the modes and their access methods.



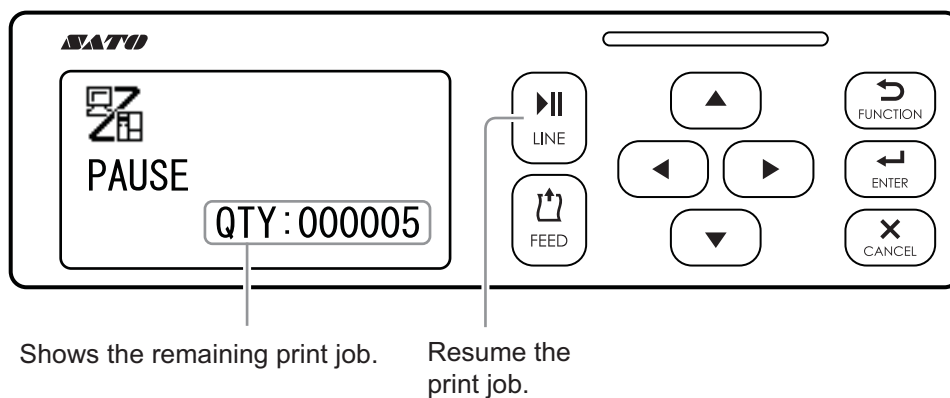


4.2.1 Online Mode/Pause Mode/Offline Mode

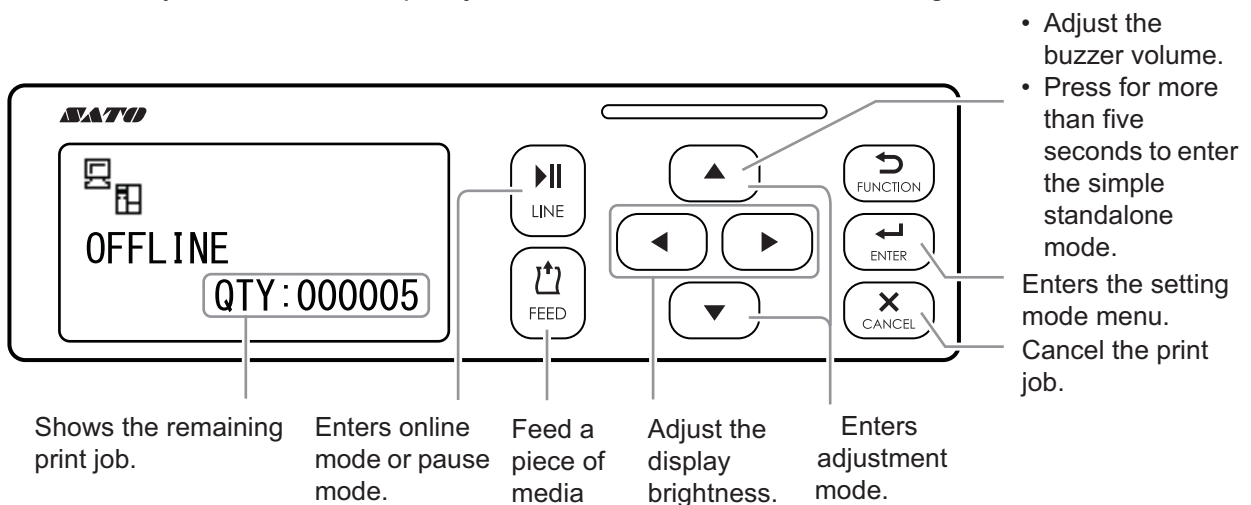
In online mode, the printer is ready to receive print data from the host computer or other connected devices and start the print job.



When you send a pause command during printing, the printer stops the print job and enters pause mode.

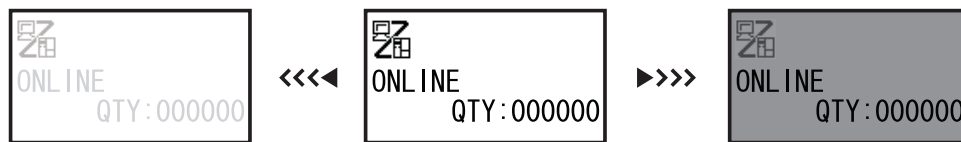


In offline mode, you can cancel the print job, feed the media or enter the setting mode menu.



4.2.2 Adjusting the Display Brightness

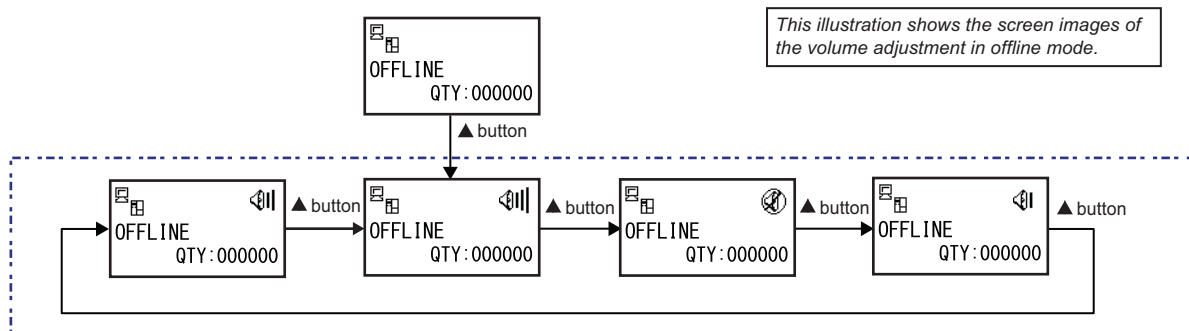
In normal mode (online or offline), press the ◀/▶ **arrow** buttons repeatedly to adjust the display brightness.



You can adjust the brightness in thirty-two steps (sixteen left and sixteen right). The brightness changes one step for every press of the ◀ **arrow** button or the ▶ **arrow** button.

4.2.3 Adjusting the Buzzer Volume

In normal mode (online or offline), press the ▲ **arrow** button repeatedly to adjust the volume of the buzzer.

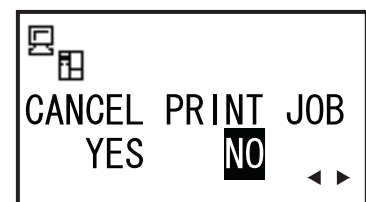
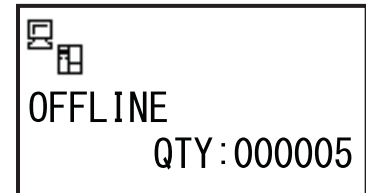


- 1 When the printer is in online or offline mode, press the ▲ **arrow** button to show the current buzzer volume of the printer.
The buzzer volume icon is shown on the top right corner of the screen.
- 2 Pressing the ▲ **arrow** button will cycle through the volume level and the buzzer will beep according to the volume.

4.2.4 Canceling the Print Job

Cancel the print job according to the following procedures:

- 1** Press the **▶|| LINE** button to change the printer to offline mode.
- 2** Press the **✕ CANCEL** button.
CANCEL PRINT JOB shows to confirm the cancelation of the print job.
- 3** Press the **◀/▶ arrow** button to select YES and press the **↵ ENTER** button to confirm.
CURRENT and ALL show on the screen.



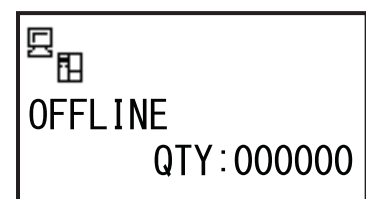
Notes

- Be sure you want to cancel the print job before selecting YES. The job cannot be recovered and will have to be re-transmitted to the printer.
- Press the **↶ FUNCTION** button or the **✕ CANCEL** button to exit the CANCEL PRINT JOB mode without clearing the print data.

- 4** Press the **◀/▶ arrow** button to select CURRENT or ALL.
 - CURRENT: Cancel the current print job.
 - ALL: Cancel all the print jobs in printer's memory.

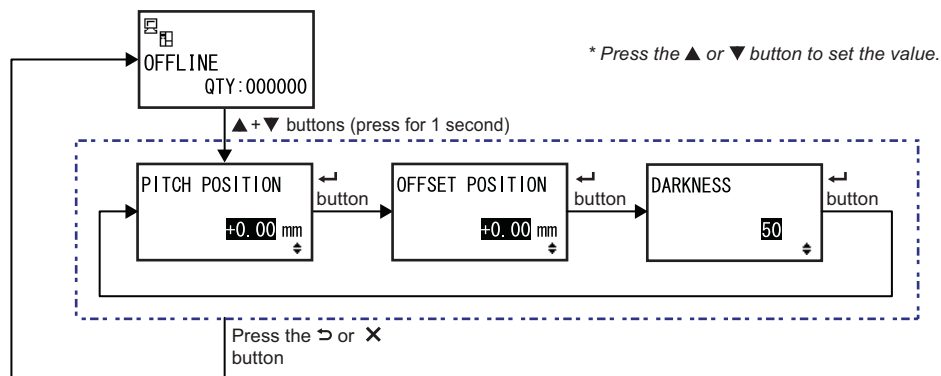


- 5** Press the **↵ ENTER** button to confirm.
CANCEL PRINT JOB COMPLETED shows and three beeps will sound. The printer will then enter offline mode. The selected print jobs will be cleared from memory.



4.2.5 Adjustment Mode


The printer has a quick access to the adjustment mode for setting the print position, stop position and print darkness. These adjustments are in conjunction with the configuration adjustments performed in the user mode menu.



- 1 When the printer is in online or offline mode, press the **▲** and **▼** **arrow** buttons for one second to enter the adjustment mode. PITCH POSITION shows on the screen.
- 2 Press the **▲/▼** **arrow** buttons to set the desired value and press the **↵** **ENTER** button to save the setting and proceed to the next adjustment screen.

PITCH POSITION	
Offset the print position in the vertical direction. Set the offset value with '+' to move the print position opposite the feed direction and '-' to move the print position in the feed direction. The setting value is adjustable by 0.25 mm (0.01") regardless of the print resolution. The setting range is from -3.75 mm (-0.15") to +3.75 mm (+0.15").	<div>PITCH POSITION +0.00mm ⬆</div>

OFFSET POSITON	
Correct the offset position. Offset position refers to the dispense stop position. Set the offset value with '+' to move the stop position opposite the feed direction and '-' to move the stop position in the feed direction. The setting value is adjustable by 0.25 mm (0.01") regardless of the print resolution. The setting range is from -3.75 mm (-0.15") to +3.75 mm (+0.15").	<div>OFFSET POSITION +0.00mm ⬆</div>

DARKNESS	
<p>Fine tune the print darkness. The setting range is 00 to 99. 00 is the lightest and 99 is the darkest.</p>	

- 3** After adjustment, press the **↩ FUNCTION** button or the **✕ CANCEL** button to exit the adjustment mode. The printer enters offline mode.

Note

Pressing the **↩ FUNCTION** button or the **✕ CANCEL** button before pressing the **↵ ENTER** button will not save the adjustment.

- 4** Perform a test print after completing the adjustments to make sure that the settings are correct.

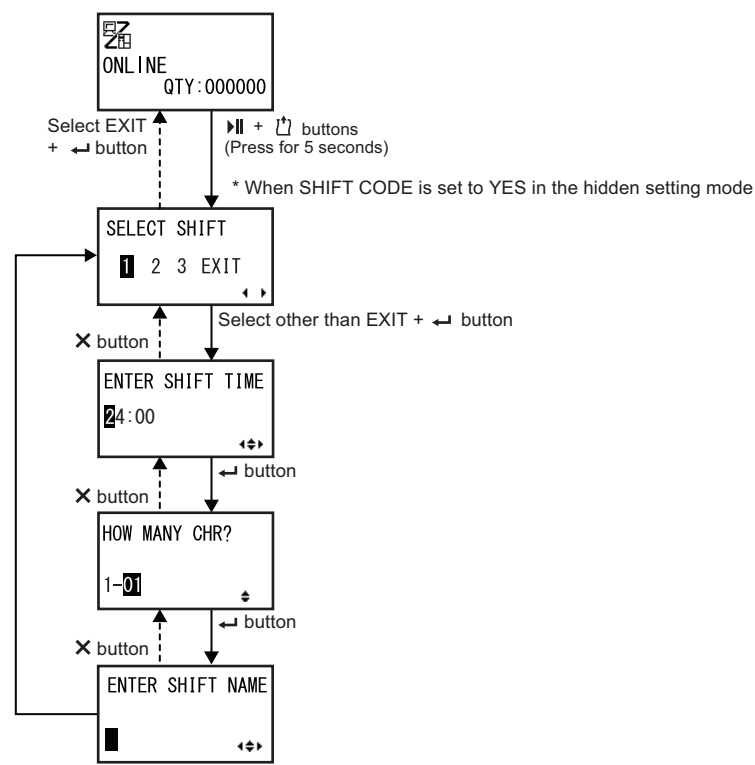
Refer to [Section 4.2.16 Test Print Mode](#) for details.

4.2.6 Work Shift Setting Mode

This mode allows for specific production shift information to be printed on a label when used with the printer SBPL command.

The flowchart shows the sequence of the setting screens for the work shift mode. The table describes each setting screen in detail.

- Notes:**
- This mode is enabled only if SHIFT CODE is set to YES in the hidden setting mode.
 - You can set up to three shifts depending on the number of work shifts required in the field. For example, if two shifts are required, set work shift number 1 and 2.



SELECT SHIFT	
Select the work shift number to store the work shift setting. You can select the work shift number from 1 to 3.	<div>SELECT SHIFT 1 2 3 EXIT</div>
<p>Note:</p> <p>If you select EXIT and press the ENTER button, the printer returns to the online screen.</p>	

ENTER SHIFT TIME

Set the printer start time in 24-hour format.

Press the ◀/▶ **arrow** buttons to shift the cursor and press the

▲/▼ **arrow** buttons to change the value.

Press the ↵ **ENTER** button to save the value and proceed to the next setting screen.

ENTER SHIFT TIME

24:00

**HOW MANY CHR?**

Set the character size of the SHIFT NAME by specifying the number of characters.

Select the number of characters using the ▲/▼ **arrow** buttons and then press the ↵ **ENTER** button.

The setting range is from 01 to 16.

HOW MANY CHR?

1-01

**ENTER SHIFT NAME**

Specify a name for the work shift.

Available characters are A to Z, space and 0 to 9.

The number of characters you can enter depends on the character size set in the HOW MANY CHR? screen.

Press the ◀/▶ **arrow** buttons to shift the cursor and press the

▲/▼ **arrow** buttons to set the character.

Press the ↵ **ENTER** button to save the work shift name.

ENTER SHIFT NAME

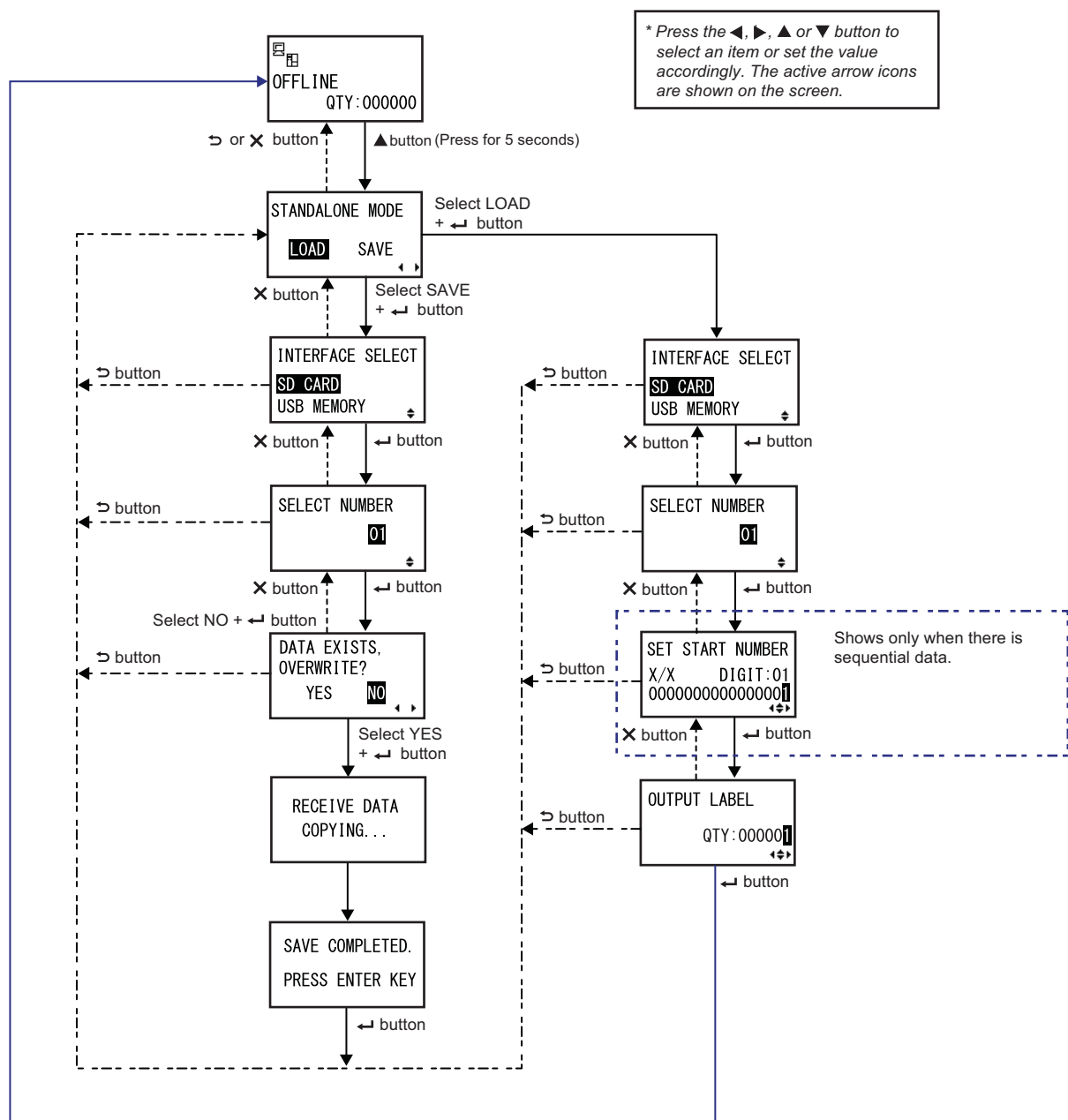


4.2.7 Simple Standalone Mode

This mode allows the printer to function independently from a host computer once a fixed format has been sent and saved to the SD card or USB memory.

The data may be saved to the SD card or USB memory while in the print buffer, and then recalled later with a new print quantity specified. The SD card or USB memory can hold a maximum of nine formats. However, one file number will only hold a single format; new format will overwrite the existing saved format. The host computer must be reconnected to the printer to overwrite an existing format.

The flowchart shows the sequence of the setting screens for the simple standalone mode. The table describes each setting screen in detail.



STANDALONE MODE

Select the following options using the ◀/▶ **arrow** buttons and then press the ↵ **ENTER** button.

- **LOAD**: Read and print the file.
- **SAVE**: Save the received print data to a file.

Note:

Three beeps will sound if you select SAVE and press the ↵ **ENTER** button when there is no received data.

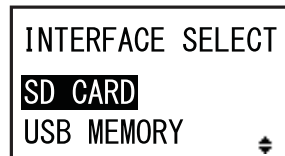


INTERFACE SELECT

Select the memory type using the ▲/▼ **arrow** buttons and then press the ↵ **ENTER** button.

Note:

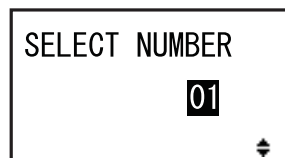
Three beeps will sound if the connected memory has no data to load or the selected memory is not connected.



SELECT NUMBER

Select the file number using the ▲/▼ **arrow** buttons and then press the ↵ **ENTER** button to load the specified file or save the received data.

The setting range is from 01 to 09.



DATA EXISTS, OVERWRITE?

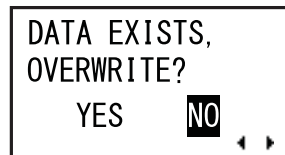
This screen confirms that you are overwriting a file if you have selected to save to an existing file number.

Select the following options using the ◀/▶ **arrow** buttons and then press the ↵ **ENTER** button.

- **YES**: Overwrite the existing file.
- **NO**: Cancel the overwrite and return to the SELECT NUMBER screen.

Note:

Make sure that you do not need the existing file before overwriting it.



RECEIVE DATA COPYING. . .	
<p>This screen shows that the received data is being copied. SAVE COMPLETED shows when the received data is fully copied.</p> <hr/> <p>Note: Three beeps will sound if the printer fails to copy the received data. The printer returns to the STANDALONE MODE screen.</p> <hr/>	<div>RECEIVE DATA COPYING. . .</div>










SAVE COMPLETED.	
<p>This screen shows when the received data is saved to a specified file. Press the ↵ ENTER button to return to the STANDALONE MODE screen.</p>	<div>SAVE COMPLETED. PRESS ENTER KEY</div>

SET START NUMBER	
<p>This is the edit screen of the sequential data included in the read data. Move the cursor using the ◀/▶ arrow buttons, change the value using the ▲/▼ arrow buttons and then press the ↵ ENTER button. The "X/X" in the screen shows the currently edited sequential data number and total sequential data number. DIGIT is the digit number of the selected cursor. The screen may be decimal or hex according to the read data. The maximum number of DIGIT is 99.</p> <hr/> <p>Note: Shows only when there is sequential data.</p> <hr/>	<div>SET START NUMBER X/X DIGIT:01 00000000000000001 ◀▶</div>

OUTPUT LABEL	
<p>This screen allows you to specify the print number. Move the cursor using the ◀/▶ arrow buttons, change the value using the ▲/▼ arrow buttons and then press the ↵ ENTER button.</p>	<div>OUTPUT LABEL QTY:000001 ◀▶</div>

4.2.8 Setting Mode Menu

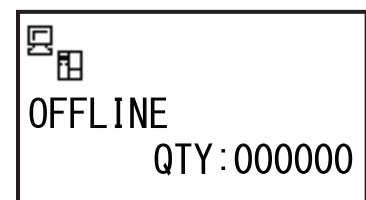
In the settings mode menu, the setting modes are shown as follows:

Menu	Description
 Online mode	Return to online mode.
 User mode	Access the settings related to the basic user configurations.
 Interface mode	Access the settings related to the interfaces.
 Memory mode	Access the settings related to the memory.
 Service mode	Access the settings related to the media sensor adjustment and various functions activation.
 Advanced mode	Access the settings related to the advanced printer configurations.
 Hex dump mode	Access and print the hex dump for troubleshooting.
 RFID mode	Access the settings related to the optional RFID module. Shows only when the optional RFID is installed.
 Information mode	Access the information of this printer.

Select the setting mode according to the following procedures:

- 1 Press the **▶|| LINE** button to change the printer to offline mode.

The printer changes to offline mode.



- 2 Press the **↵ ENTER** button.

The printer changes to the setting mode menu.

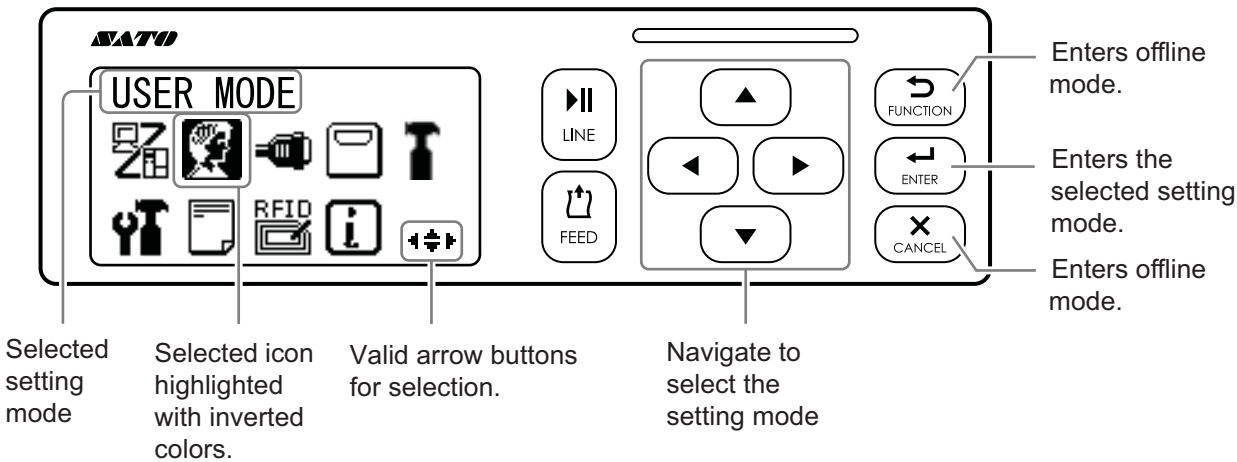
- 3 Select the setting mode using the **▲/▼/◀/▶ arrow** buttons.

The selected setting mode shows on the screen and the icon is highlighted by inverting its colors.



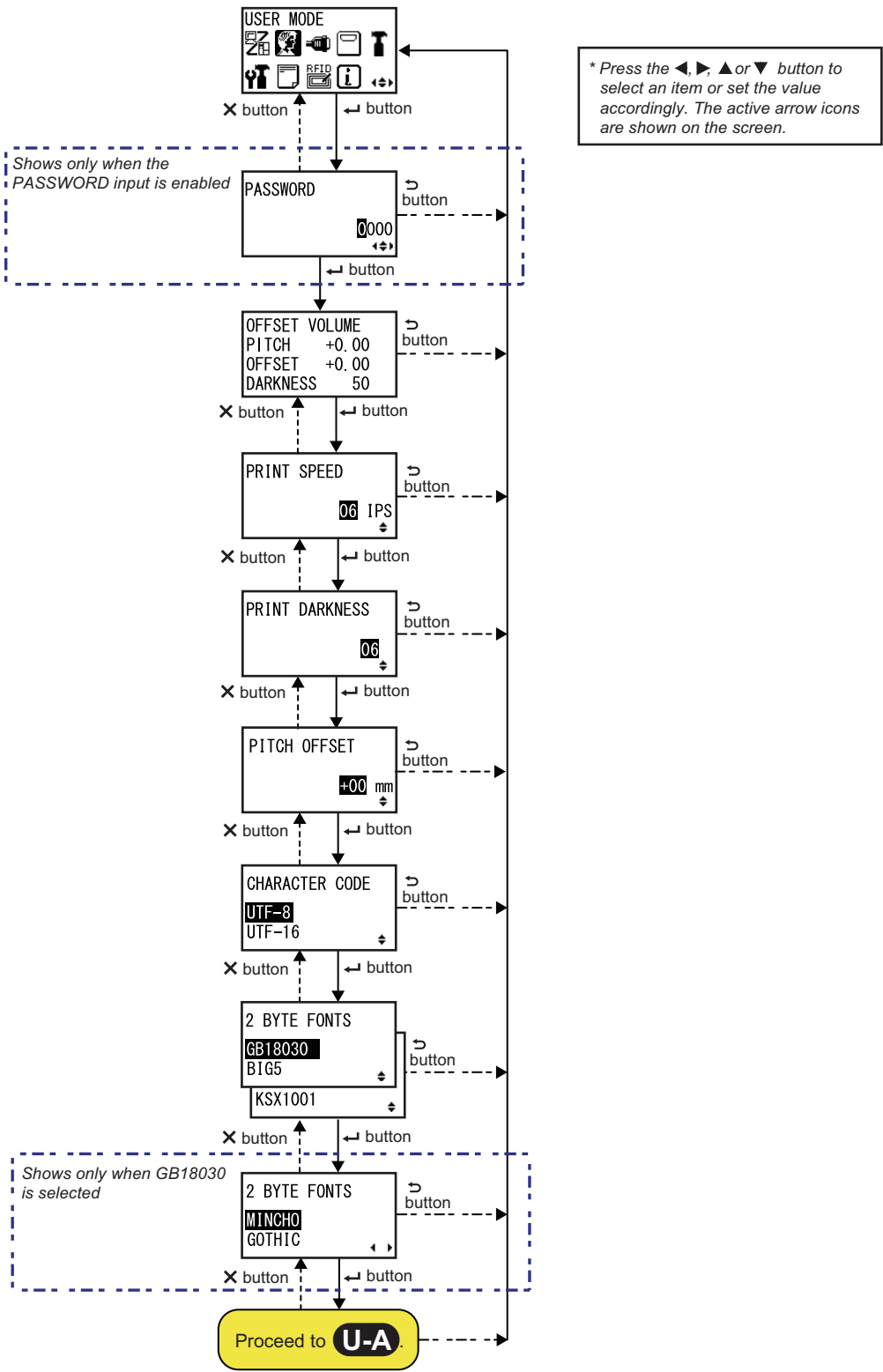
- 4 Press the **↵ ENTER** button to enter the selected mode.

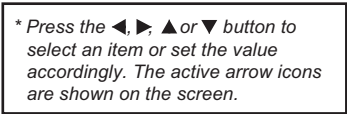
The functions of the buttons in the setting mode menu are shown as below.



4.2.9 User Mode

The flowchart shows the sequence of the setting screens for the user mode. The table describes each setting screen in detail.





OFFSET VOLUME

The setting values of the adjustment mode are shown.

- **PITCH:** Shows the print position offset value.
- **OFFSET:** Shows the stop position offset value.
- **DARKNESS:** Shows the darkness setting value.

You can change these values in **Adjustment Mode** and **Test Print Mode**.

OFFSET VOLUME	
PITCH	+0.00
OFFSET	+0.00
DARKNESS	50

PRINT SPEED

The setting range varies depending on the model.

- S84-ex (203 dpi): 4 to 16 ips (inches/sec)
- S86-ex (203 dpi): 4 to 14 ips (inches/sec)
- S84-ex (305 dpi): 4 to 14 ips (inches/sec)
- S86-ex (305 dpi): 4 to 12 ips (inches/sec)
- S84-ex (609 dpi): 2 to 6 ips (inches/sec)

Note:

Setting the print speed to a level that is too fast may affect the print quality.

PRINT SPEED

06 IPS
⬆ ⬆

PRINT DARKNESS

Specify the print darkness from ten steps.

The setting range is from 1 to 10. 1 is the lightest and 10 is the darkest.

PRINT DARKNESS

06
⬆ ⬆

PITCH OFFSET

This setting adjusts the pitch offset value.

The media pitch is the distance between the leading edge (the edge that comes out of the printer first) of the media and the leading edge of the next media. Once the position has been set, it can be fine adjusted using the PITCH POSITION in adjustment mode.

The setting range is from -49 mm (-1.9") to +49 mm (+1.9") and is adjustable by 1 mm (0.04") steps.

Set the offset value with '+' to move the print position opposite the feed direction and '-' to move the print position in the feed direction.

PITCH OFFSET

+00 mm
⬆ ⬆

CHARACTER CODE

Set the character code to be used.

- **UTF-8:** Use UTF-8 for character encoding.
- **UTF-16:** Use UTF-16 for character encoding.

CHARACTER CODE

UTF-8
UTF-16
⬆ ⬆

2 BYTE FONTS

Set the kanji code to be used.

- **GB18030**: Set for use with simplified Chinese.
- **BIG5**: Set for use with traditional Chinese.
- **KSX1001**: Set for use with Korean.

The following kanji codes are available when GB18030 is selected:

- **MINCHO**: Print the kanji code using MINCHO.
- **GOTHIC**: Print the kanji code using GOTHIC.

2 BYTE FONTS

GB18030

BIG5

KSX1001

2 BYTE FONTS

MINCHO

GOTHIC

NOTIFICATION FUNCTION SETTING

Select whether or not to set the notification function.

- **YES**: Set the notification function.
- **NO**: Do not set the notification function. The screen returns to user mode.

Note:

For details on the media motion when the set notification interval has reached, refer to [Section 7.6 Notification Function](#).

NOTIFICATION FUNCTION SETTING

YES

NO

NOTICE FUNCTION (SELECT)

Select the items for notification.

- **CLEAN PRINTER**: Notify when to perform cleaning of the printer.
- **CHANGE ROLLER**: Notify when to perform replacement of the platen roller.
- **CHANGE HEAD**: Notify when to perform replacement of the print head.

NOTICE FUNCTION

CLEAN PRINTER

CHANGE ROLLER

CHANGE HEAD

NOTICE FUNCTION (ENABLE/DISABLE)

Enable or disable the notification for the item selected in the above NOTICE FUNCTION.

- **ENABLE**: Enable the notification function.
- **DISABLE**: Disable the notification function.

NOTICE FUNCTION

ENABLE

DISABLE

CLEAN PRINTER

Set the notification distance for cleaning the printer.
The setting range is from 000 to 999 m.

Note:

The notification function will be disabled if the distance is set to 0.

CLEAN PRINTER
NOTICE DISTANCE
000 m


CHANGE ROLLER

Set the notification distance for changing the platen roller.
The setting range is from 000 to 150 km.

Note:

The notification function will be disabled if the distance is set to 0.

CHANGE ROLLER
NOTICE DISTANCE
000 km


CHANGE HEAD

Set the notification distance for changing the print head.
The setting range is from 000 to 150 km.

Note:

The notification function will be disabled if the distance is set to 0.


CHANGE HEAD
NOTICE DISTANCE
000 km


SETTING FINISH?

Confirm to complete the setting.

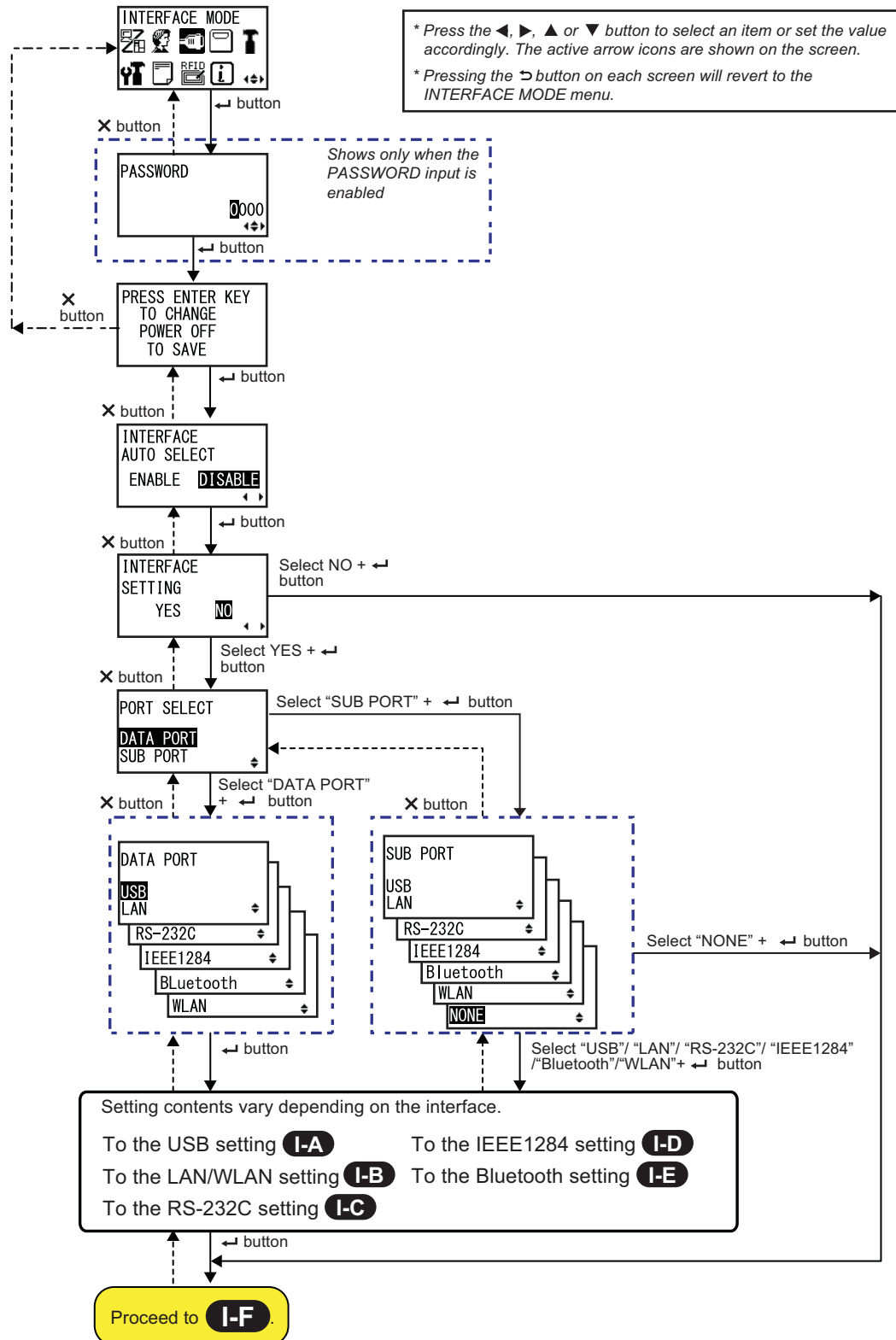
- **YES:** Returns to the user mode screen.
- **NO:** Returns to the NOTICE FUNCTION screen to select an item.

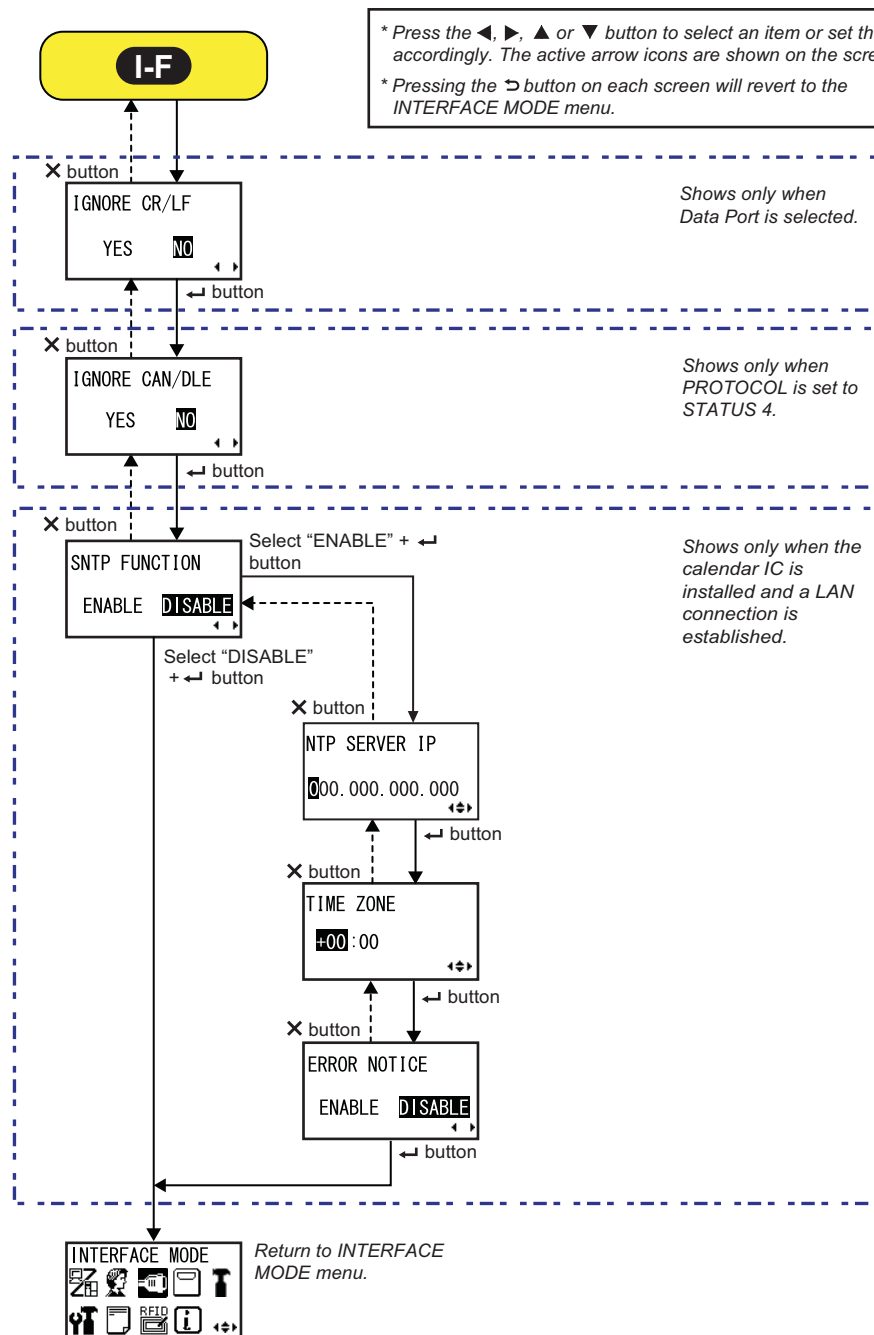
SETTING FINISH?
YES NO



4.2.10 Interface Mode

The flowchart shows the sequence of the setting screens for the interface mode. The table describes each setting screen in detail.





PRESS ENTER KEY

This screen reminds the user to press the **↵ ENTER** button to change or power off the printer to save the setting.

PRESS ENTER KEY
TO CHANGE
POWER OFF
TO SAVE

INTERFACE AUTO SELECT

Enable or disable the interface auto detection.

- **ENABLE:** Automatically select the connected interface.
- **DISABLE:** The interface is selected based on the interface setting.

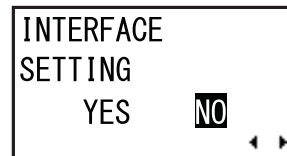
Note:

The setting will be effective only when you power on the printer again.

**INTERFACE SETTING**

Set whether or not to perform the interface settings.

- **YES:** Enter the PORT SELECT screen.
- **NO:** Enter the IGNORE CR/LF screen.

**PORT SELECT**

Select the port used for the connected interface.

- **DATA PORT:** For receiving various SBPL commands and executing print operations.
- **SUB PORT:** For monitoring the printer status and connecting to external devices.

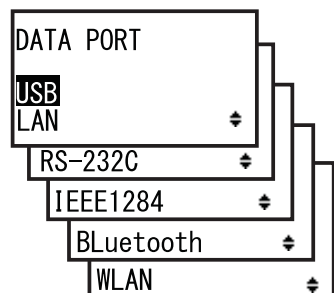
**DATA PORT**

Select the connected interface for use with the data port.
One of the following interfaces can be selected.

- **USB**
- **LAN**
- **RS-232C**
- **IEEE1284**
- **Bluetooth**
- **WLAN**

Notes:

- Bluetooth shows only when a Bluetooth adapter is connected.
- WLAN shows only if a WLAN unit is installed.
- You cannot select the interface that has already been set for the SUB PORT.
- The setting will be effective only when you power on the printer again.



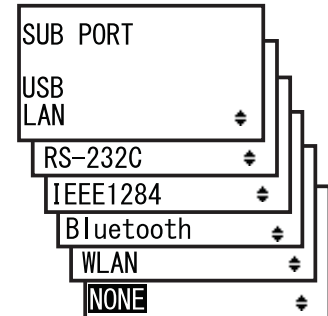
SUB PORT

Select the connected interface for use with the data port.
One of the following interfaces can be selected.

- **USB**
- **LAN**
- **RS-232C**
- **IEEE1284**
- **Bluetooth**
- **WLAN**
- **NONE**

Notes:

- Bluetooth shows only when a Bluetooth adapter is connected.
- WLAN shows only if a WLAN unit is installed.
- You cannot select the interface that has already been set for the DATA PORT.
- The setting will be effective only when you power on the printer again.



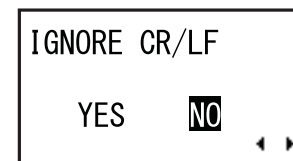
IGNORE CR/LF

Ignore or acknowledge the CR/LF code of the received data.

- **YES**: Ignore the CR/LF code.
- **NO**: Do not ignore the CR/LF code.

Note:

Shows only if the DATA PORT is selected.



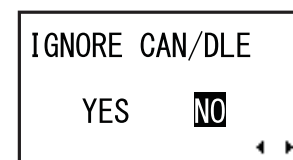
IGNORE CAN/DLE

Ignore or acknowledge the CAN/DLE code of the received data.

- **YES**: Ignore the CAN/DLE code.
- **NO**: Do not ignore the CAN/DLE code.

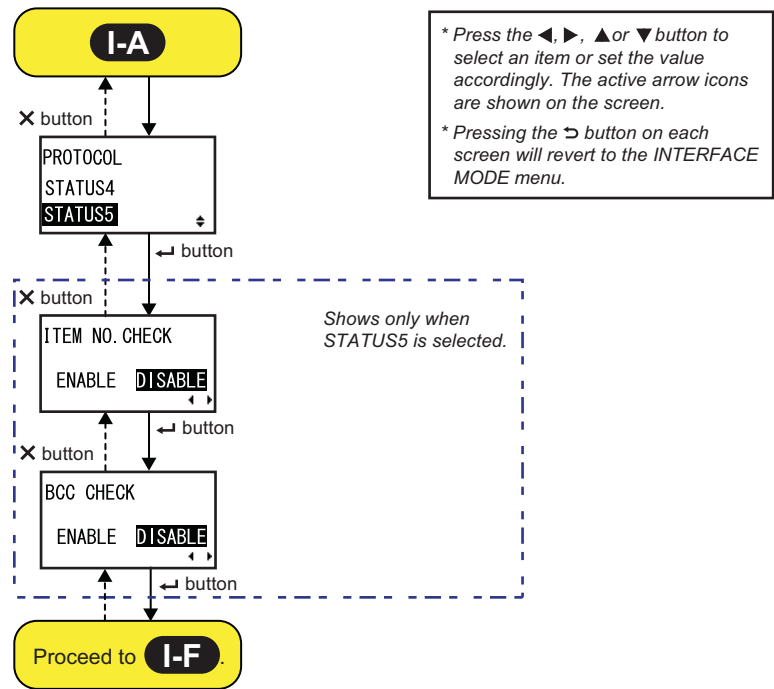
Note:

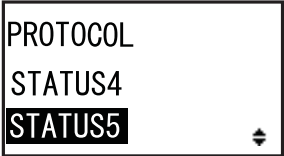
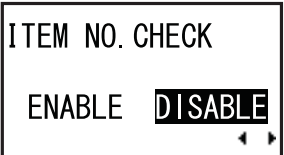
Shows only if PROTOCOL is set to STATUS4.



SNTP FUNCTION	
<p>Enable or disable the SNTP function.</p> <ul style="list-style-type: none">• ENABLE: Perform the time correction of the calendar IC.• DISABLE: Do not perform the time correction of the calendar IC. <p>Note: Shows only when the calendar IC is installed and the LAN interface is selected.</p>	<div>SNTP FUNCTION</div> <div>ENABLE DISABLE</div>
NTP SERVER IP	
<p>Set the NTP server IP address.</p> <p>Note: Shows only when the SNTP function is enabled.</p>	<div>NTP SERVER IP</div> <div>000.000.000.000</div>
TIME ZONE	
<p>Set the time zone. The setting range is from -12:45 to +14:45.</p> <p>Note: Shows only when the SNTP function is enabled.</p>	<div>TIME ZONE</div> <div>+00:00</div>
ERROR NOTICE	
<p>Set whether or not to notify the SNTP function error.</p> <ul style="list-style-type: none">• ENABLE: Shows an error notice when failing to correct the time.• DISABLE: Does not show an error notice when failing to correct the time. <p>Note: Shows only when the SNTP function is enabled.</p>	<div>ERROR NOTICE</div> <div>ENABLE DISABLE</div>

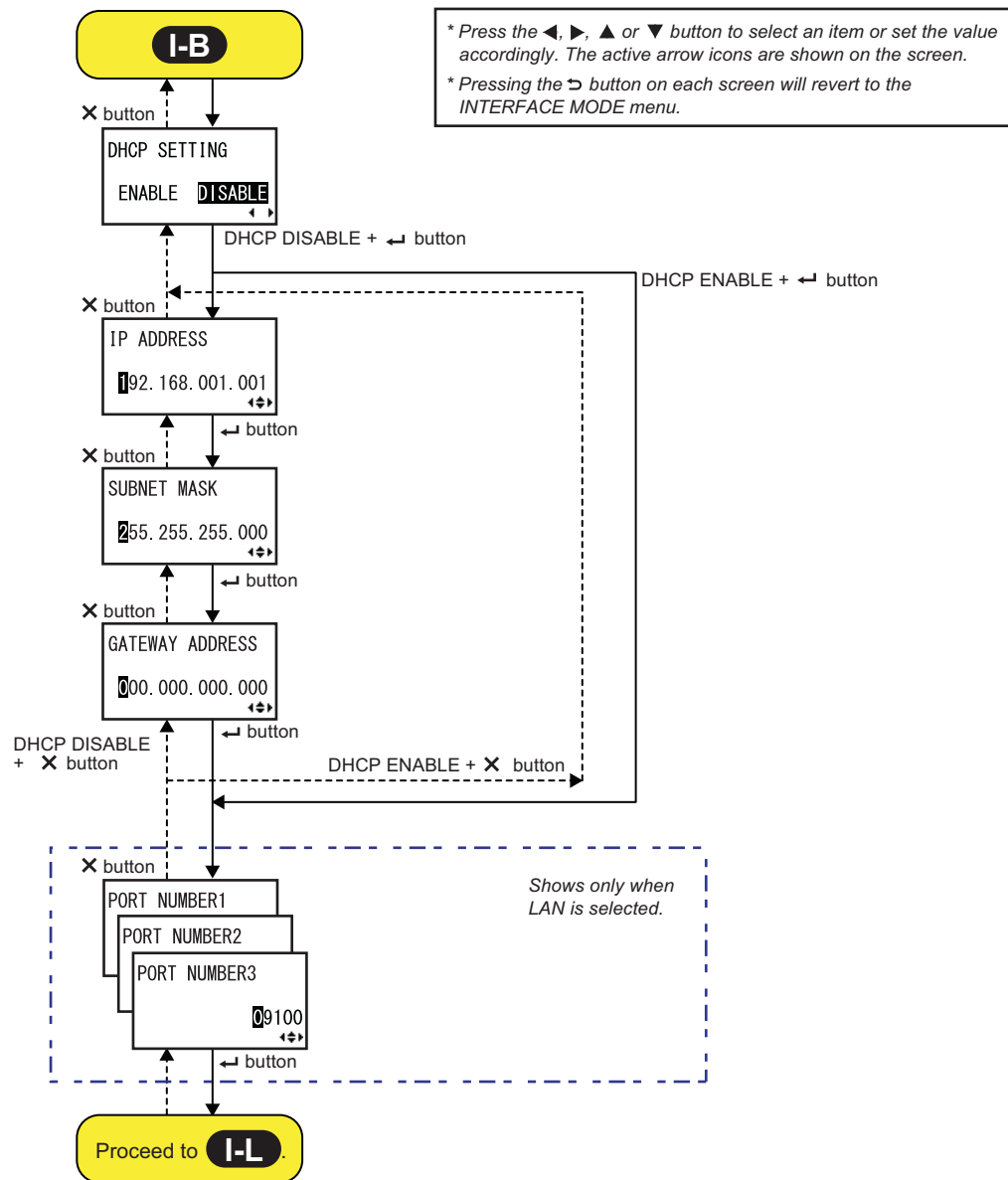
USB Setting

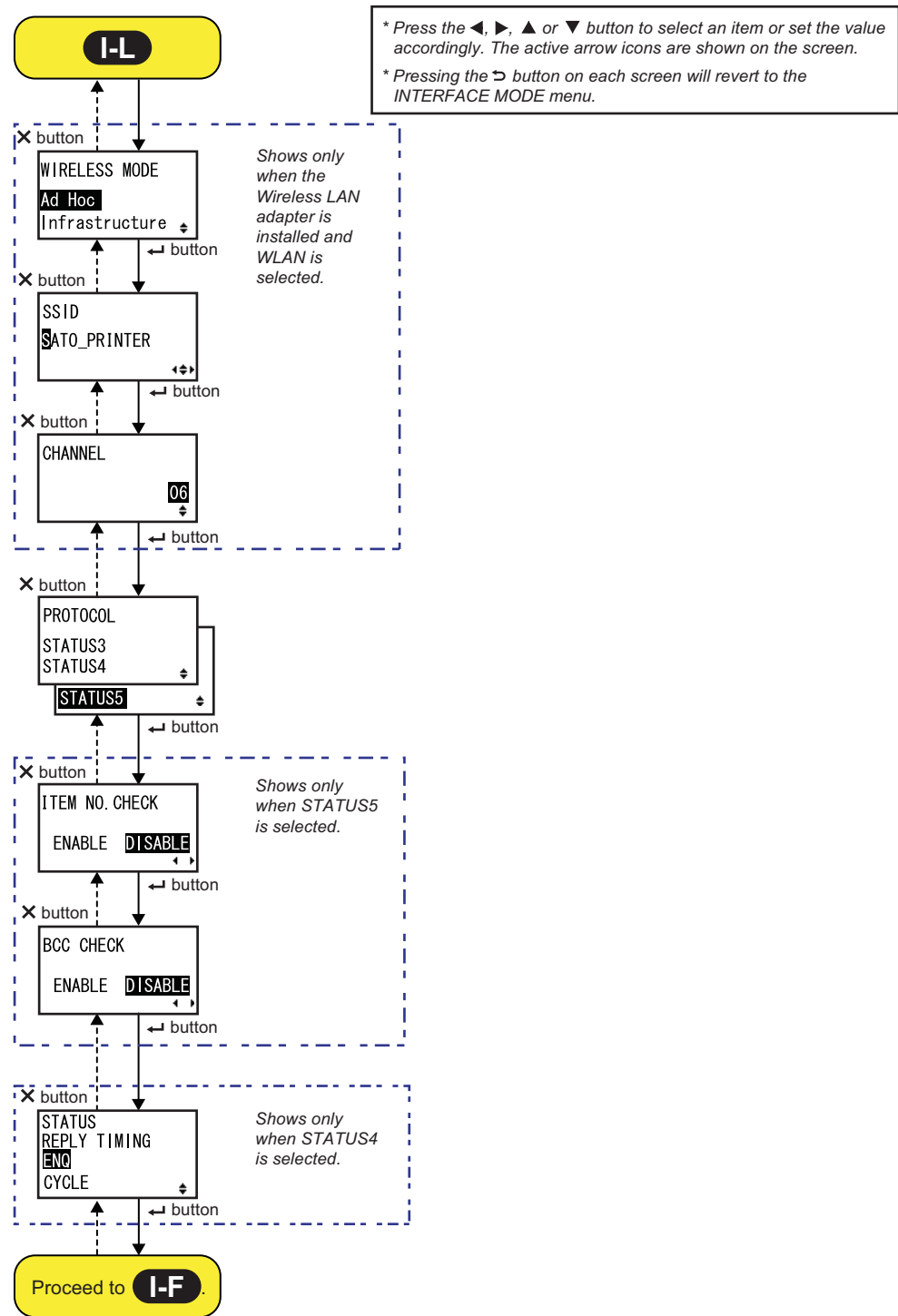


PROTOCOL	
<p>Set the communication protocol.</p> <ul style="list-style-type: none">• STATUS4: When selected, the printer will proceed to the IGNORE CR/ LF screen.• STATUS5: When selected, the printer will proceed to the ITEM NO. CHECK screen.	
ITEM NO. CHECK	
<p>Set the item number check function.</p> <ul style="list-style-type: none">• ENABLE: Enable the item number check function.• DISABLE: Disable the item number check function. <p>Note: Shows only when PROTOCOL is set to STATUS5.</p>	

BCC CHECK	
<p>Set the BCC check function.</p> <ul style="list-style-type: none">• ENABLE: Enable the BCC check function.• DISABLE: Disable the BCC check function. <p>Note: Shows only when PROTOCOL is set to STATUS5.</p>	<div><div>BCC CHECK</div><div>ENABLE DISABLE</div></div>

LAN/Wireless LAN Setting





DHCP SETTING

Enable or disable DHCP.

- **ENABLE:** Enable DHCP.
- **DISABLE:** Disable DHCP.

Notes:

- Shows only if the LAN or WLAN interface is selected.
- The setting for the WLAN interface will be effective only when you power on the printer again.

DHCP SETTING

ENABLE **DISABLE**

IP ADDRESS

Set the IP address.

The setting range is from 0.0.0.0 to 255.255.255.255.

The default value is 192.168.001.001.

Notes:

- Shows only if the LAN or WLAN interface is selected.
- The setting will be effective only when you power on the printer again.

IP ADDRESS

192. 168. 001. 001

SUBNET MASK

Set the subnet mask address.

The setting range is from 0.0.0.0 to 255.255.255.255.

The default value is 255.255.255.000.

Notes:

- Shows only if the LAN or WLAN interface is selected.
- The setting will be effective only when you power on the printer again.

SUBNET MASK

255. 255. 255. 000

GATEWAY ADDRESS

Set the gateway address.

The setting range is from 0.0.0.0 to 255.255.255.255.

The default value is 000.000.000.000.

Notes:

- Shows only if the LAN or WLAN interface is selected.
- The setting will be effective only when you power on the printer again.

GATEWAY ADDRESS

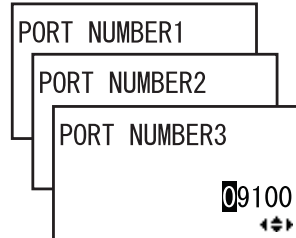
000. 000. 000. 000

PORT NUMBER

Set the LAN port numbers, 1 to 3.
The setting range is from 00001 to 65535.

Notes:

- Shows only if the LAN interface is selected.
- Each port (1, 2 and 3) must be set to different values.
- The setting will be effective only when you power on the printer again.



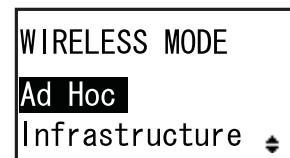
WIRELESS MODE

Set the communication method of the wireless LAN.
The options are as follows:

- **Ad Hoc**
- **Infrastructure**

Notes:

- Shows only if the WLAN interface is selected.
- The setting will be effective only when you power on the printer again.



SSID

Set the SSID of the wireless LAN.
You can enter a maximum of thirty-two characters including alphabet (upper case and lower case), numbers and symbols.

Notes:

- Shows only if the WLAN interface is selected.
- The setting will be effective only when you power on the printer again.



CHANNEL

Set the communication channel of the wireless LAN.
The setting range is from 01 to 13 and the default value is 06.

Notes:

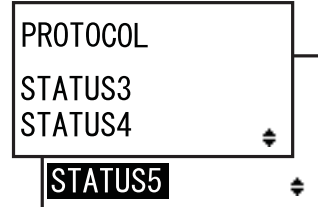
- Shows only if the WLAN interface is selected.
- The setting will be effective only when you power on the printer again.
- When the channel has become invalid due to a region code change, the channel returns to its default setting.



PROTOCOL

Set the communication protocol.

- **STATUS3**: When selected, the printer will proceed to the IGNORE CR/LF screen.
- **STATUS4**: When selected, the printer will proceed to the STATUS REPLY TIMING screen.
- **STATUS5**: When selected, the printer will proceed to the ITEM NO. CHECK screen.



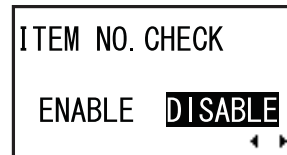
ITEM NO. CHECK

Set the item number check function.

- **ENABLE**: Enable the item number check function.
- **DISABLE**: Disable the item number check function.

Note:

Shows only when PROTOCOL is set to STATUS5.



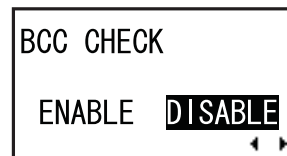
BCC CHECK

Set the BCC check function.

- **ENABLE**: Enable the BCC check function.
- **DISABLE**: Disable the BCC check function.

Note:

Shows only when PROTOCOL is set to STATUS5.



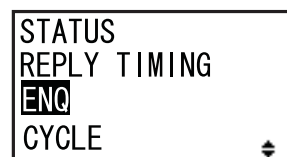
STATUS REPLY TIMING

Set the timing for replying with the status information to the host.

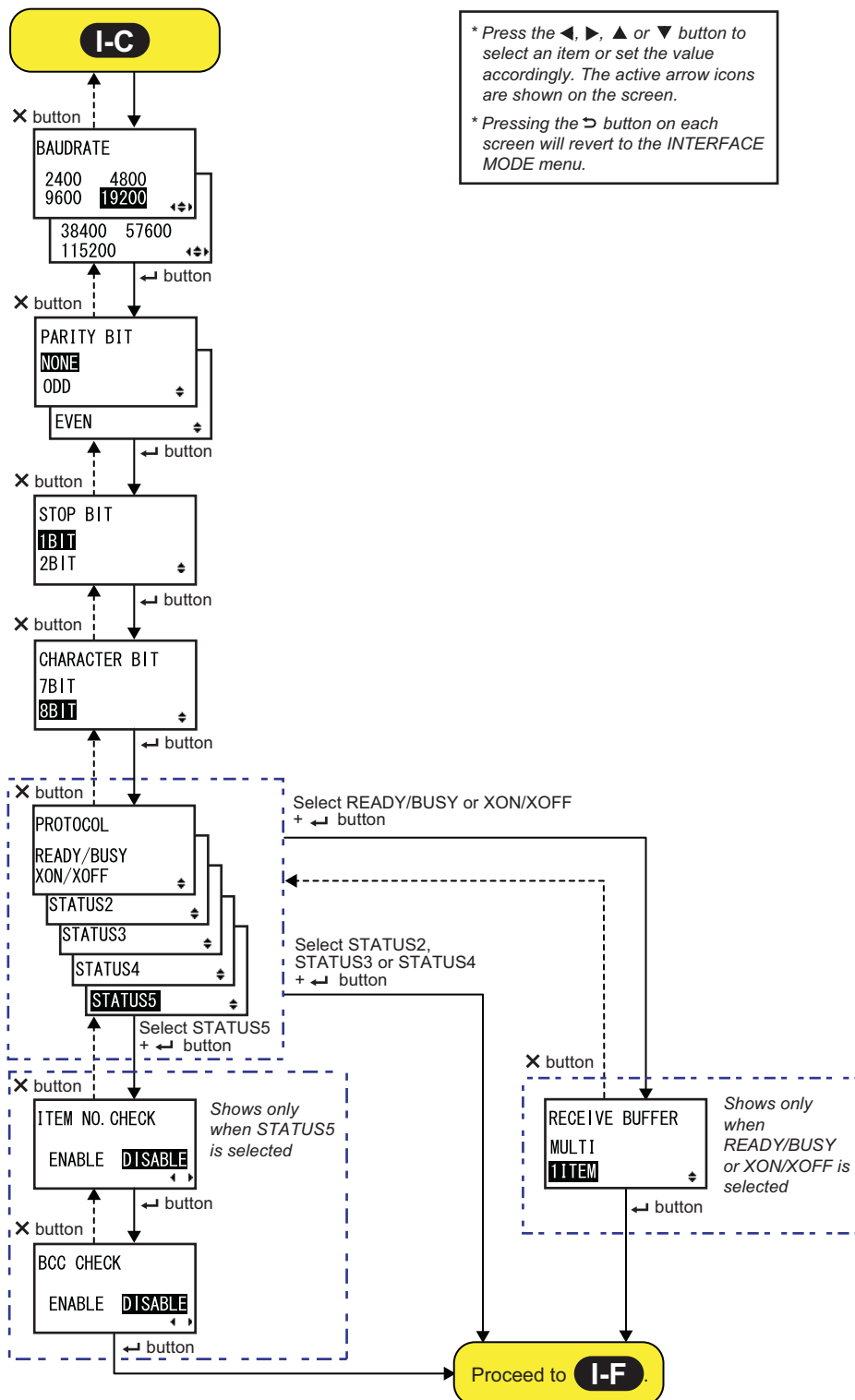
- **ENQ**: Returns a status after receiving a Status Request (ENQ), which was sent from the host.
- **CYCLE**: Returns a status from the printer to the host at an interval of 500 ms.

Note:

Shows only when PROTOCOL is set to STATUS4.



RS-232C Setting

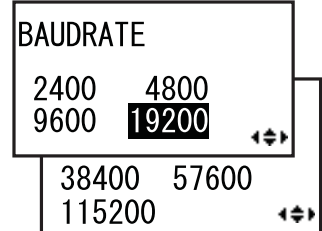


BAUDRATE

Set the RS-232C baud rate.

The following baud rates are available:

- **2400** (bps)
- **4800** (bps)
- **9600** (bps)
- **19200** (bps)
- **38400** (bps)
- **57600** (bps)
- **115200** (bps)

**Notes:**

- Shows only if the RS-232C interface is selected.
- The setting will be effective only when you power on the printer again.

PARITY BIT

Set the RS-232C parity bit.

The following options are available:

- **NONE**
- **ODD**
- **EVEN**

**Notes:**

- Shows only if the RS-232C interface is selected.
- The setting will be effective only when you power on the printer again.

STOP BIT

Set the RS-232C stop bit.

The following options are available:

- **1BIT**
- **2BIT**

**Notes:**

- Shows only if the RS-232C interface is selected.
- The setting will be effective only when you power on the printer again.

CHARACTER BIT

Set the RS-232C data length.
The following options are available:

- **7BIT**
- **8BIT**

Notes:

- Shows only if the RS-232C interface is selected.
- The setting will be effective only when you power on the printer again.

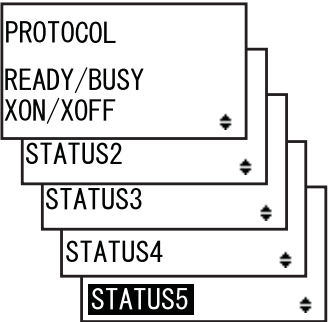


PROTOCOL

Set the communication protocol.

- **READY/BUSY**: When selected, the printer will proceed to the RECEIVE BUFFER screen.
- **XON/OFF**: When selected, the printer will proceed to the RECEIVE BUFFER screen.
- **STATUS2**: When selected, the printer will proceed to the IGNORE CR/LF screen.
- **STATUS3**: When selected, the printer will proceed to the IGNORE CR/LF screen.
- **STATUS4**: When selected, the printer will proceed to the IGNORE CR/LF screen.
- **STATUS5**: When selected, the printer will proceed to the ITEM NO. CHECK screen.

Note:
The setting will be effective only when you power on the printer again.

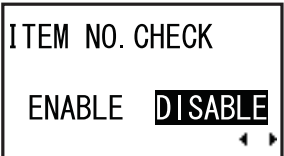


ITEM NO. CHECK

Set the item number check function.

- **ENABLE**: Enable the item number check function.
- **DISABLE**: Disable the item number check function.

Note:
Shows only when PROTOCOL is set to STATUS5.



BCC CHECK

Set the BCC check function.

- **ENABLE**: Enable the BCC check function.
- **DISABLE**: Disable the BCC check function.

Note:

Shows only when PROTOCOL is set to STATUS5.

BCC CHECK

ENABLE **DISABLE**

**RECEIVE BUFFER**

Set the receive buffer type.

- **MULTI**: Multiple receive buffers.
- **1ITEM**: A single receive buffer.

Note:

Shows only when PROTOCOL is set to READY/BUSY or XON/XOFF.

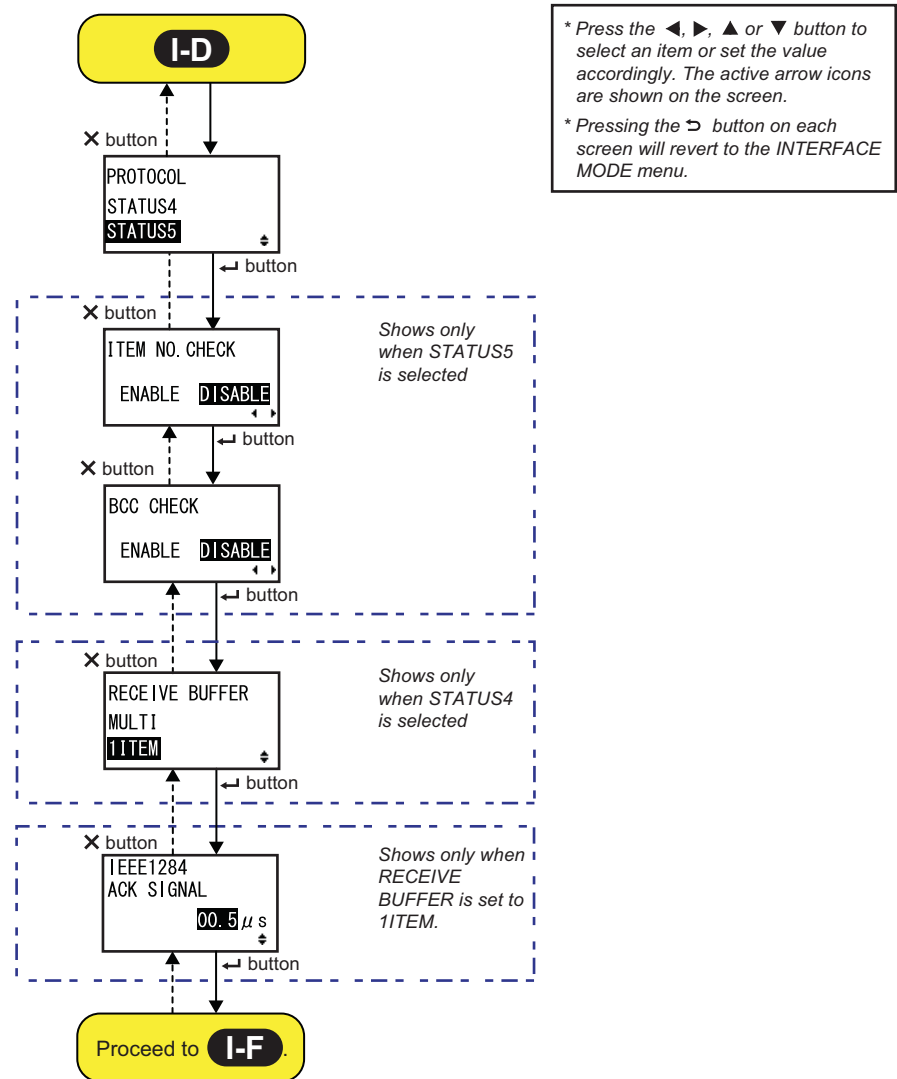
RECEIVE BUFFER

MULTI

1ITEM



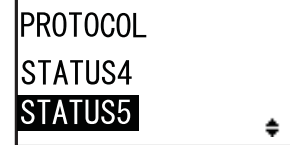
IEEE1284 Setting



PROTOCOL

Set the communication protocol.

- **STATUS4**: When selected, the printer will proceed to the RECEIVE BUFFER screen.
- **STATUS5**: When selected, the printer will proceed to the ITEM NO. CHECK screen.



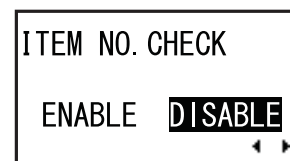
ITEM NO. CHECK

Set the item number check function.

- **ENABLE**: Enable the item number check function.
- **DISABLE**: Disable the item number check function.

Note:

Shows only when PROTOCOL is set to STATUS5.



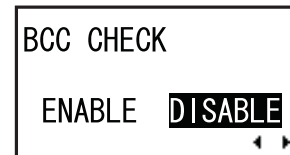
BCC CHECK

Set the BCC check function.

- **ENABLE**: Enable the BCC check function.
- **DISABLE**: Disable the BCC check function.

Note:

Shows only when PROTOCOL is set to STATUS5.



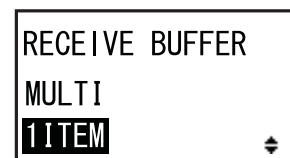
RECEIVE BUFFER

Set the receive buffer type.

- **MULTI**: Multiple receive buffers.
- **1ITEM**: A single receive buffer.

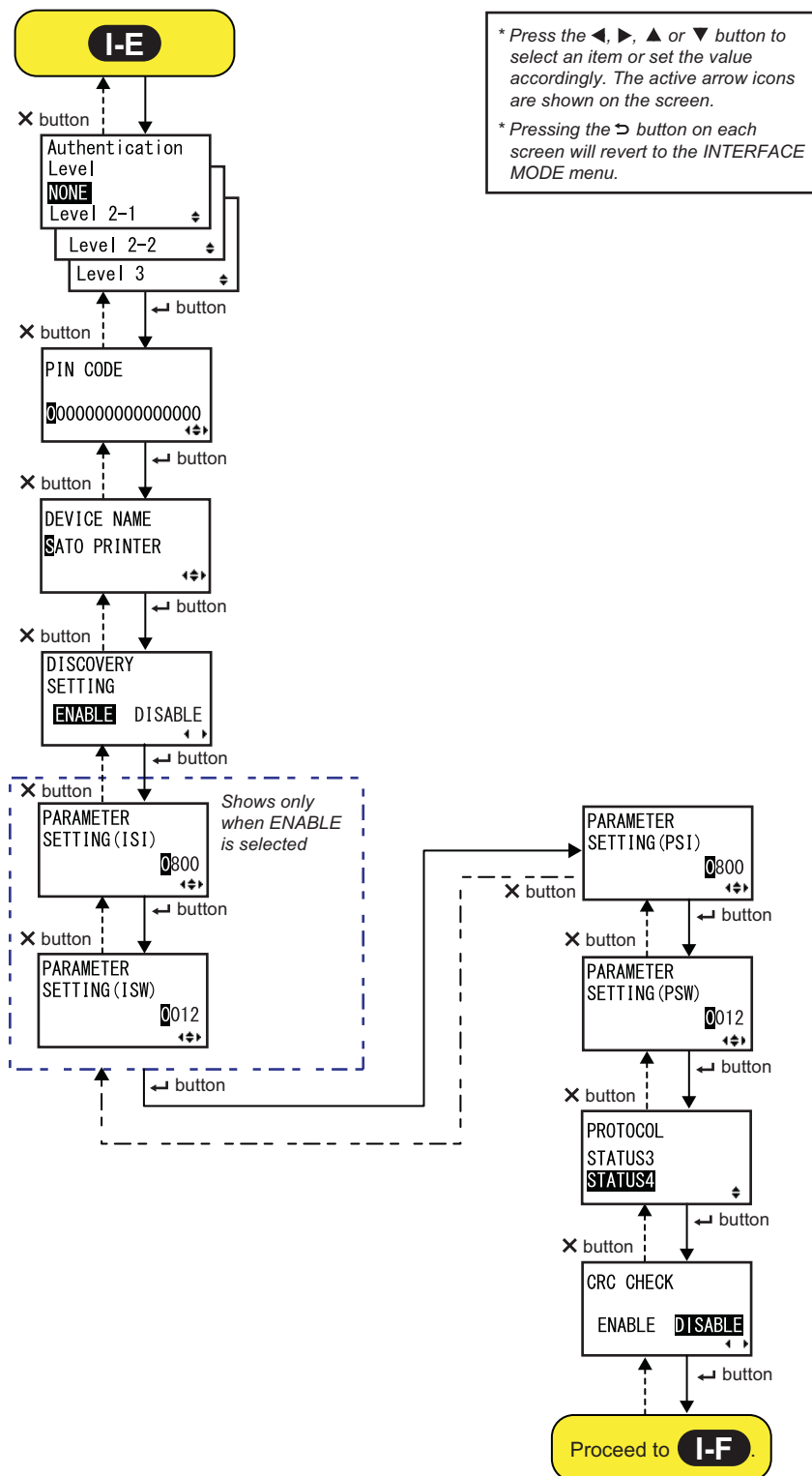
Note:

Shows only when PROTOCOL is set to STATUS4.



IEEE1284 ACK SIGNAL	
<p>Set the width of the IEEE1284 ACK signal. The setting range is from 00.5 μs to 12.0 μs, and is adjustable in 0.1 μs steps.</p> <hr/> <p>Note: Shows only if the IEEE1284 interface is selected and RECEIVE BUFFER is set to 1ITEM.</p> <hr/>	<div><div>IEEE1284 ACK SIGNAL</div><div>00.5 μs</div></div>

Bluetooth Setting



AUTHENTICATION LEVEL

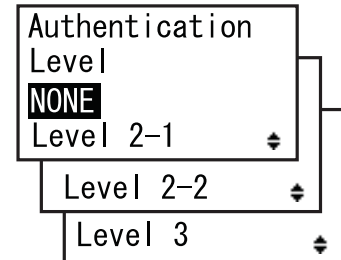
Set the Bluetooth authentication level.

The following options are available:

- **NONE**: No authentication
- **Level 2-1**: PIN code authentication, service level
- **Level 2-2**: PIN code authentication, service level
- **Level 3**: PIN code authentication, link level

Notes:

- Shows only if the Bluetooth interface is selected.
- The setting will be effective only when you power on the printer again.



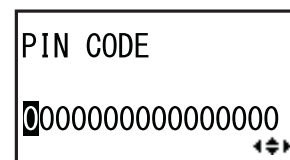
PIN CODE

Set the Bluetooth PIN code.

You can enter a maximum of sixteen characters including alphabet (upper case and lower case), numbers and symbols.

Notes:

- Shows only if the Bluetooth interface is selected.
- The setting will be effective only when you power on the printer again.



DEVICE NAME

Set the device name for the printer.

You can enter a maximum of twenty characters including alphabet (upper case and lower case), numbers and symbols.

Notes:

- Shows only if the Bluetooth interface is selected.
- The setting will be effective only when you power on the printer again.



DISCOVERY SETTING

Enable or disable the Bluetooth detection response.

- **ENABLE**: Enable the Bluetooth detection response.
- **DISABLE**: Disable the Bluetooth detection response.

Notes:

- Shows only if the Bluetooth interface is selected.
- The setting will be effective only when you power on the printer again.



PARAMETER SETTING(ISI)

Set the Bluetooth communication parameter (ISI).
The setting range is from 0012 to 1000.

Notes:

- Shows only if the Bluetooth interface is selected and DETECTING SETTING is enabled.
- You cannot set the ISI value if it is smaller than the ISW value.
- The setting will be effective only when you power on the printer again.

PARAMETER
SETTING (ISI)
0800
◀▶

PARAMETER SETTING(ISW)

Set the Bluetooth communication parameter (ISW).
The setting range is from 0011 to 1000.

Notes:

- Shows only if the Bluetooth interface is selected and DETECTING SETTING is enabled.
- You cannot set the ISW value if it is greater than the ISI value.
- The setting will be effective only when you power on the printer again.

PARAMETER
SETTING (ISW)
0012
◀▶

PARAMETER SETTING(PSI)

Set the Bluetooth communication parameter (PSI).
The setting range is from 0012 to 1000.

Notes:

- Shows only if the Bluetooth interface is selected.
- You cannot set the PSI value if it is smaller than the PSW value.
- The setting will be effective only when you power on the printer again.

PARAMETER
SETTING (PSI)
0800
◀▶

PARAMETER SETTING(PSW)

Set the Bluetooth communication parameter (PSW).
The setting range is from 0011 to 1000.

Notes:

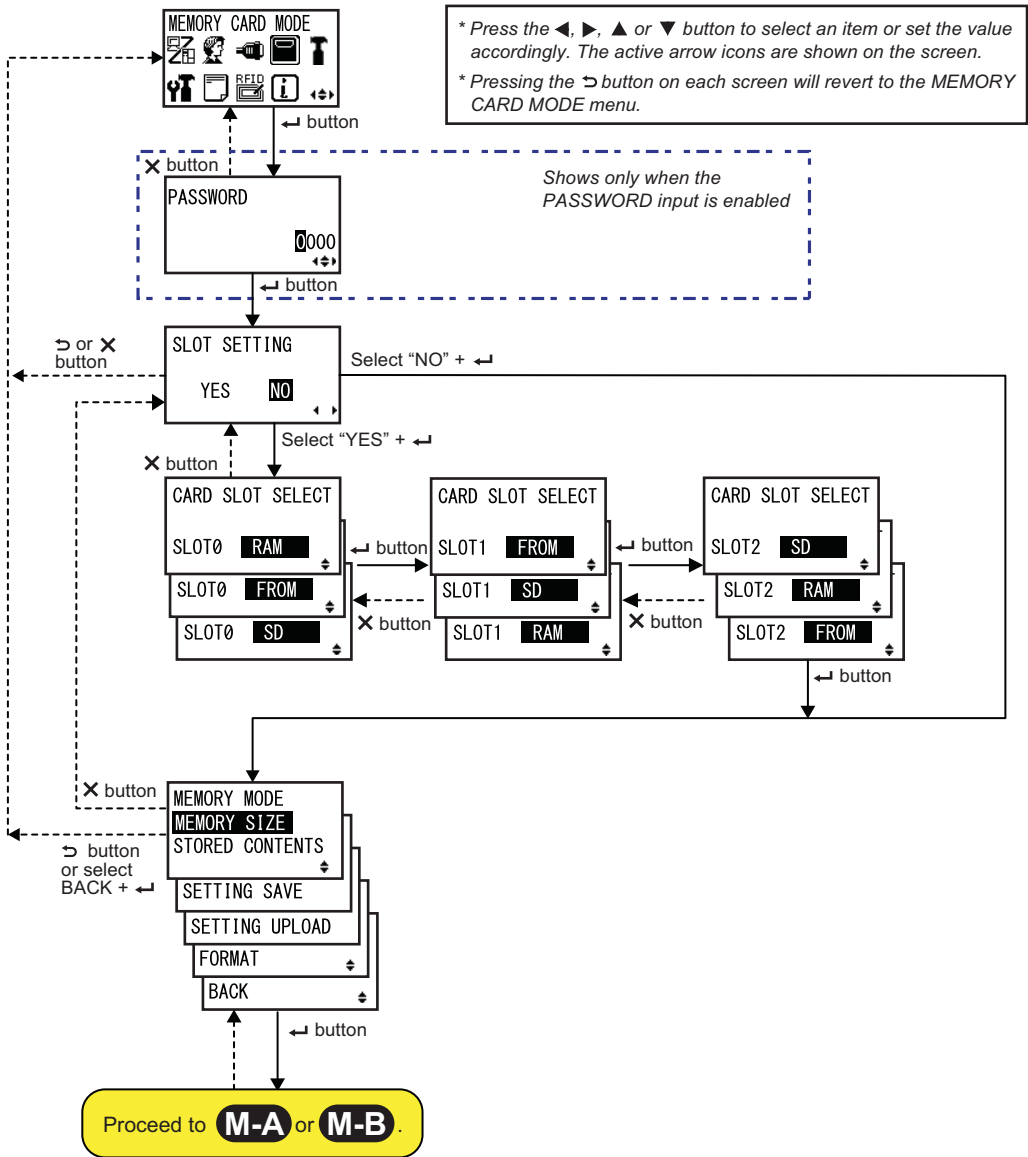
- Shows only if the Bluetooth interface is selected.
- You cannot set the PSW value if it is greater than the PSI value.
- The setting will be effective only when you power on the printer again.

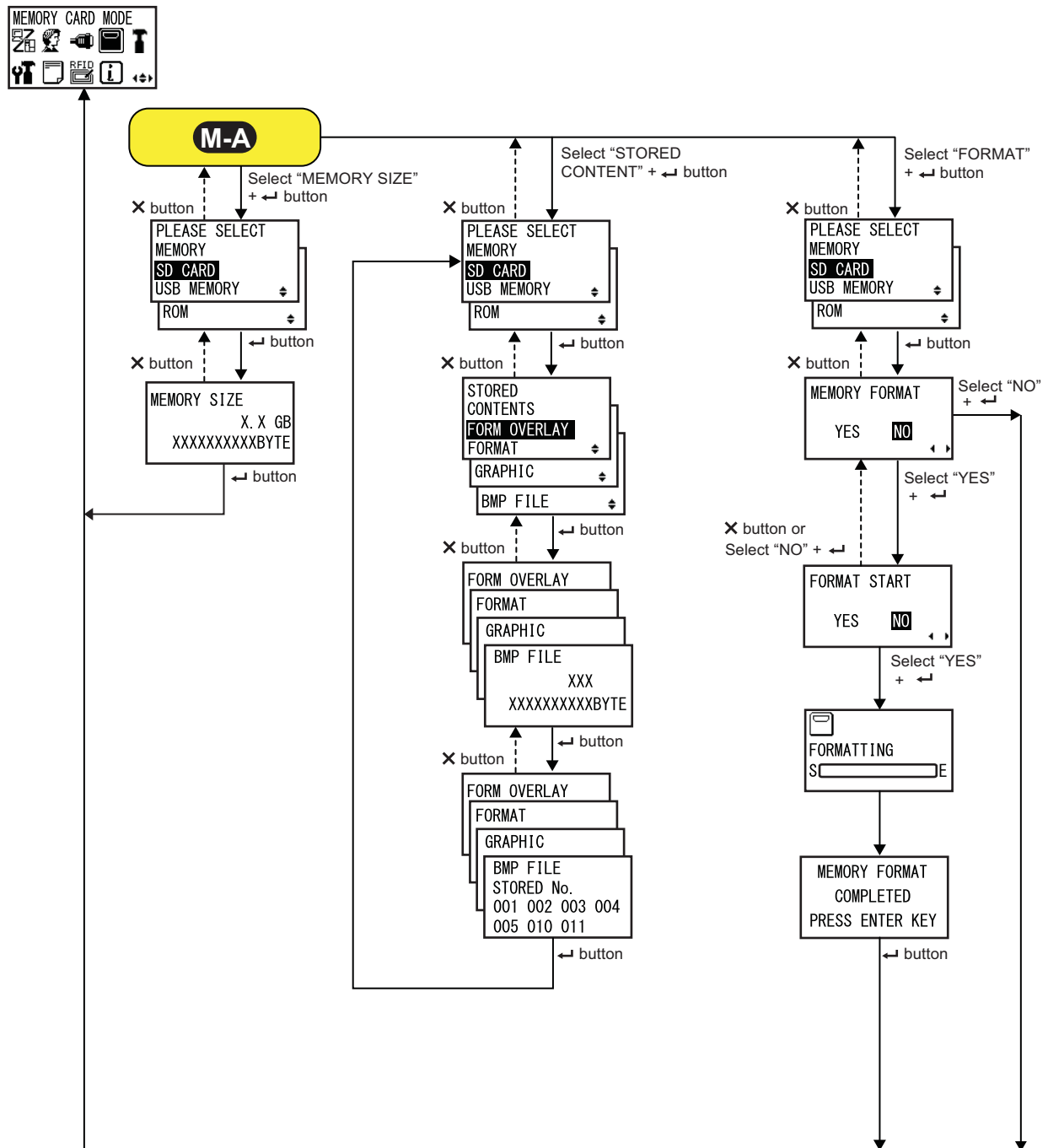
PARAMETER
SETTING (PSW)
0012
◀▶

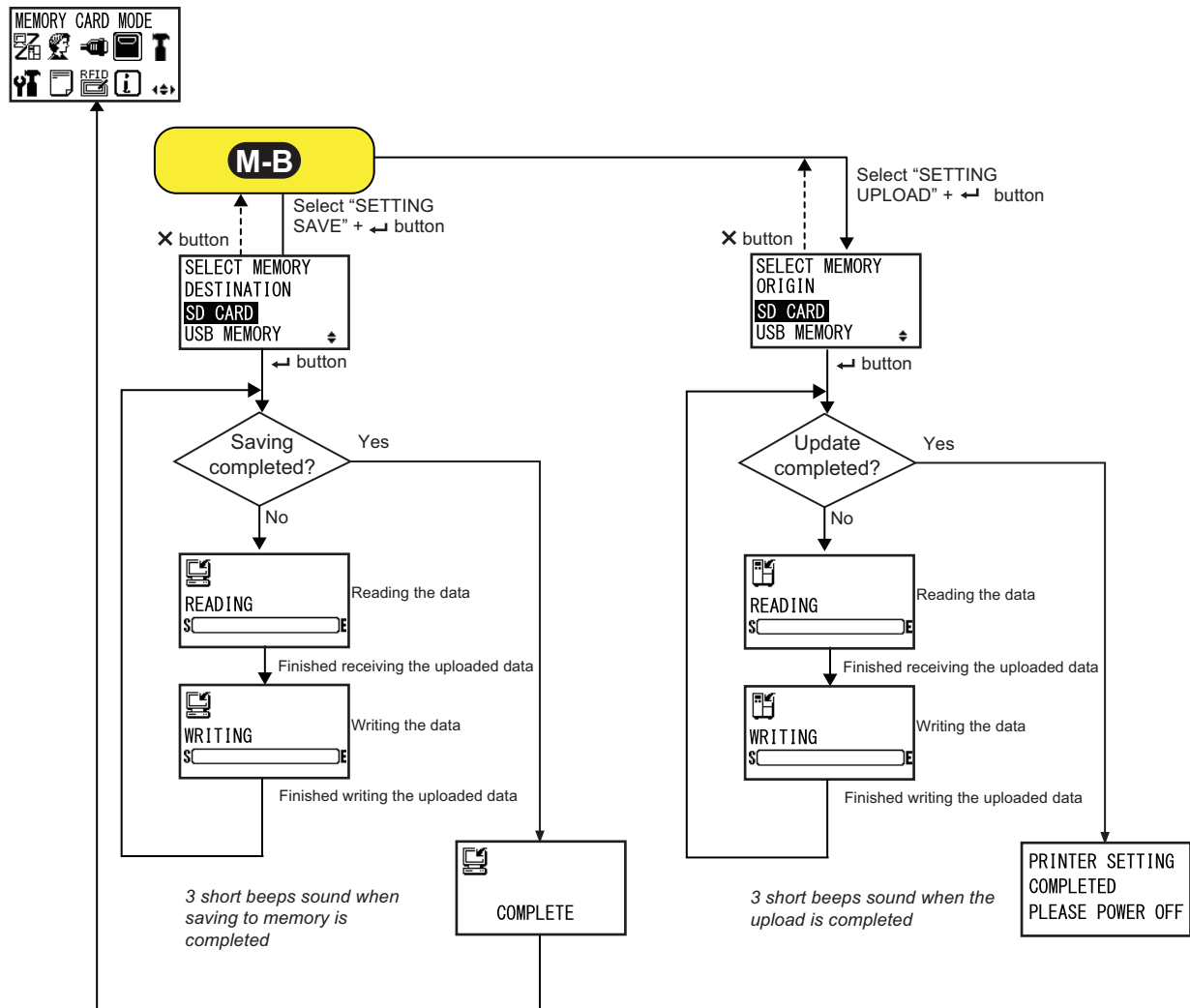
PROTOCOL	
<p>Set the communication protocol. The following options are available:</p> <ul style="list-style-type: none">• STATUS3• STATUS4	<div><div>PROTOCOL STATUS3 STATUS4</div></div>
CRC CHECK	
<p>Set the CRC check function.</p> <ul style="list-style-type: none">• ENABLE: Enable the CRC check function.• DISABLE: Disable the CRC check function. <p>Note: Shows only if the Bluetooth interface is selected.</p>	<div><div>CRC CHECK ENABLE DISABLE</div></div>

4.2.11 Memory Mode

The flowchart shows the sequence of the setting screens for the memory mode. The table describes each setting screen in detail.







SLOT SETTING

Select whether or not to set the memory storage allocation for use with the Memory card command <CC>.

- **YES:** Proceed to change the storage allocation for the memory slot.
- **NO:** No change to the memory slot.

Note:

Refer to the Programming reference for details of the command.

SLOT SETTING

YES

NO

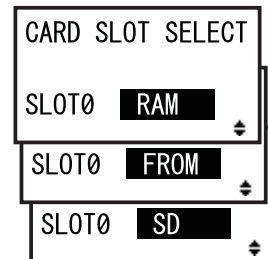
CARD SLOT SELECT

Set the memory storage allocation for each card slot for use with the Memory card command <CC>. A total of three slots can be set (Slot 0-2). Each card slot can be allocated to the following options:

- **RAM**
- **FROM** (Flash ROM)
- **SD** (SD card)
- **USB** (USB memory)
- **NO USE**

Note:

- Other than the NO USE option, a memory storage allocated to a card slot cannot be allocated to another card slot.
- Refer to the Programming reference for details of the command.

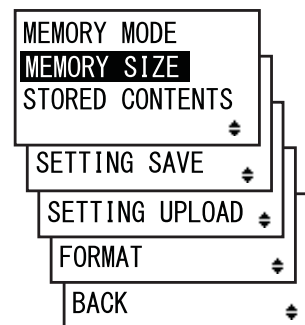


MEMORY MODE

Perform the memory settings.

The following options are available:

- **MEMORY SIZE**: Check the free size of the selected memory.
- **STORED CONTENTS**: Shows the information that is registered in the selected memory.
- **SETTING SAVE**: Save the printer setting information to the selected memory.
- **SETTING UPLOAD**: Update the printer setting information stored in the selected memory.
- **FORMAT**: Initialize and format the selected memory.
- **BACK**: Return to the MEMORY CARD MODE screen.



PLEASE SELECT MEMORY

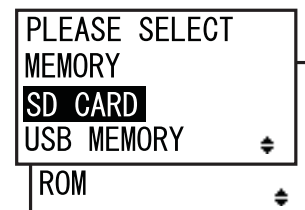
Select the memory you want to perform the settings.

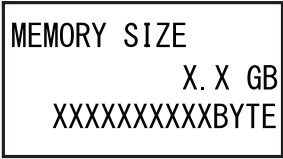
The following options are available:

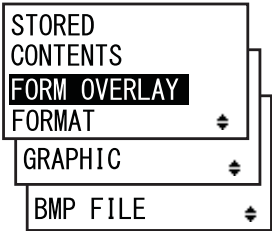
- **SD CARD**
- **USB MEMORY**
- **ROM**

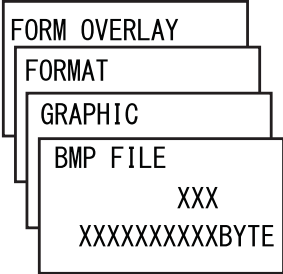
Note:

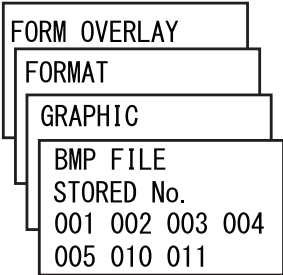
Shows only if MEMORY MODE is set to MEMORY SIZE, STORED CONTENTS or FORMAT.



MEMORY SIZE	
<p>Check the free size of the selected memory. The memory unit (BYTE, KB, MB, GB) changes automatically according to the free space of the memory.</p> <hr/> <p>Note: After you press the ↵ ENTER button, the screen returns to MEMORY CARD MODE.</p> <hr/>	

STORED CONTENTS	
<p>Select the type of information registered in the memory. The following options are available:</p> <ul style="list-style-type: none">• FORM OVERLAY• FORMAT• GRAPHIC• BMP FILE	

MEMORY INFORMATION	
<p>Shows the number of files and the total size of the selected type of information registered in the memory.</p>	

STORED NO. INFORMATION	
<p>Shows the stored number of the registered information.</p> <hr/> <p>Note: After you press the ↵ ENTER button, the screen returns to PLEASE SELECT MEMORY.</p> <hr/>	

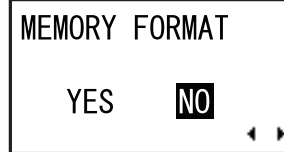
MEMORY FORMAT

Select whether or not to format the memory.

- **YES:** Format the memory.
- **NO:** Do not format the memory.

Note:

If you select NO, the screen returns to MEMORY CARD MODE.



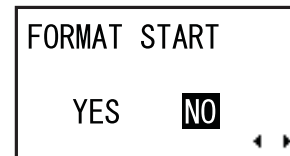
FORMAT START

Confirm to start formatting the memory.

- **YES:** Start to format the memory.
- **NO:** Cancel formatting the memory.

Note:

If you select NO, the screen returns to MEMORY FORMAT.



FORMATTING

Shows the formatting progress of the memory.

Note:

After formatting the memory card, a completion message will show.

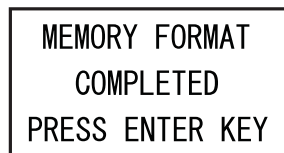


MEMORY FORMAT COMPLETED

Shows that the formatting of the memory card is completed.

Note:

After you press the **↵ ENTER** button, the screen returns to MEMORY CARD MODE.



SELECT MEMORY DESTINATION

Select the memory to save the printer setting information.
The following options are available:

- **SD CARD**
- **USB MEMORY**

Note:

- Shows only if MEMORY MODE is set to SETTING SAVE.
- The setting information of the wireless LAN is saved only when the wireless LAN is connected.

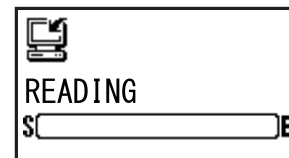


READING (SETTING SAVE)

Shows while the printer is reading the setting information data.

Note:

Automatically shows the WRITING screen upon completion.



WRITING (SETTING SAVE)

Shows while the printer is writing the setting information data.

Note:

Shows the COMPLETE screen automatically upon completion.



COMPLETE

Shows when the printer setting information has been saved to memory.

Note:

After three beeps sound, the screen returns to MEMORY CARD MODE.



SELECT MEMORY ORIGIN

Select the memory to copy the printer setting information.
The following options are available:

- **SD CARD**
- **USB MEMORY**

Note:

- Shows only if MEMORY MODE is set to SETTING UPLOAD.

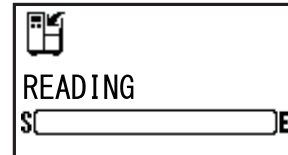


READING (SETTING UPLOAD)

Shows while the printer is reading the setting information data.

Note:

Automatically shows the WRITING screen upon completion.



WRITING (SETTING UPLOAD)

Shows while the printer is writing the setting information data.

Note:

Automatically shows the PRINTER SETTING COMPLETED screen upon completion.

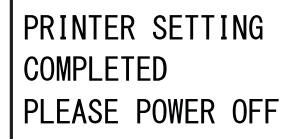


PRINTER SETTING COMPLETED

Shows when the printer setting information has been uploaded to the printer.

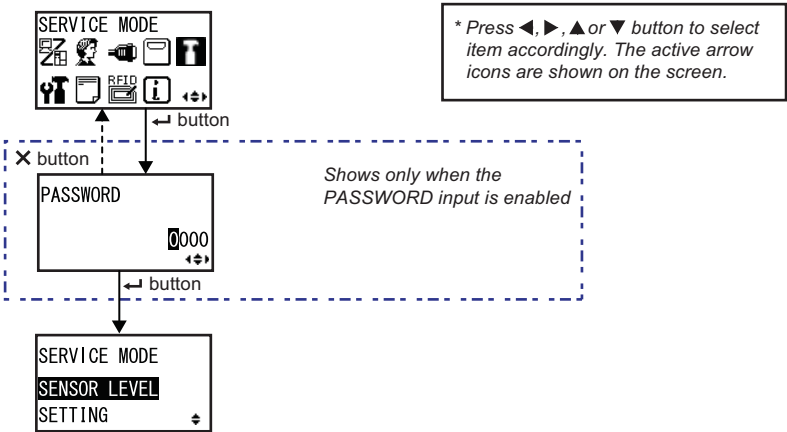
Note:

- Three beeps sound when the upload is completed.
- The setting will be effective only when you power on the printer again.



4.2.12 Service Mode

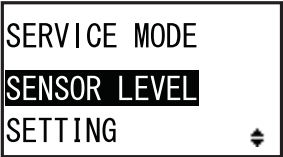
In the SERVICE MODE menu, you can perform sensor level adjustments and various function settings of the printer.



SERVICE MODE

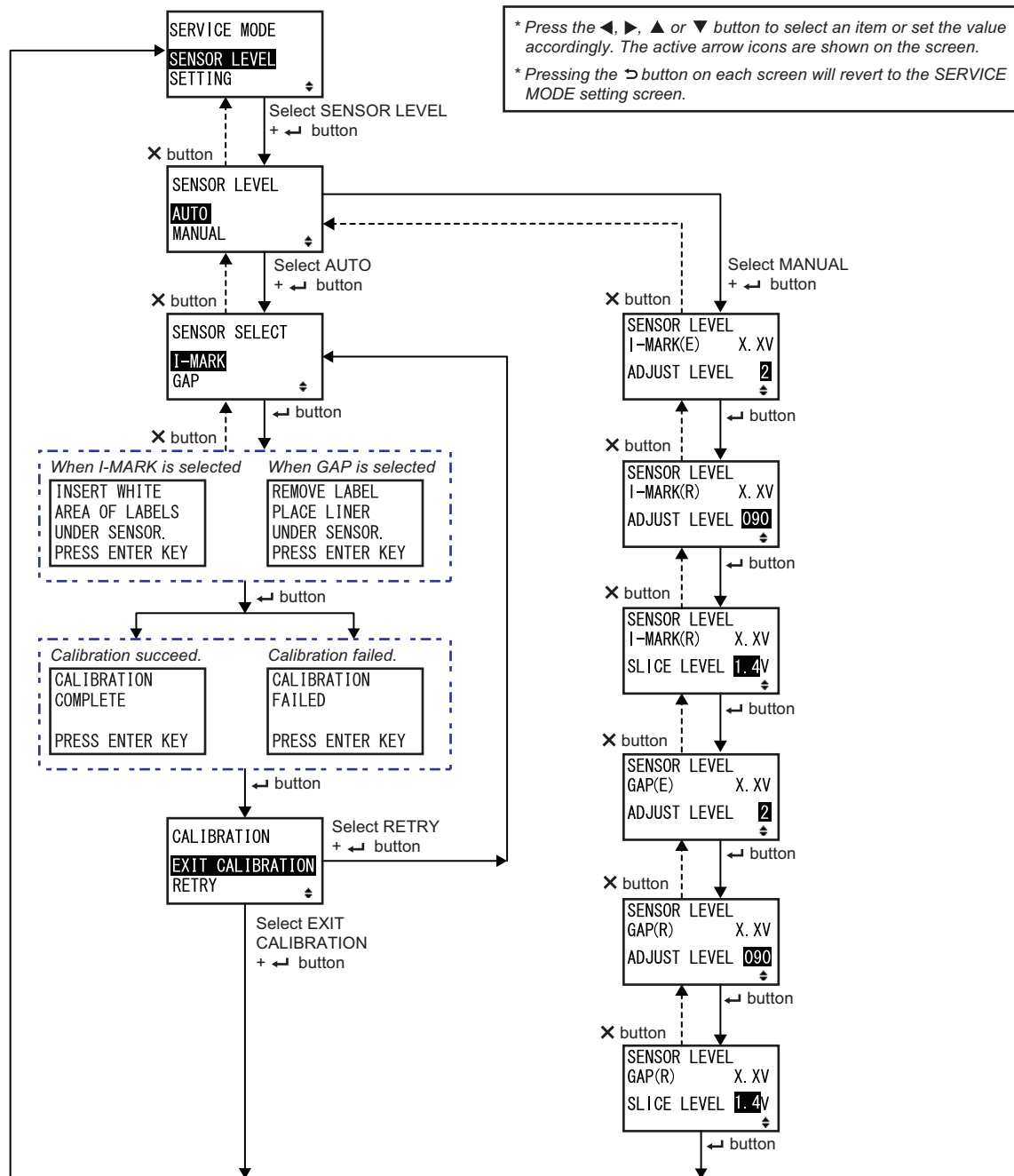
Select one from the two service setting modes.

- **SENSOR LEVEL:** Adjust the sensor level.
- **SETTING:** Set various function settings of the printer.



Sensor Level Adjustments

The flowchart shows the sequence of the setting screens for the sensor level adjustments. The table describes each setting screen in detail.



SENSOR LEVEL

Set the sensor adjustment method.

- **AUTO**: Automatically adjust the sensor level.
- **MANUAL**: Manually adjust the sensor level.

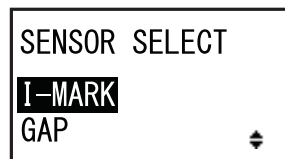
**SENSOR SELECT**

Select the media sensor type for the sensor adjustment.

- **I-MARK**: Adjust the I-mark sensor.
- **GAP**: Adjust the Gap sensor.

Note:

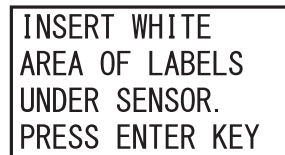
Shows only if AUTO is selected for the sensor adjustment method.

**I-mark sensor adjustment explanation screen**

This screen shows the instruction to place the media for I-mark sensor adjustment.

Shows only if I-MARK is selected in the SENSOR SELECT screen.

After placing the media, press the **↵ ENTER** button to start the automatic sensor adjustment.

**Gap sensor adjustment explanation screen**

This screen shows the instruction to place the media for I-mark sensor adjustment.

Shows only if GAP is selected in the SENSOR SELECT screen.

After placing the label, press the **↵ ENTER** button to start the automatic sensor adjustment.



CALIBRATION COMPLETE/FAILED

This screen shows the result of the automatic sensor adjustment.

- **COMPLETE:** The automatic adjustment has succeeded.
- **FAILED:** The automatic adjustment has failed.

Press the **← ENTER** button to proceed to the next screen.

CALIBRATION
COMPLETE
PRESS ENTER KEY

CALIBRATION
FAILED
PRESS ENTER KEY

CALIBRATION

Select to exit the automatic sensor adjustment or retry the automatic sensor adjustment.

- **EXIT CALIBRATION:** Exit the automatic sensor adjustment.
- **RETRY:** Retry the automatic sensor adjustment.

CALIBRATION
EXIT CALIBRATION
RETRY

SENSOR LEVEL I-MARK(E)

Shows the current level (Emission) of the I-mark sensor on the upper part of the screen.

This offset determines how soon the sensor will respond to an incoming I-mark. The adjustment range is from 1 to 3 and is shown on the bottom line of the screen.

SENSOR LEVEL
I-MARK(E) X. XV
ADJUST LEVEL 2

SENSOR LEVEL I-MARK(R)

Shows the current level (Reception) of the I-mark sensor on the upper part of the screen.

This offset determines how soon the sensor will respond to an incoming I-mark. The adjustment range is from 0 to 127 and is shown on the bottom line of the screen.

SENSOR LEVEL
I-MARK(R) X. XV
ADJUST LEVEL 090


SENSOR LEVEL I-MARK SLICE

Shows the current level (Reception) of the I-mark sensor on the upper part of the screen.

The slice level is calculated automatically and shown on the bottom line. The slice level can be set to 0.0 V, or from 0.3 V to 2.9 V. (adjustable in increments of 0.1 V)

Notes:

- The slice level is set automatically when the value is set to 0.0 V.
- In the case of automatic calculation, the calculated value will be shown automatically after printing.

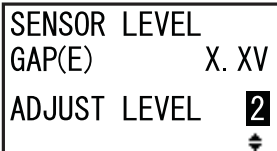


SENSOR LEVEL
I-MARK(R) X. XV
SLICE LEVEL 1.4V

SENSOR LEVEL GAP(E)

Shows the current level (Emission) of the gap sensor on the upper part of the screen.

This offset determines how soon the sensor will respond to an incoming gap. The adjustment range is from 1 to 3 and is shown on the bottom line of the screen.

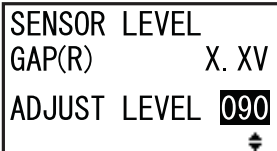


SENSOR LEVEL
GAP(E) X. XV
ADJUST LEVEL 2

SENSOR LEVEL GAP(R)

Shows the current level (Reception) of the gap sensor on the upper part of the screen.

This offset determines how soon the sensor will respond to an incoming gap. The adjustment range is from 0 to 127 and is shown on the bottom line of the screen.



SENSOR LEVEL
GAP(R) X. XV
ADJUST LEVEL 090

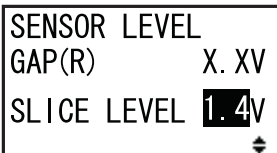
SENSOR LEVEL GAP SLICE

Shows the current level (Reception) of the gap sensor on the upper part of the screen.

The slice level is calculated automatically and shown on the bottom line. The slice level can be set to 0.0 V, or from 0.3 V to 2.9 V. (adjustable in increments of 0.1 V)

Notes:

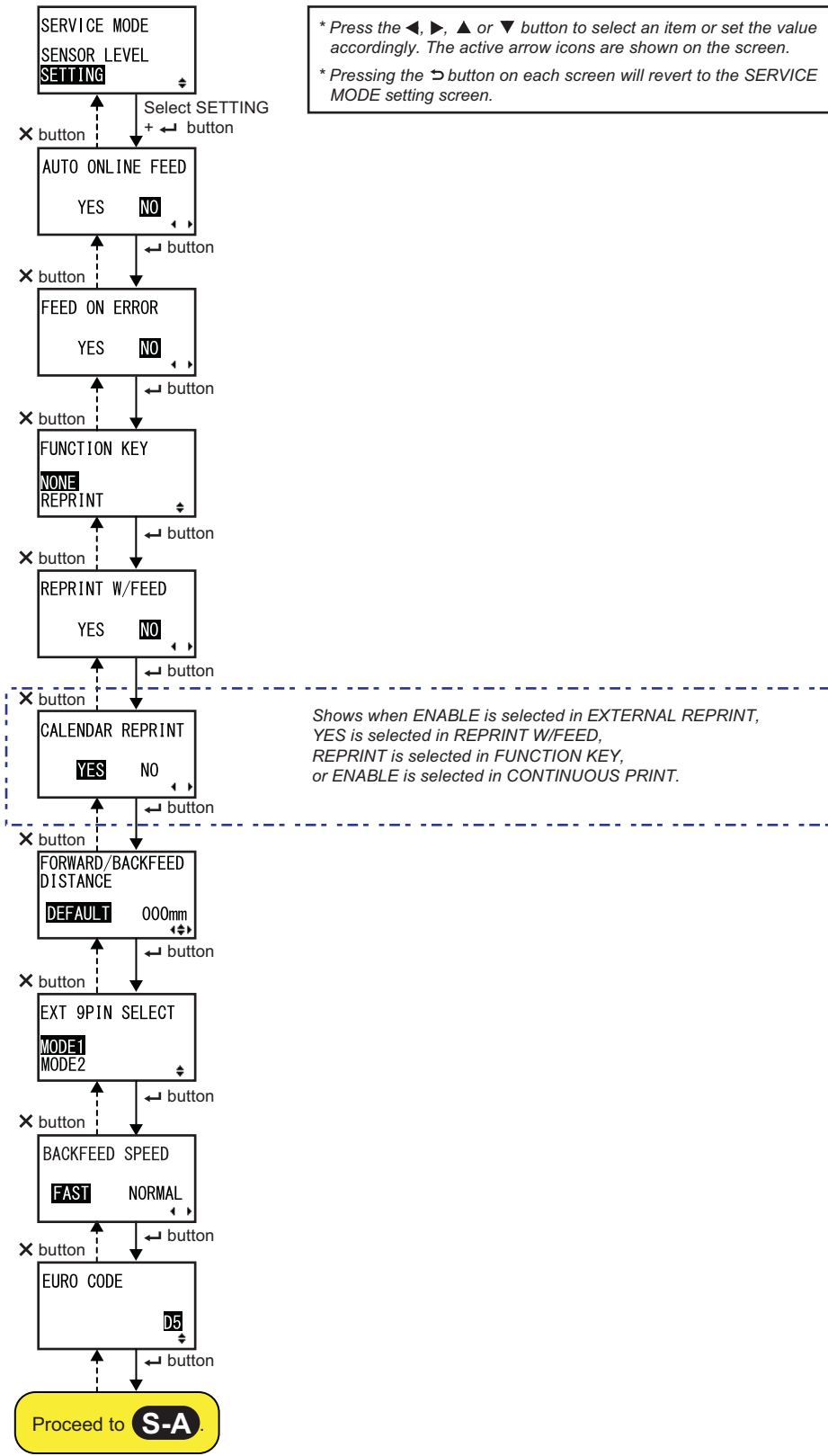
- The slice level is set automatically by the firmware when the value is set to 0.0 V.
- In the case of automatic calculation, the calculated value will be shown automatically after printing.

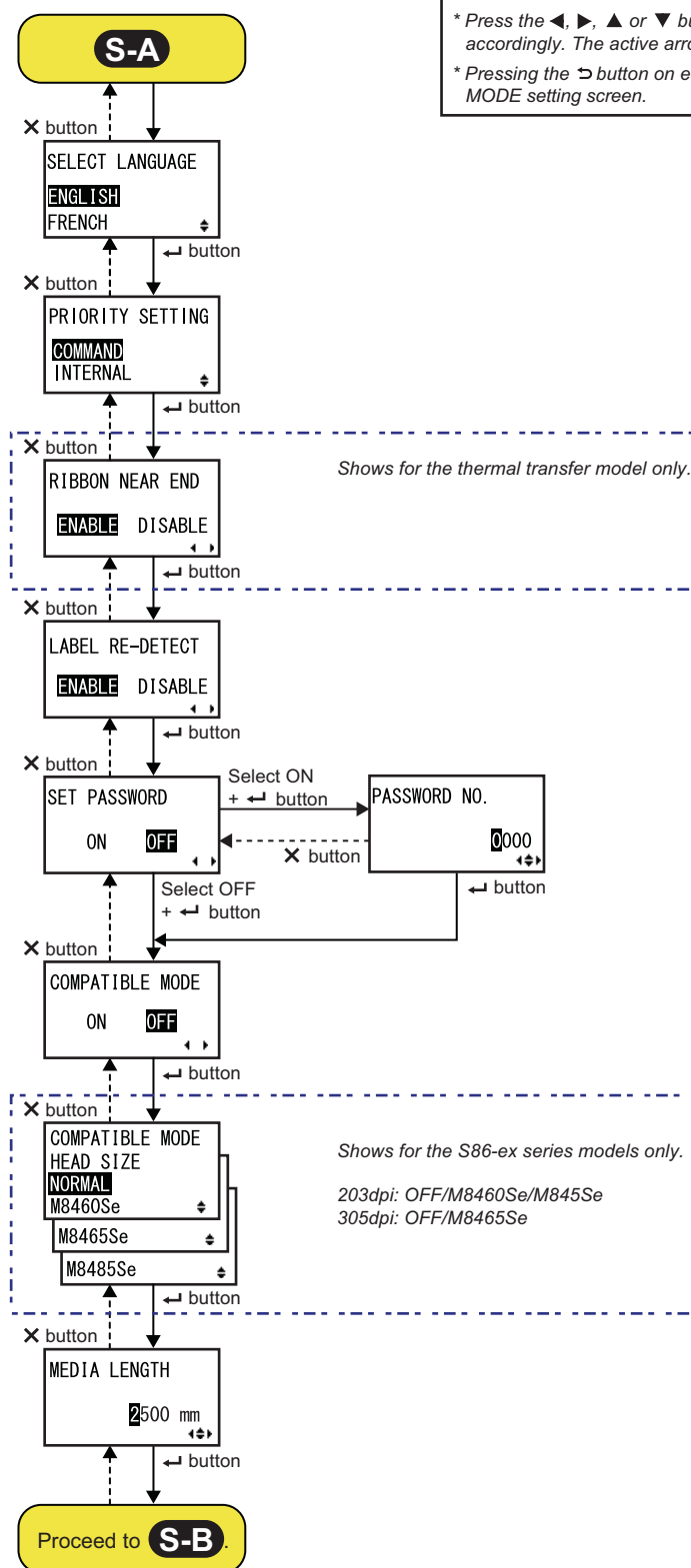


SENSOR LEVEL
GAP(R) X. XV
SLICE LEVEL 1.4V

Function Settings

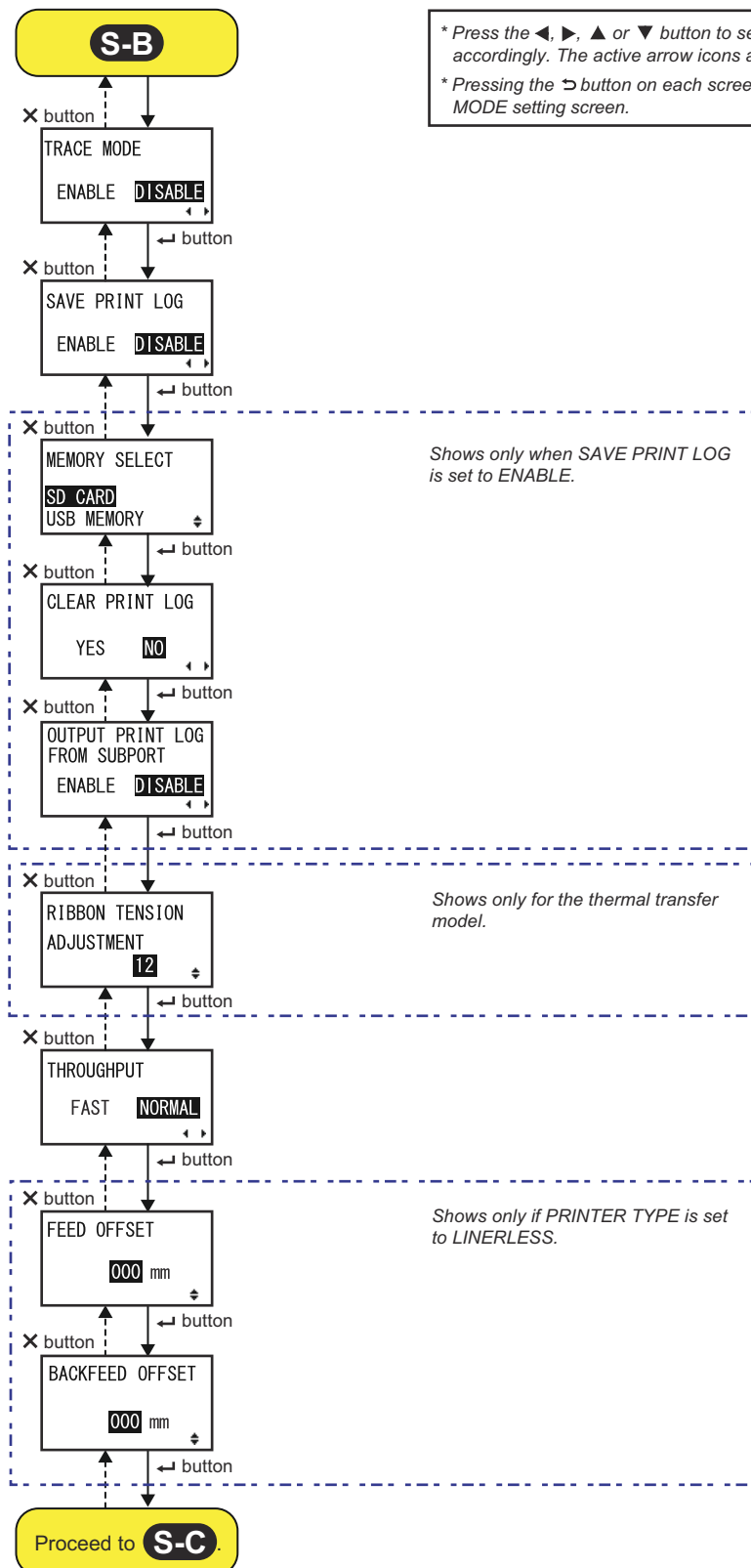
The flowchart shows the sequence of the setting screens for the function settings. The table describes each setting screen in detail.

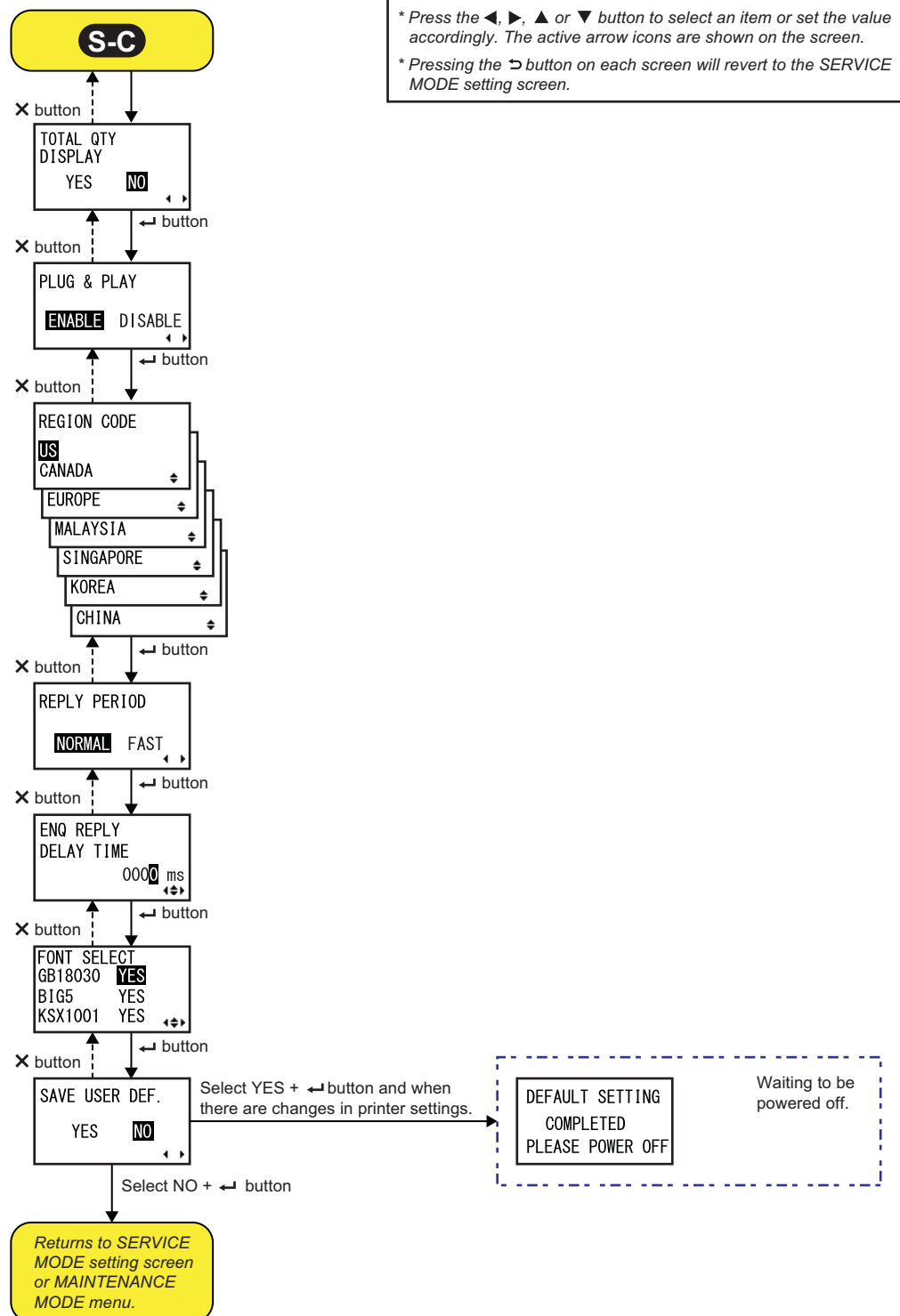




* Press the ◀, ▶, ▲ or ▼ button to select an item or set the value accordingly. The active arrow icons are shown on the screen.

* Pressing the ⏮ button on each screen will revert to the SERVICE MODE setting screen.





AUTO ONLINE FEED

Set the auto online feed function.

This function enables the printer to automatically feed media in online mode after power on.

- **YES:** Feed the media in online mode at power on.
- **NO:** Do not feed the media in online mode at power on.

AUTO ONLINE FEED

YES

NO



FEED ON ERROR

Set the online feed function.

This function enables the printer to feed media automatically when recovering from a head open error or when starting up the printer and changing to online mode.

- **YES:** Feed the media when changing to online mode.
- **NO:** Do not feed the media when changing to online mode.

FEED ON ERROR

YES

NO



FUNCTION KEY

Allocate the following functions to the **FUNCTION** button.

- **NONE:** Do not allocate any function.
- **REPRINT:** Allocate the reprint function.

Note:

The **FUNCTION** button is disabled when NONE is set.

FUNCTION KEY

NONE

REPRINT



REPRINT W/FEED

Enable or disable the reprint function for use with the **FEED** button.

If this function is enabled, you can reprint the last print job by pressing the

FEED button in online mode.

- **YES:** Enable the reprint function.
- **NO:** Disable the reprint function.

REPRINT W/FEED

YES

NO



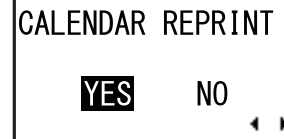
CALENDAR REPRINT

Perform the calendar reprint setting.

- **YES:** The updated calendar data (date and time) according to the RTC (Real Time Clock) is included in the reprint data.
- **NO:** Print exactly the same data as before.

Note:

Shows only if EXTERNAL REPRINT is set to ENABLE, REPRINT W/FEED is set to YES, FUNCTION KEY is set to REPRINT, or CONTINUOUS PRINT is set to ENABLE.



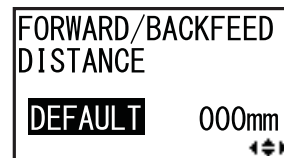
FORWARD/BACKFEED DISTANCE

Set the feed length in the forward and backward directions.

- **DEFAULT:** Enable the printer to operate using the fixed value maintained in the printer.
- **000mm:** Set the feed length to enable the printer to operate using this distance. The setting range of forward/backward feed length is from 001 mm to 255 mm (0.04" to 10").
The actual forward/backward feed length is equivalent to the offset adjustment value + the paper feed length.

Notes:

- If using thermal transfer for printing, set the feed distance to less than 30 mm (1.2") to avoid detection of the ribbon end by mistake.
- If the value is larger than the distance between the print head and the option stop position, the media may shift away from the platen during backward feed.



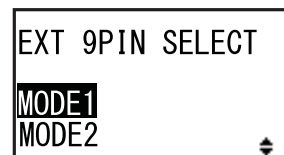
EXT 9PIN SELECT

Set the output mode of the external signal pin 9 when using a 14 pin connector (pin 6 when using a 25 pin connector).

- **MODE1:** Outputs a signal in the status of existence or non-existence for the number of remaining media to be printed.
- **MODE2:** The output signal becomes "Active" when there is remaining print data without error in online mode.

Note:

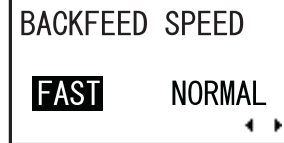
Refer to the [Timing Chart of the EXT Output Signal \(Online\)](#) for details.



BACKFEED SPEED

Specify the backfeed speed.

- **FAST:** Set to a speed of six inches per second.
- **NORMAL:** Set to a speed of four inches per second.



EURO CODE

Select the symbol for representing the Euro mark (currency symbol).
The setting range is from 00 to FF.



SELECT LANGUAGE

Set the LCD language.

The following languages are available:

- **ENGLISH**
- **FRENCH**
- **GERMAN**
- **SPANISH**
- **ITALIAN**
- **PORTUGUESE**
- **CHINESE** (Simplified Chinese)



PRIORITY SETTING

Set the priority for the system commands.

- **COMMAND:** Certain system commands that have been sent to the printer have the priority to overwrite the printer configuration set by the LCD operator panel.
- **INTERNAL:** The above mentioned printer configuration set by the LCD operator panel will not be replaced by the sent command.

System commands which can be assigned priority are as follows:
Print Darkness <#E>, Print Speed <CS>, Start Point Correction <A3>,
Print Mode <PM>, Print Method <PH>



RIBBON NEAR END

Enable or disable the detection of the ribbon near end.

- **ENABLE**: Detect and notify when the ribbon is about to run out.
- **DISABLE**: Do not detect the ribbon near end.

Note:

Shows for the thermal transfer model only.

RIBBON NEAR END
ENABLE DISABLE
◀ ▶

LABEL RE-DETECT

Set whether or not to re-detect the label pitch when the power is on after the head opens/closes.

- **ENABLE**: Re-detect the label pitch.
- **DISABLE**: Do not re-detect the label pitch.

LABEL RE-DETECT
ENABLE DISABLE
◀ ▶

SET PASSWORD

Enable or disable password input to various modes.

- **ON**: Password input is required to enter various modes.
- **OFF**: Password input is not required to enter various modes.

You can enable password input for the following modes:
USER MODE, INTERFACE MODE, MEMORY MODE,
ADVANCED MODE, HEX DUMP MODE and SERVICE MODE

SET PASSWORD
ON **OFF** ▶

PASSWORD NO.

Set the four digit password for entering various modes.

Move the cursor using the ◀/▶ **arrow** buttons, change the value using the ▲/▼ **arrow** buttons and then press the ↵ **ENTER** button to confirm the password.

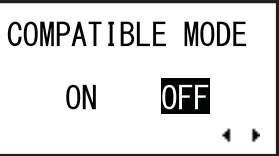
PASSWORD NO.
0000
◀ ▶

COMPATIBLE MODE

Set the compatibility with the printer operation of existing models.

- **ON**: Keep the compatibility with the printer operation of existing models.
- **OFF**: Disable the compatibility with the printer operation of existing models.

Note:
For details on the compatible mode, refer to [Section 7.3 About Compatible Mode](#).

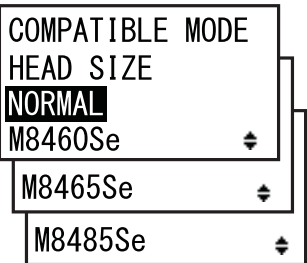


COMPATIBLE MODE HEAD SIZE

Set the head width for S86-ex series models.
The options vary depending on the head density. Corresponding head width are as follows:

Model Name	Option	Head Width (mm)
S86-ex (203 dpi)	NORMAL	167.5
	M8460Se	152.0
	M8485Se	128.0
S86-ex (305 dpi)	NORMAL	167.5
	M8465Se	152.0

Note:
Shows for S86-ex series models only and when COMPATIBLE MODE is set to ON.



MEDIA LENGTH

Set the maximum length of the media to be used.
This function affects the printable area (lengthwise) and the media size checking function. It is necessary to set this value based on the actual media length to be used.

The setting range varies depending on the model as follows:

Model Name	Setting Range (mm)	Default Value (mm)
S84-ex (203 dpi)	0 - 2500	2500
S84-ex (305 dpi)	0 - 1500	1500
S84-ex (609 dpi)	0 - 400	400
S86-ex (203 dpi)	0 - 1249	1249
S86-ex (305 dpi)	0 - 1249	1249

MEDIA LENGTH

2500 mm
◀ ▶

TRACE MODE

Enable or disable the function to show the printer operation status through icons in online mode. The following operation status are available:



RCU :Data reception: Shows after receiving any data.



EDT :Data edition: Shows after receiving ESC (1BH) A.



PRT :Print: Shows after a print job.

Each icon will be overwritten and cleared when changing to online mode.

TRACE MODE

ENABLE **DISABLE** ◀ ▶

SAVE PRINT LOG

Enable or disable to save the printer operation log to a memory card.

- **ENABLE**: Save the history data to a memory card.
- **DISABLE**: Do not save the history data to a memory card.

SAVE PRINT LOG

ENABLE **DISABLE** ◀ ▶

MEMORY SELECT

Select the storage memory for saving the printer operation log.
SD CARD or USB MEMORY can be selected.

Note:

Shows only if SAVE PRINT LOG is set to ENABLE.

MEMORY SELECT

SD CARD

USB MEMORY



CLEAR PRINT LOG

Select whether or not to clear the history data in the memory card.

- **YES:** Clear the history data.
- **NO:** Do not clear the history data.

Note:

Shows only if SAVE PRINT LOG is set to ENABLE.

CLEAR PRINT LOG

YES

NO



OUTPUT PRINT LOG FROM SUBPORT

Output the printer operation log to the sub port in real time (when the status has changed).

- **ENABLE:** Enable the sub port and output the history data from it.
- **DISABLE:** Disable the sub port and do not output any history data from it.

Note:

Shows only if SAVE PRINT LOG is set to ENABLE.

OUTPUT PRINT LOG FROM SUBPORT

ENABLE

DISABLE



RIBBON TENSION ADJUSTMENT

Adjust the ribbon tension for the backfeed if scuffing (horizontal black line) occurs.

The ribbon is tensed when using a smaller value, and is loosened when using a larger value.

The setting range varies depending on the head density as follows:

Head Density	Setting Range	Default Value
203 dpi	0 - 15	12
305 dpi	0 - 15	5
609 dpi	0 - 15	1

Note:

Shows only for the thermal transfer model.

RIBBON TENSION
ADJUSTMENT

12



THROUGHPUT

Set the interval from backfeed to forward feed or from forward feed to backfeed.

- **FAST:** The interval is shortened and the throughput is improved.
- **NORMAL:** Use the existing interval.

Note:

The printer may not operate with the FAST setting, depending on the operating environment.

THROUGHPUT

FAST

NORMAL



FEED OFFSET

Set the feed distance in LINERLESS mode.

The setting range is from 000 to 250 mm.

Note:

Shows only if PRINTER TYPE in ADVANCED MODE is set to LINERLESS.

FEED OFFSET

000 mm



BACKFEED OFFSET

Set the backfeed distance in LINERLESS mode.
The setting range is from 000 to 250 mm.

Note:

Shows only if PRINTER TYPE in ADVANCED MODE is set to LINERLESS.

BACKFEED OFFSET

000 mm




TOTAL QTY DISPLAY


Set whether or not to show the total print quantity.

- **YES:** Shows the total print quantity and current print quantity.
- **NO:** Shows the current print quantity.

YES is selected

NO is selected


ONLINE
000000 00000000


ONLINE
QTY: 000000

TOTAL QTY
DISPLAY

YES

NO



PLUG & PLAY

Enable or disable the Plug and play function of the printer.

- **ENABLE:** Enable the Plug and play function.
- **DISABLE:** Disable the Plug and play function.

Note:

This function will affect the IEEE1284 interface connectivity because it uses the DEVICE ID response of the IEEE1284.

PLUG & PLAY

ENABLE

DISABLE

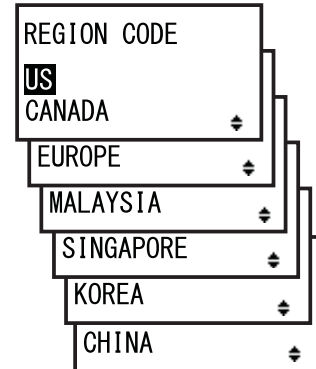


REGION CODE

Set the region code of the wireless LAN.

The channel range varies depending on the region code as follows:

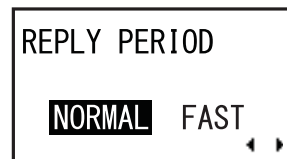
Region	Region Code	Channel Range
USA	US	1 - 11ch
CANADA	CANADA	1 - 11ch
Europe	EUROPE	1 - 13ch
Malaysia	MALAYSIA	1 - 13ch
Singapore	SINGAPORE	1 - 13ch
Korea	KOREA	1 - 13ch
China	CHINA	1 - 13ch



REPLY PERIOD

Set the LAN reply timing.

- **NORMAL**: Reply intervals of 500 to 1000 milliseconds.
- **FAST**: Reply intervals of 200 to 400 milliseconds.



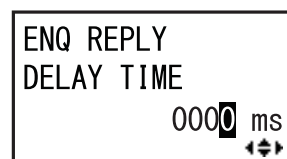
ENQ REPLY DELAY TIME

Set the ENQ reply delay time.

The setting range is from 0000 to 9999 ms and is adjustable by 1 ms.

Note:

- When "0000ms" is selected, the printer sends an ENQ response with no delay.
- When status 4 is set as the cyclic response mode, the printer sends an ENQ response with no delay for cycle response or ENQ command.



FONT SELECT

Select a font from the stored fonts.

- **GB18030**: Simplified Chinese
- **BIG 5**: Traditional Chinese
- **KSX1001**: Korean
- **YES**: Printable
- **NO**: Non-printable

Move the cursor using the **▲/▼ arrow** buttons, change the value using the **◀/▶ arrow** buttons and then press the **↵ ENTER** button to set the value.

The printable maximum size of the TrueType font varies depending on the setting as follows:

GB18030	BIG5	KSX1001	Available TrueType font size (MB)
YES	YES	YES	4.6
YES	YES	NO	5.5
YES	NO	YES	5.6
YES	NO	NO	6.5
NO	YES	YES	10.6
NO	YES	NO	10.7
NO	NO	YES	10.8
NO	NO	NO	11.7

Note:

When the printer tries to print a TrueType font that is bigger than the maximum size, a command error occurs.

FONT SELECT	
GB18030	YES
BIG5	YES
KSX1001	YES

SAVE USER DEF.

This is a screen for saving service mode and advanced mode settings performed by the user as default settings.

- **YES**: Save the printer settings.
- **NO**: Do not save the printer settings.

Note:

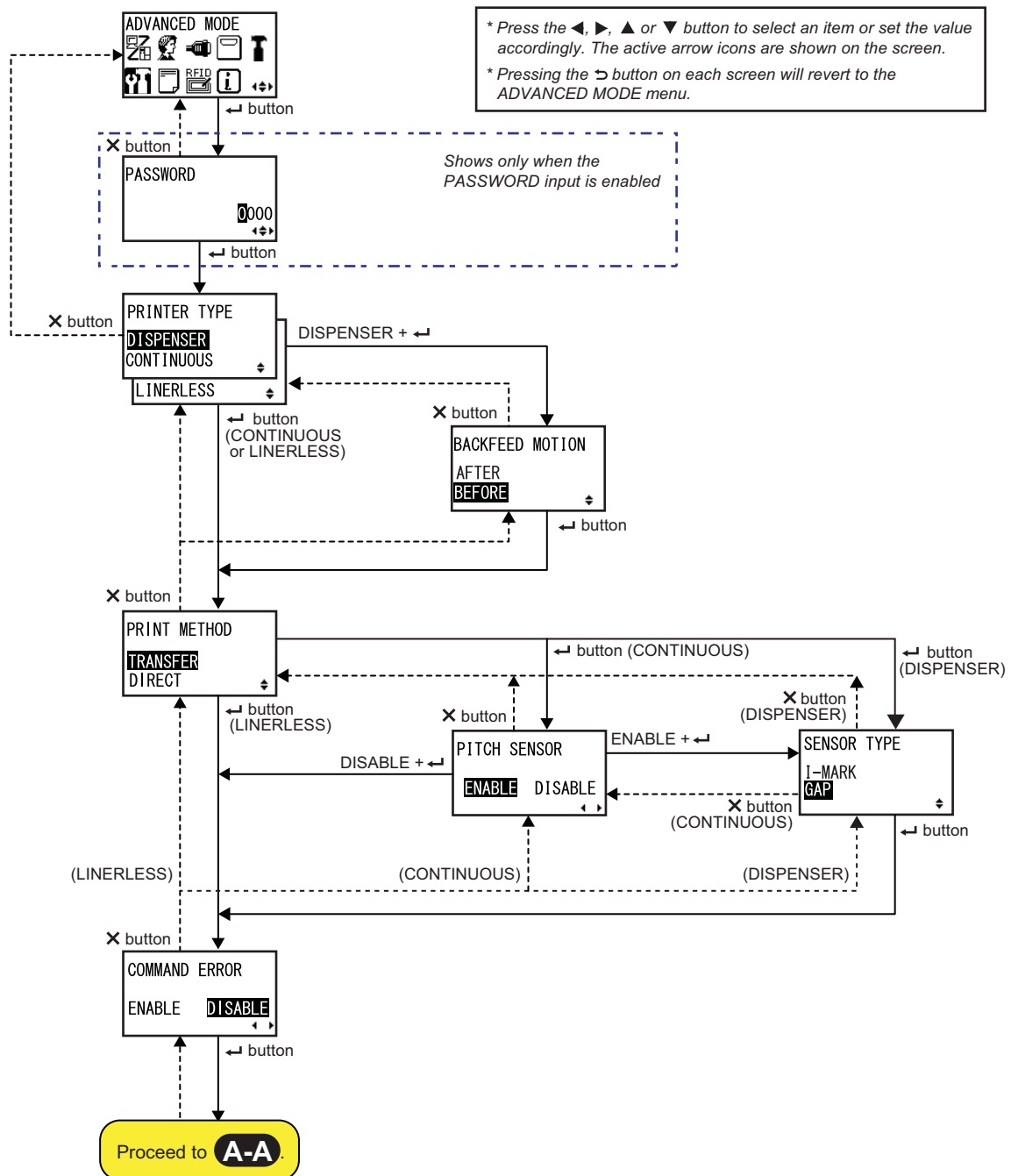
The printer can be initialized to this setting at a later time. Refer to [Section 4.2.17 Default Setting Mode](#).

SAVE USER DEF.	
YES	NO

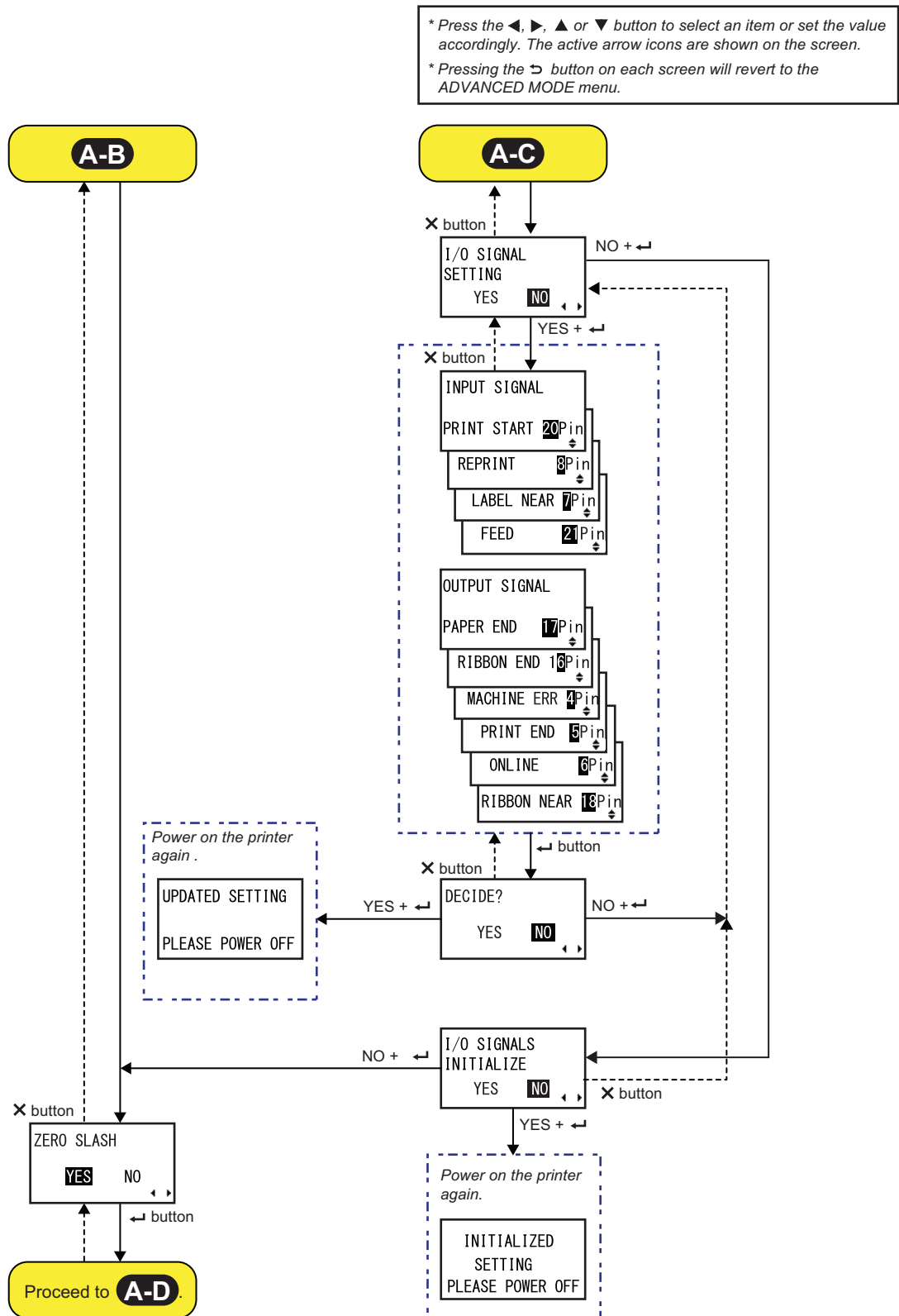
DEFAULT SETTING COMPLETED	
Shows when the printer settings have been saved completely.	<div>DEFAULT SETTING COMPLETED PLEASE POWER OFF</div>
Note: The setting will be effective only when you power on the printer again.	

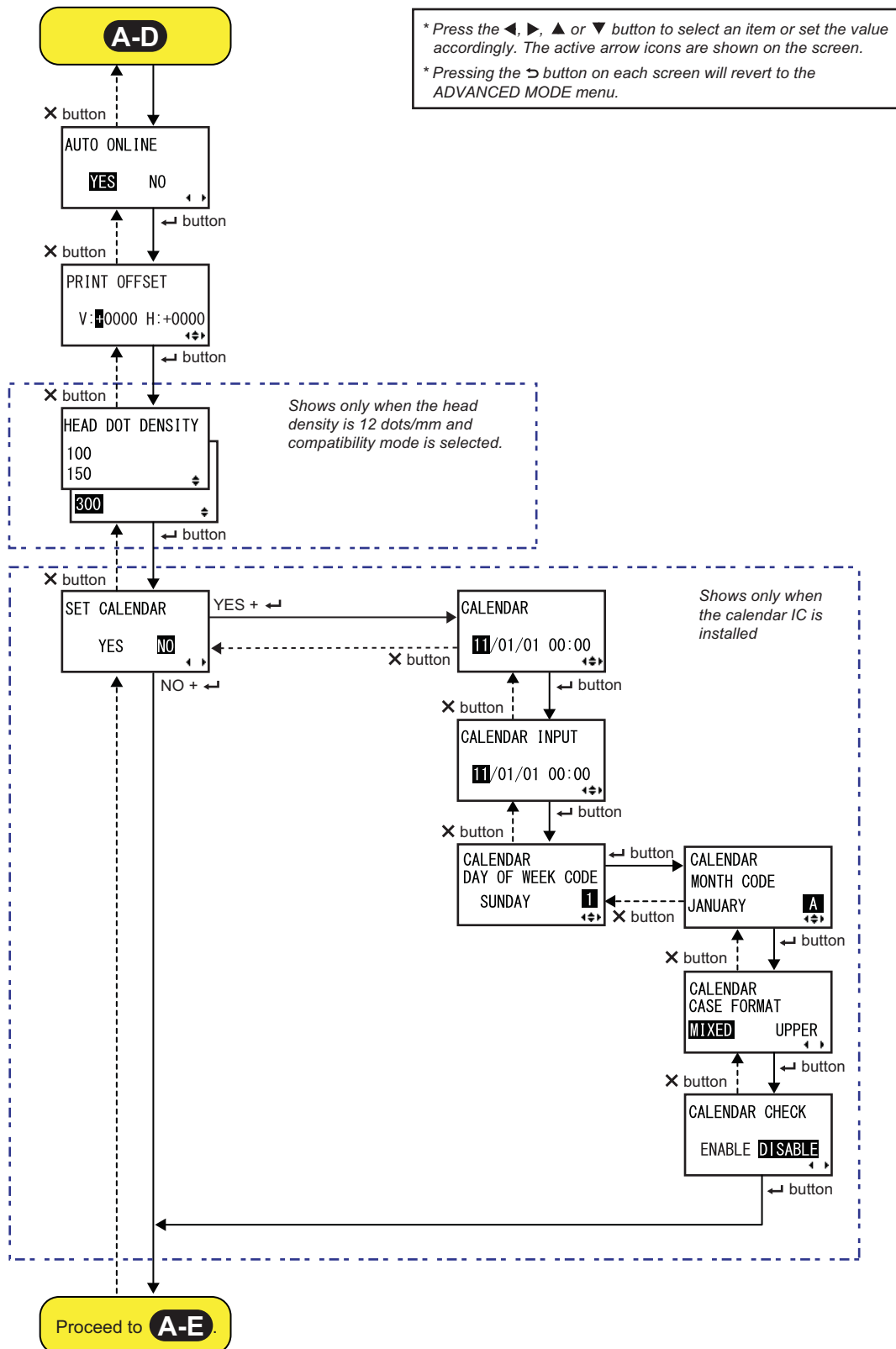
4.2.13 Advanced Mode

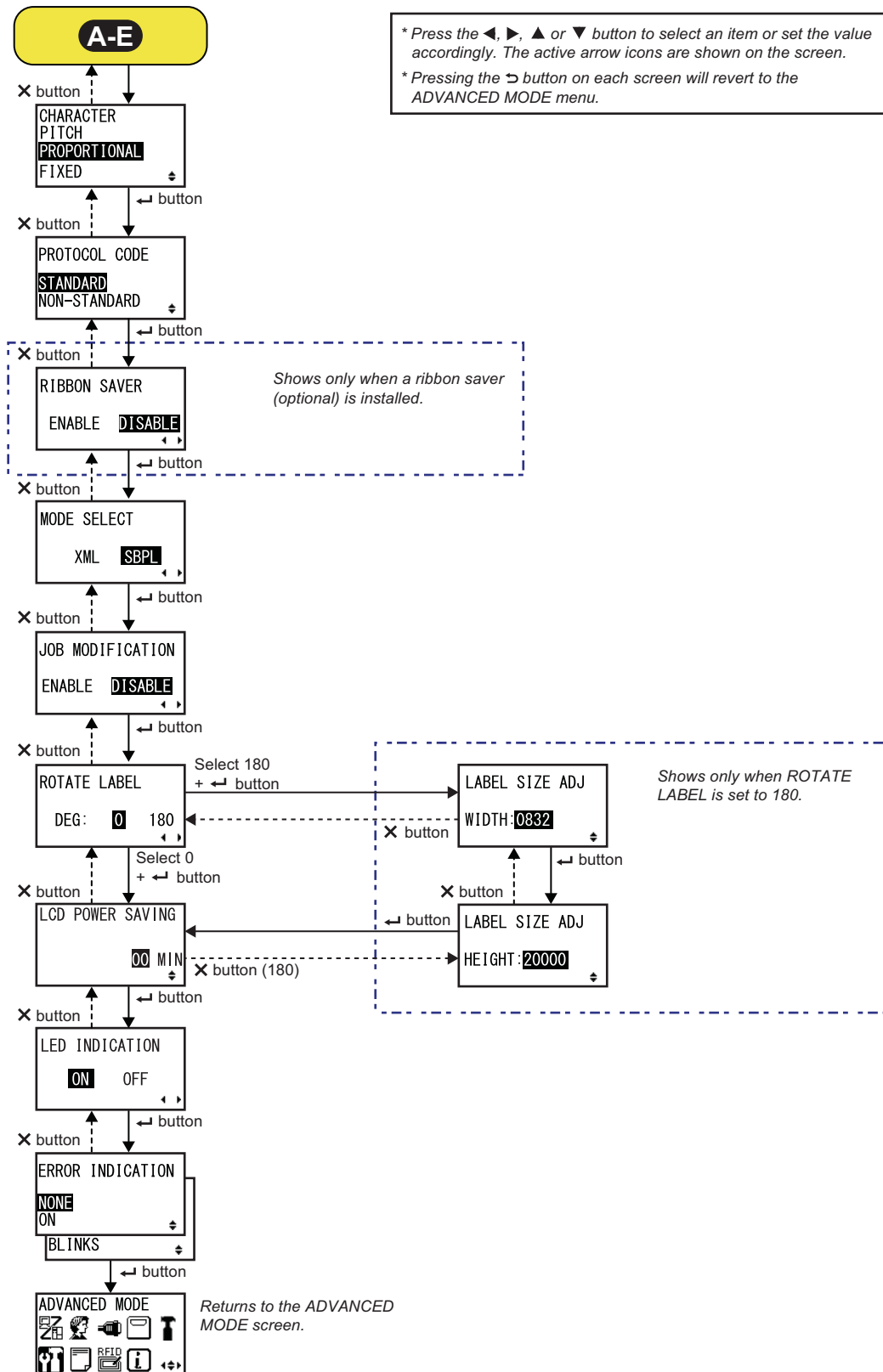
The advanced mode lets you configure the more advanced features of the printer hardware. The flowchart shows the sequence of the setting screens for the advanced mode. The table describes each setting screen in detail.







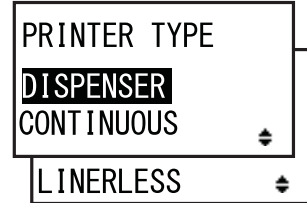




PRINTER TYPE

Set the print mode.

- **DISPENSER:** Peel the liner from the printed label as it is advanced to the printer's front. Once the printed label has been removed from the printer for application, the next label will retract and position itself for printing. You can specify this option only when you have installed the dispenser unit.
- **CONTINUOUS:** Print the specified number of media. The media remains in position for printing at all times.
- **LINERLESS:** Cut each label while printing the specified number of labels. You can specify this option only when you have installed the linerless cutter unit.



BACKFEED MOTION

Backfeed is applicable only when the print mode is set to dispenser mode.

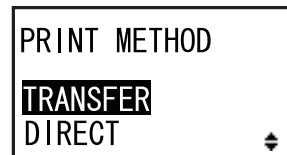
- **AFTER:** Backfeed the front part of the next label after dispensing the label.
- **BEFORE:** Before printing, backfeed the front part of the media to the print head position.



PRINT METHOD

Set the print method.

- **TRANSFER:** Print using a ribbon.
- **DIRECT:** Print using direct thermal paper.



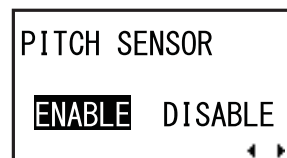
PITCH SENSOR

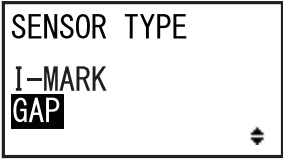
Enable or disable the pitch sensor.

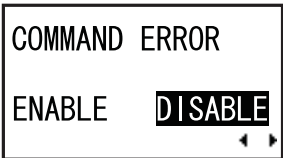
- **ENABLE:** Enable the pitch sensor.
- **DISABLE:** Disable the pitch sensor.


Note:

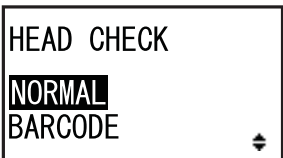
Shows only if PRINTER TYPE is set to CONTINUOUS.



SENSOR TYPE	
<p>Set the type of sensor for sensing the media.</p> <ul style="list-style-type: none">• I-MARK: Use the reflective type sensor.• GAP: Use the transmissive type sensor.	

COMMAND ERROR	
<p>Enable or disable the command error indication. This setting determines the printer motion when detecting a command error.</p> <ul style="list-style-type: none">• ENABLE: Stops printing when a command error occurs.• DISABLE: Shows a warning icon and continues printing when a command error occurs.	

HEAD CHECK	
<p>This printer can be set to check the print head when printing each media.</p> <ul style="list-style-type: none">• ENABLE: Enable the head check function.• DISABLE: Disable the head check function.	

HEAD CHECK	
<p>Automatically check if there is a filament disconnection of the print head.</p> <ul style="list-style-type: none">• NORMAL: Check the entire print area.• BARCODE: Check only the area for printing a barcode. Head check is not applicable for barcodes printed as graphic data. <p>Caution: Head check is a reference for checking for a filament disconnection of the print head. This function does not guarantee barcode readability.</p> <p>Note: Shows only if the head check function is enabled.</p>	

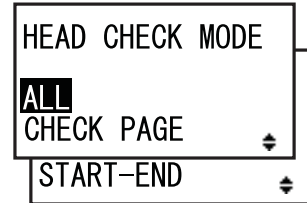
HEAD CHECK MODE

Set the method for the head check.

- **ALL**: Perform the head check for every item.
- **CHECK PAGE**: Perform the head check for each specified number of media.
- **START-END**: The head check occurs before starting to print and when printing is stopped. If backfeed is applicable, the head check occurs before starting to print, when stopping to print and during the backfeed.

Note:

Shows only if the head check function is enabled.

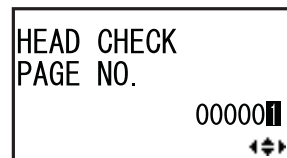


HEAD CHECK PAGE NO.

Specify the number of media between each head check.
The setting range is from 000001 to 999999.

Note:

Shows only if HEAD CHECK MODE is set to CHECK PAGE.



EXTERNAL SIGNAL SETTING

Select whether or not to perform the external signal setting.

- **YES**: Proceed to the external signal setting screen.
- **NO**: Proceed to the ZERO SLASH screen.



EXTERNAL SIGNAL

Enable or disable the external signal (EXT) function.

- **ENABLE**: Enable the external signal (EXT) function.
- **DISABLE**: Disable the external signal (EXT) function.

Note:

Shows only if PRINTER TYPE is set to CONTINUOUS.



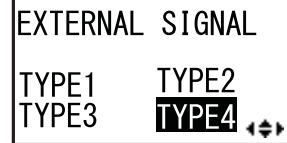
EXTERNAL SIGNAL

Set the output signal type of the print end signal (PREND).
The following options are available:

Type	Operation Details
TYPE1	The print end signal (PREND) is High before label printing, and it becomes Low after print completion. The signal level becomes High after 20 ms.
TYPE2	The print end signal (PREND) is Low before label printing, and it becomes High after print completion. The signal level becomes Low after 20 ms.
TYPE3	The print end signal (PREND) is High before label printing, becomes Low from the start to the end of print, and becomes High again after print completion.
TYPE4	The print end signal (PREND) is Low before label printing, becomes High from the start to the end of print, and becomes Low again after print completion.

Note:

- Shows only if the external signal (EXT) function is enabled.
- Refer to the [Timing Chart of the EXT Output Signal](#) for details.



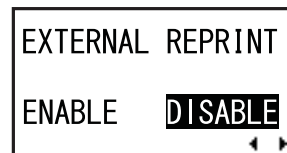
EXTERNAL REPRINT

Set the reprint function by reprint signal from the external signal.

- **ENABLE:** Enable the reprint.
- **DISABLE:** Disable the reprint.

Note:

The printer will not reprint if a command error occurs.



CONTINUOUS PRINT

Set the reprint function by the print start signal from an external signal.

- **ENABLE:** Enable the continuous print.
- **DISABLE:** Disable the continuous print.



ENHANCED REPRINT

Set the reprint function by the reprint signal from an external signal.

- **ENABLE**: The printer reprints regardless of the remaining print quantity.
- **DISABLE**: Disable the enhanced reprint.

Note:

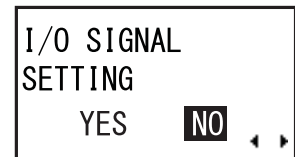
Shows only if EXTERNAL REPRINT is enabled.



I/O SIGNAL SETTING

Select whether or not to set the pin number for the input/output signal.

- **YES**: Proceed to the INPUT SIGNAL screen.
- **NO**: Proceed to the I/O SIGNALS INITIALIZE screen.



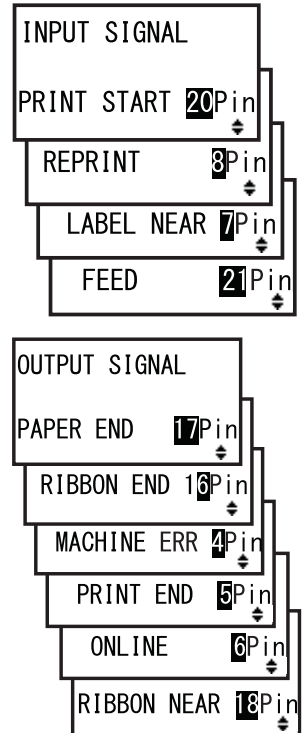
INPUT SIGNAL/OUTPUT SIGNAL

Set the pin number for the input/output signal.
The setting details are as follows:

Signal Name	Input/ Output	Default Pin No.	Over- lapping	Available Pin No.
PRINT START	Input	20	Not Allowed	Can be set to 8 or 20.
REPRINT	Input	8	Not Allowed	
LABEL NEAR END	Input	7	Not Allowed	Can be set to 7 or 21. “-”: Function is disabled.
FEED	Input	21	Not Allowed	
PAPER END	Output	17	Allowed	Can be set to 4, 5, 6, 16, 17 or 18. “-”: No output
RIBBON END	Output	16	Allowed	
MACHINE ERROR	Output	4	Allowed	
PRINT END	Output	5	Not Allowed	
ONLINE	Output	6	Allowed	
RIBBON NEAR END	Output	18	Allowed	

Note:

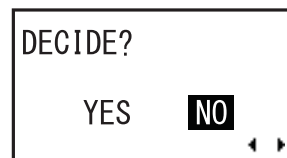
For details, refer to [Section 7.5 Input/Output Signal of the External Signal](#).



DECIDE?

Select whether or not to confirm the input/output signal setting.

- **YES:** Proceed to the UPDATED SETTING screen.
- **NO:** Return to the I/O SIGNAL SETTING screen.



UPDATED SETTING

This screen shows that the input/output signal setting has been updated.
Power on the printer again to make the setting effective.

UPDATED SETTING

PLEASE POWER OFF

I/O SIGNALS INITIALIZE

Select whether or not to initialize the pin number for the input/output signal.

- **YES:** Proceed to the INITIALIZED SETTING screen.
- **NO:** Proceed to the ZERO SLASH screen.

Note:

Refer to the default value of the pin number in **INPUT SIGNAL/OUTPUT SIGNAL**.

I/O SIGNALS
INITIALIZE
YES **NO** ◀ ▶

INITIALIZED SETTING

This screen shows that the pin number for the input/output signal has been initialized.
Power on the printer again to make the setting effective.

INITIALIZED
SETTING
PLEASE POWER OFF

ZERO SLASH

Set whether to print the number zero (0) with or without a slash (/).

- **YES:** Print zero with a slash.
- **NO:** Print zero without a slash.

ZERO SLASH

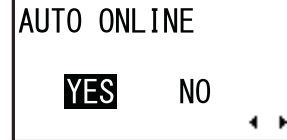
YES NO ◀ ▶

AUTO ONLINE

Set the auto online function.

This function sets the printer status at power on.

- **YES:** Start up the printer in online mode.
- **NO:** Start up the printer in offline mode.

**PRINT OFFSET**

When setting the print position in the vertical direction "V":

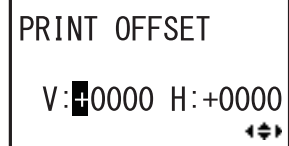
Set the offset value from the print reference position using '+' to move the print position opposite the feed direction and '-' to move the print position in the feed direction.

When setting the print position in the horizontal direction "H":

Set the offset value from the print reference position using '+' to move to the left side and '-' to move to the right side of the printer (when facing the front of the printer).

The setting range varies depending on the model as follows:

Model	V	H
S84-ex (203 dpi)	±0-9999	±0-832
S84-ex (305 dpi)	±0-9999	±0-1248
S84-ex (609 dpi)	±0-9999	±0-2496
S86-ex (203 dpi)	±0-9999	±0-1340
S86-ex (305 dpi)	±0-9999	±0-2010

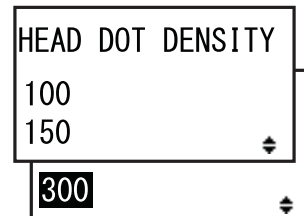
**HEAD DOT DENSITY**

Toggle the head dot density from 12 dots/mm to 6 dots/mm and vice versa. The following options are available:

- **100:** Approximately four inches. Effective for S84-ex only.
- **150:** Approximately six inches. Effective for S84-ex and S86-ex.
- **300:** Approximately twelve inches. Effective for S84-ex and S86-ex.

Note:

Shows only when the head dot density is 12 dots/mm and **COMPATIBLE MODE** is enabled. For details on the compatible mode, refer to [Section 7.3 About Compatible Mode](#).



SET CALENDAR

Select whether or not to set the calendar.

- **YES:** Proceed to the calendar setting screen.
- **NO:** Proceed to the CHARACTER PITCH screen.

Note:

Shows only when the calendar IC is installed.

SET CALENDAR

YES

NO

CALENDAR/CALENDAR INPUT

Set the Year/Month/Date and then set the time in 24 hour format. Enter the date and time twice. When the entered value of both screens match, it goes to the next screen after saving the value. If not, the printer beeps and returns to the first entry screen. The second entry is indicated as CALENDAR INPUT on the screen.

The setting range is from 81/01/01 00:00 (January 01, 1981 at 00:00) to 80/12/31 0:00 (December 31, 2080 at 00:00).

Note:

Shows only when YES is selected in the SET CALENDAR screen.

CALENDAR

CALENDAR INPUT

11/01/01 00:00

CALENDAR DAY OF WEEK CODE

Set the day of the week code for the calendar.

The setting range is from 0 to 9, A to Z, and a to z.

The default value is 1-Sun, 2-Mon, 3-Tue, 4-Wen, 5-Thu, 6-Fri, 7-Sat.

Select the day using the ▲/▼ **arrow** buttons, select the day of the week code using the ◀/▶ **arrow** buttons, then press the ↵ **ENTER** button to confirm the day of week code.

Note:

Shows only when YES is selected in the SET CALENDAR screen.

CALENDAR
DAY OF WEEK CODE

SUNDAY

1

CALENDAR MONTH CODE

Set the month code for the calendar.

The setting range is from A to Z and a to z.

The default value is A-JAN, B-FEB, C-MAR, D-APR, E-MAY, F-JUN, G-JUL, H-AUG, J-SEP, K-OCT, L-NOV, M-DEC.

Select the month using the ▲/▼ **arrow** buttons, select the month code using the ◀/▶ **arrow** buttons, then press the ↵ **ENTER** button to confirm the month code.

Note:

Shows only when YES is selected in the SET CALENDAR screen.



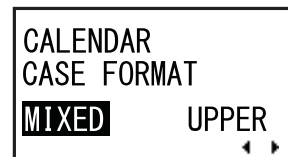
CALENDAR CASE FORMAT

Select the character format for the calendar.

- **MIXED**: Use upper case for the first character only.
- **UPPER**: Use upper case for all characters.

Note:

Shows only when YES is selected in the SET CALENDAR screen.



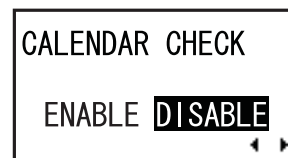
CALENDAR CHECK

Enable or disable the calendar check function.

- **ENABLE**: Enable the calendar check function.
- **DISABLE**: Disable the calendar check function.

Note:

Shows only when YES is selected in the SET CALENDAR screen.



CHARACTER PITCH

Set the character width for printing.

- **PROPORTIONAL**: Print each character with a different width.
- **FIXED**: Print all characters with the same width.



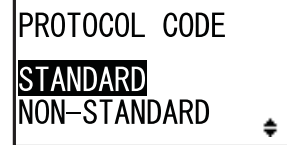
PROTOCOL CODE

Set the protocol code.

- **STANDARD**: Use a standard code.
- **NON-STANDARD**: Use a non-standard code.

Note:

To set the non-standard code, send the user download command <LD> in normal mode. For more details on the <LD> command, refer to the Programming Reference.



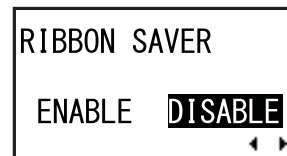
RIBBON SAVER

Enable or disable the ribbon saver function.

- **ENABLE**: Use the ribbon saver.
- **DISABLE**: Do not use the ribbon saver.

Note:

Shows only if the optional ribbon saver is installed. The optional ribbon saver is only available for the S84-ex printer. For details on the ribbon saver function, refer to [Section 7.10 Optional Ribbon Saver](#).



MODE SELECT

Set the communication command mode for analysis.

- **XML**: Use for supporting Oracle and SAP mode.
- **SBPL**: Use SBPL (SATO Barcode Printer Language) for the printer commands.

Note:

The setting will be effective only when you power on the printer again.

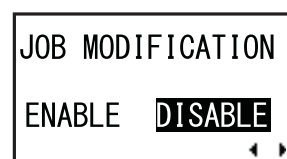


JOB MODIFICATION

Set the job modification function.

Use the job modification command <#J> to specify the strings before and after conversion.

- **ENABLE**: Enable the job modification function.
- **DISABLE**: Disable the job modification function.



ROTATE LABEL

Set the rotation for printing.

- **0**: Print the media as usual without rotation.
- **180**: Print the media with 180 degree rotation.

Note:

The LABEL SIZE ADJ screen shows when you press the **↵ ENTER** button with 180 selected.

ROTATE LABEL

DEG: **0** 180

**LABEL SIZE ADJ WIDTH**

Specify the width of the label for rotation.

The setting range varies depending on the model as follows:

Model	Setting Range	Default Value
S84-ex (203 dpi)	0000-0832	0832
S84-ex (305 dpi)	0000-1248	1248
S84-ex (609 dpi)	0000-2496	2496
S86-ex (203 dpi)	0000-1340	1340
S86-ex (305 dpi)	0000-2010	2010

Note:

Shows only if ROTATE LABEL is set to 180.

LABEL SIZE ADJ

WIDTH: **0832**

**LABEL SIZE ADJ HEIGHT**

Specify the height of the label for rotation.

The setting range varies depending on the model as follows:

Model	Setting Range	Default Value
S84-ex (203 dpi)	00000-20000	20000
S84-ex (305 dpi)	00000-18000	18000
S84-ex (609 dpi)	00000-09600	09600
S86-ex (203 dpi)	00000-09992	09992
S86-ex (305 dpi)	00000-14988	14988

Note:

Shows only if ROTATE LABEL is set to 180.

LABEL SIZE ADJ

HEIGHT: **20000**



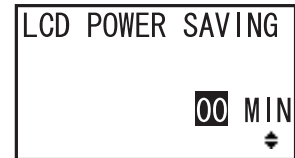
LCD POWER SAVING

Specify a period of time to light off the LCD backlight when the printer is not operated.

The setting range is from 00 to 15 minutes.

Note:

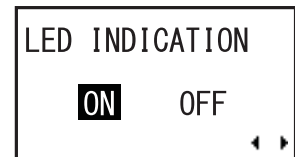
This function is disabled when set to 00; the LCD backlight will remain on. For details, refer to [Section 7.4 LCD Power Saving Mode](#).



LED INDICATION

Set the LED indicator for indicating the printer status.

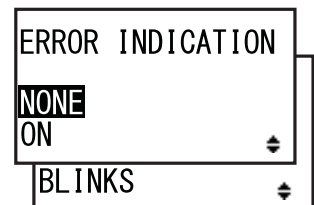
- **ON:** The LED indicator lights, blinks or off according to the printer status.
- **OFF:** The LED indicator is always off.



ERROR INDICATION

Set the LCD backlight for indicating a printer error.

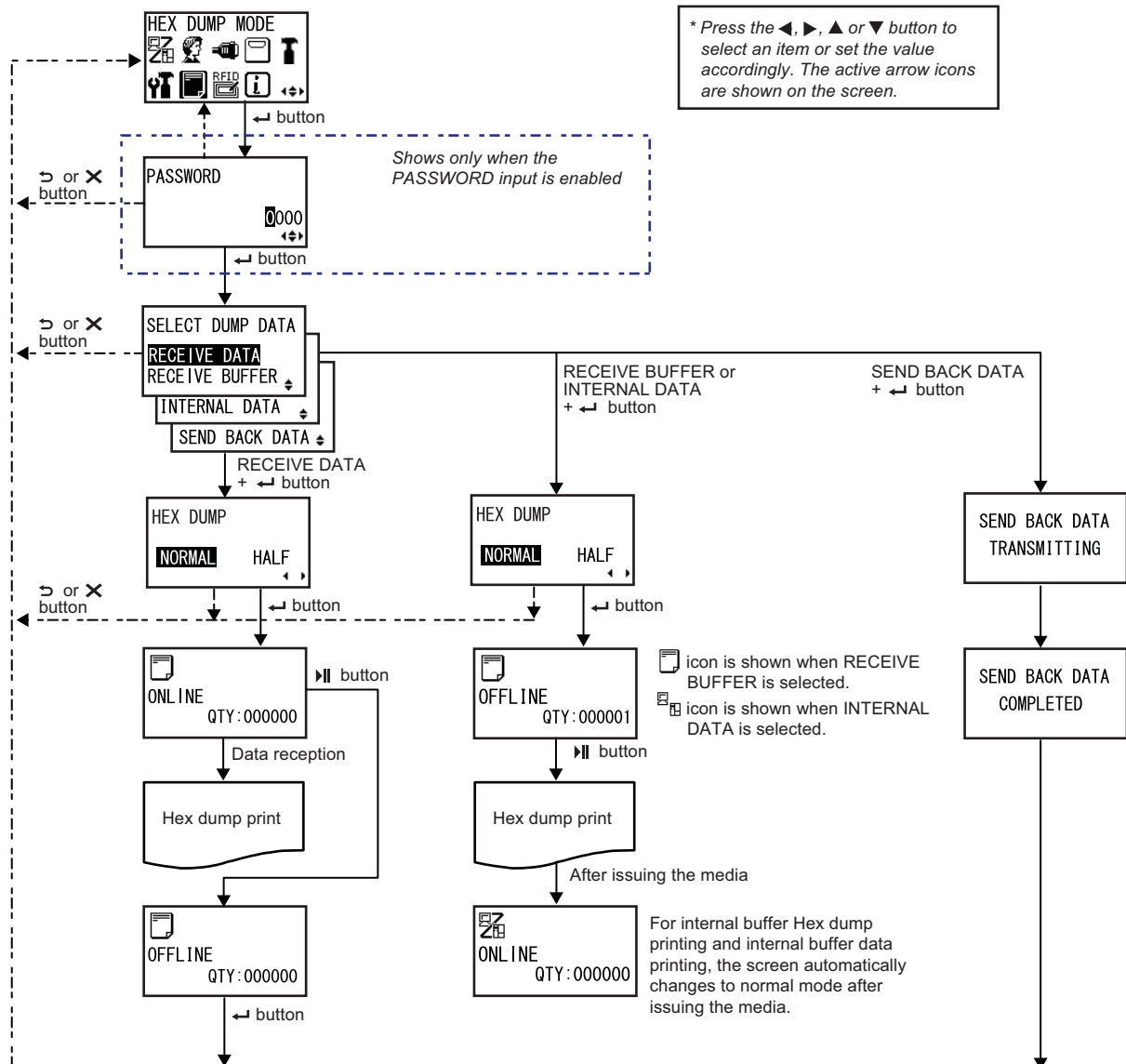
- **NONE:** No change to the LCD backlight.
- **ON:** The LCD backlight lights orange.
- **BLINKS:** The LCD backlight flashes orange.



4.2.14 Hex Dump Mode

The hex dump mode allows you to print the contents of the receive buffer in a hexadecimal format to allow the data stream to be examined for errors and troubleshooting.

The flowchart shows the sequence of the setting screens for the hex dump mode. The table describes each setting screen in detail.



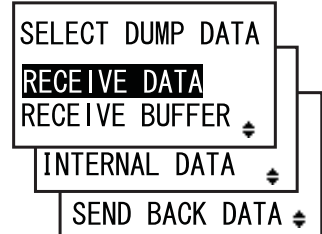
SELECT DUMP DATA

Select the data for printing the hex dump.

- **RECEIVE DATA:** Print the hex dump of the received data.
- **RECEIVE BUFFER:** Print the hex dump of the received print data (one item).
- **INTERNAL DATA:** Print the setting values of the internal buffer.
- **SEND BACK DATA:** Return the received data (one item).

Note:

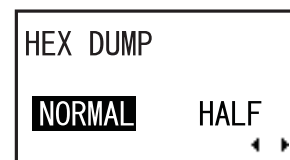
RECEIVE BUFFER and SEND BACK DATA cannot be selected when there is no received data.



HEX DUMP

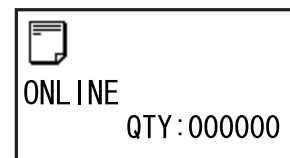
Set the print width of the hex dump.

- **NORMAL:** Print the received data with sixteen bytes in one line.
- **HALF:** Print the received data with eight bytes in one line.



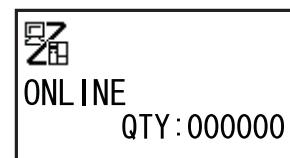
ONLINE



This screen shows an online status icon when RECEIVE DATA or RECEIVE BUFFER is selected.



ONLINE

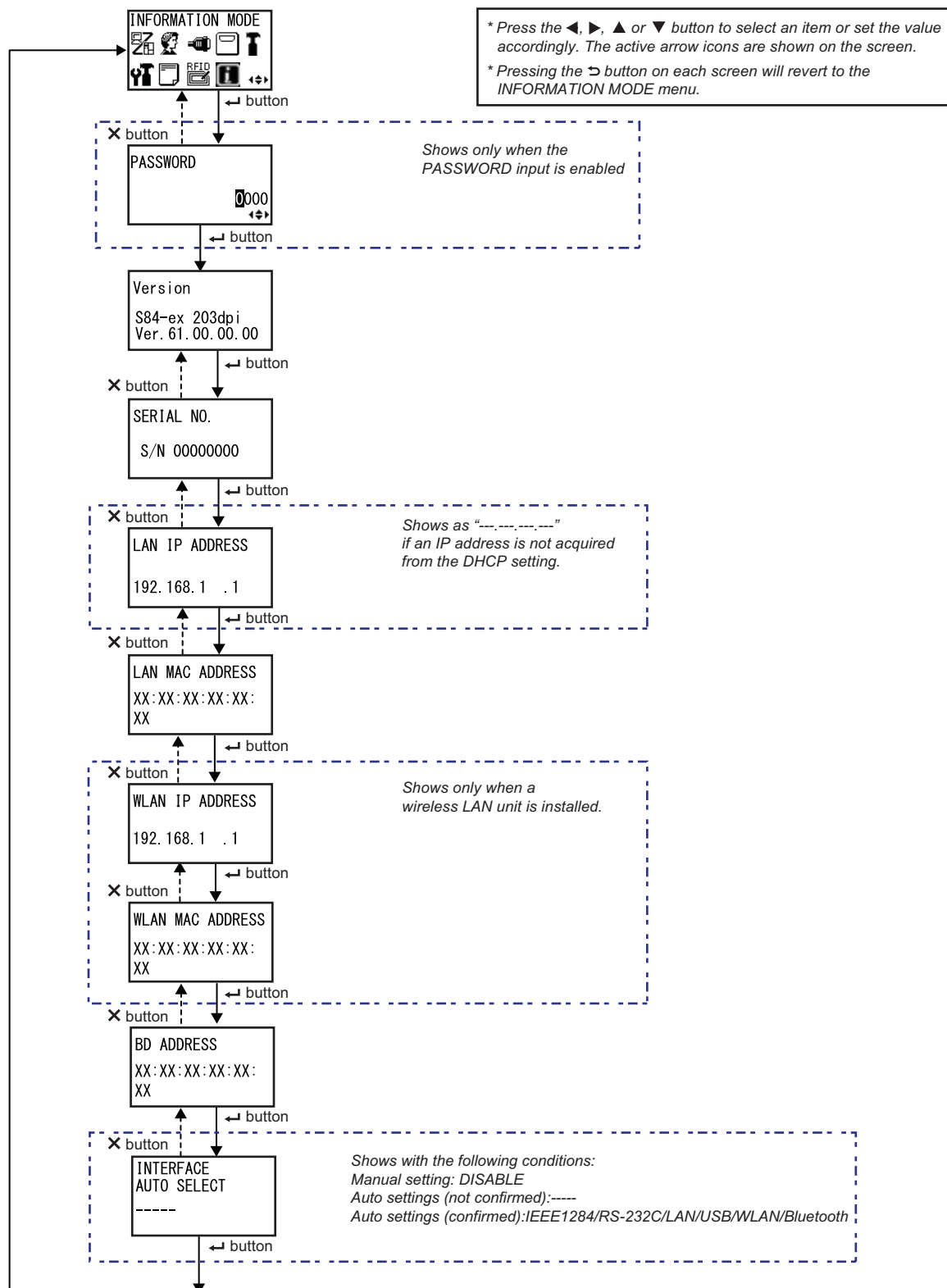
This screen shows an online status icon when INTERNAL DATA is selected.



OFFLINE	
This screen shows an offline status icon when RECEIVE DATA or RECEIVE BUFFER is selected.	<div> OFFLINE QTY:000000</div>
OFFLINE	
This screen shows an offline status icon when INTERNAL DATA is selected.	<div> OFFLINE QTY:000000</div>
SEND BACK DATA TRANSMITTING	
This screen shows while the printer is transmitting the “SEND BACK DATA”.	<div>SEND BACK DATA TRANSMITTING</div>
SEND BACK DATA COMPLETED	
<p>This screen shows that the printer has completed the transmission of “SEND BACK DATA”.</p> <hr/> <p>Note: The printer returns to the HEX DUMP MODE screen after three beeps sound.</p> <hr/>	<div>SEND BACK DATA COMPLETED</div>

4.2.15 Information Mode

The flowchart shows the sequence of the setting screens for the information mode. The table describes each setting screen in detail.



Version

Shows the model name and firmware version of this printer.

Version

S84-ex 203dpi
Ver. 61.00.00.00

SERIAL NO.

Shows the serial number of the control board in this printer.

SERIAL NO.

S/N 00000000

LAN IP ADDRESS

Shows the IP address of the LAN.

Note:

If the IP address is not acquired from DHCP, it will be shown as
“---.---.---.---”.

LAN IP ADDRESS

192.168.1 .1

LAN MAC ADDRESS

Shows the MAC address of the LAN.

LAN MAC ADDRESS

XX:XX:XX:XX:XX:
XX

WLAN IP ADDRESS

Shows the IP address of the wireless LAN.

Note:

- This screen shows only if a wireless LAN unit is installed.
- DHCP should be enabled to acquire the WLAN IP address.
- The IP address is shown as “---.---.---.---” before it is acquired.
- The dynamic IP address will be shown after it is acquired.
- When the printer fails to acquire the IP address or DHCP is disabled, the static IP address will be shown.

WLAN IP ADDRESS

192.168.1 . 1

WLAN MAC ADDRESS

Shows the MAC address of the wireless LAN.

Note:

This screen shows only if a wireless LAN unit is installed.

WLAN MAC ADDRESS

XX:XX:XX:XX:XX:
XX

BD ADDRESS

Shows the BD address.

BD ADDRESS

XX:XX:XX:XX:XX:
XX

INTERFACE AUTO SELECT

Shows the interface auto detection status.

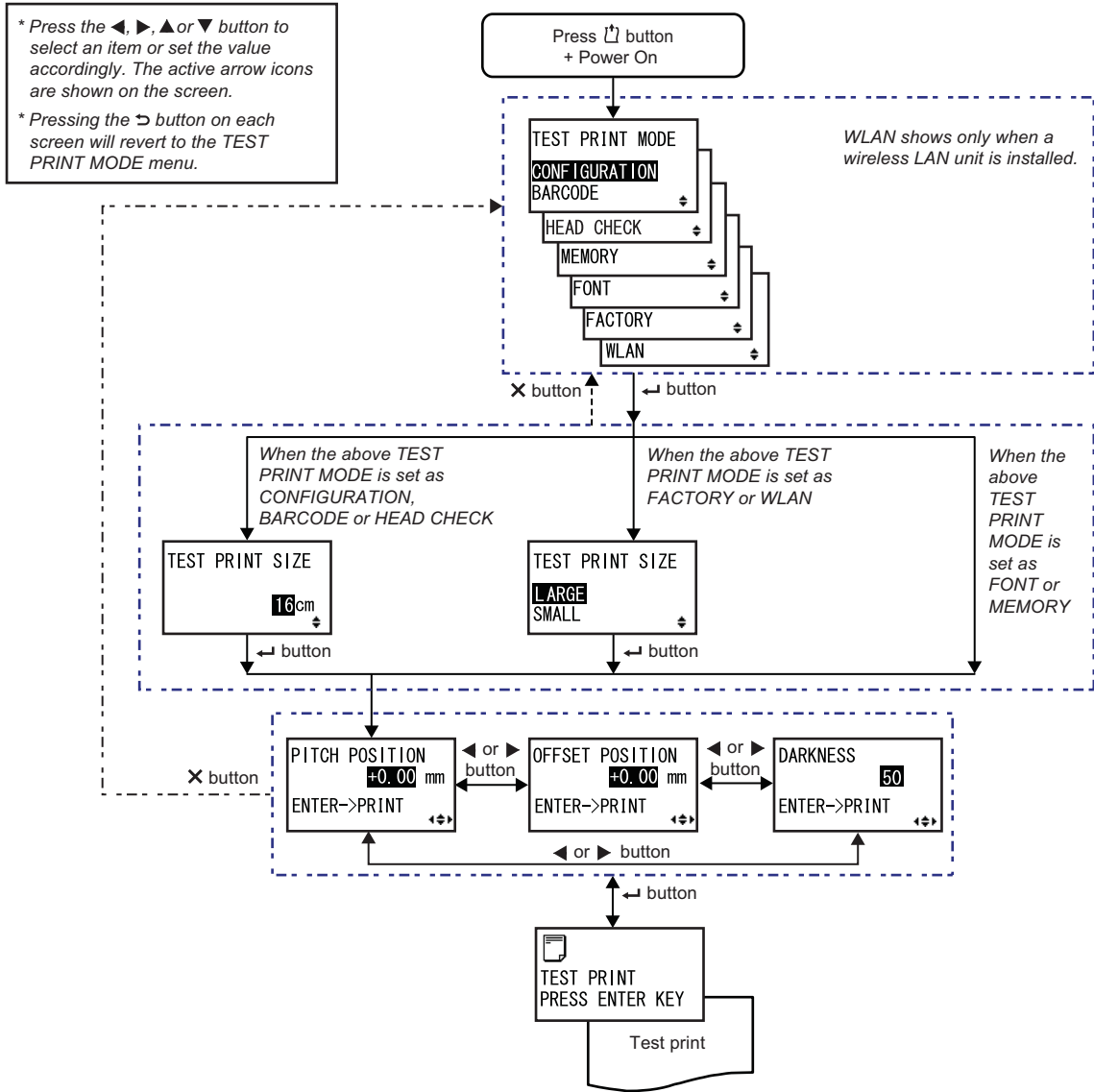
Note:

- “-----” shows when the interface is not detected.
- DISABLE shows that the INTERFACE AUTO SELECT function is disabled (manual setting).
- IEEE1284, RS-232C, LAN, USB, WLAN or Bluetooth shows the detected interface.

INTERFACE
AUTO SELECT

4.2.16 Test Print Mode

The flowchart shows the sequence of the setting screens for the test print mode. The table describes each setting screen in detail.



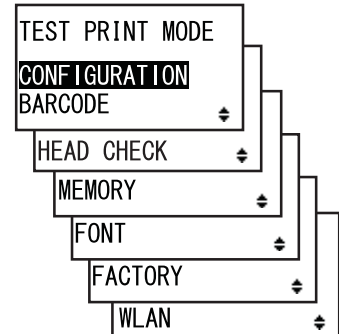
TEST PRINT MODE

Select the test print contents.

- **CONFIGURATION**: Print the configuration settings of the printer.
- **BARCODE**: Print the barcodes installed in this printer.
- **HEAD CHECK**: Print the head check pattern of the selected media size area.
- **MEMORY**: Print the contents of the memory in this printer.
- **FONT**: Print the contents of the fonts installed in this printer.
- **FACTORY**: Perform the factory test print.
- **WLAN**: Print the wireless LAN settings of the printer.

Note:

WLAN shows only if a wireless LAN unit is installed.



TEST PRINT SIZE

Set the width of the test print in 1cm steps.

The setting range varies depending on the model as follows:

Model Name	Setting Range	Default Value
S84-ex	04-10cm	10cm
S86-ex	05-16cm	16cm

Note:

Shows only if TEST PRINT MODE is set to CONFIGURATION, BARCODE or HEAD CHECK.



TEST PRINT SIZE

Select the width of the test print from LARGE or SMALL.

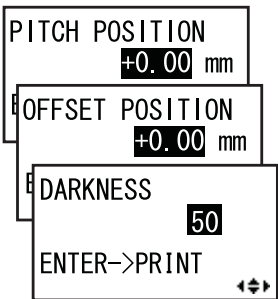
The available width varies depending on the model as follows:

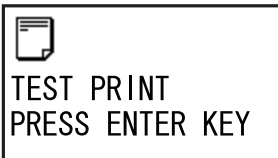
Model Name	LARGE	SMALL
S84-ex	10cm	4cm
S86-ex	16cm	5cm

Note:

Shows only if TEST PRINT MODE is set to FACTORY or WLAN.



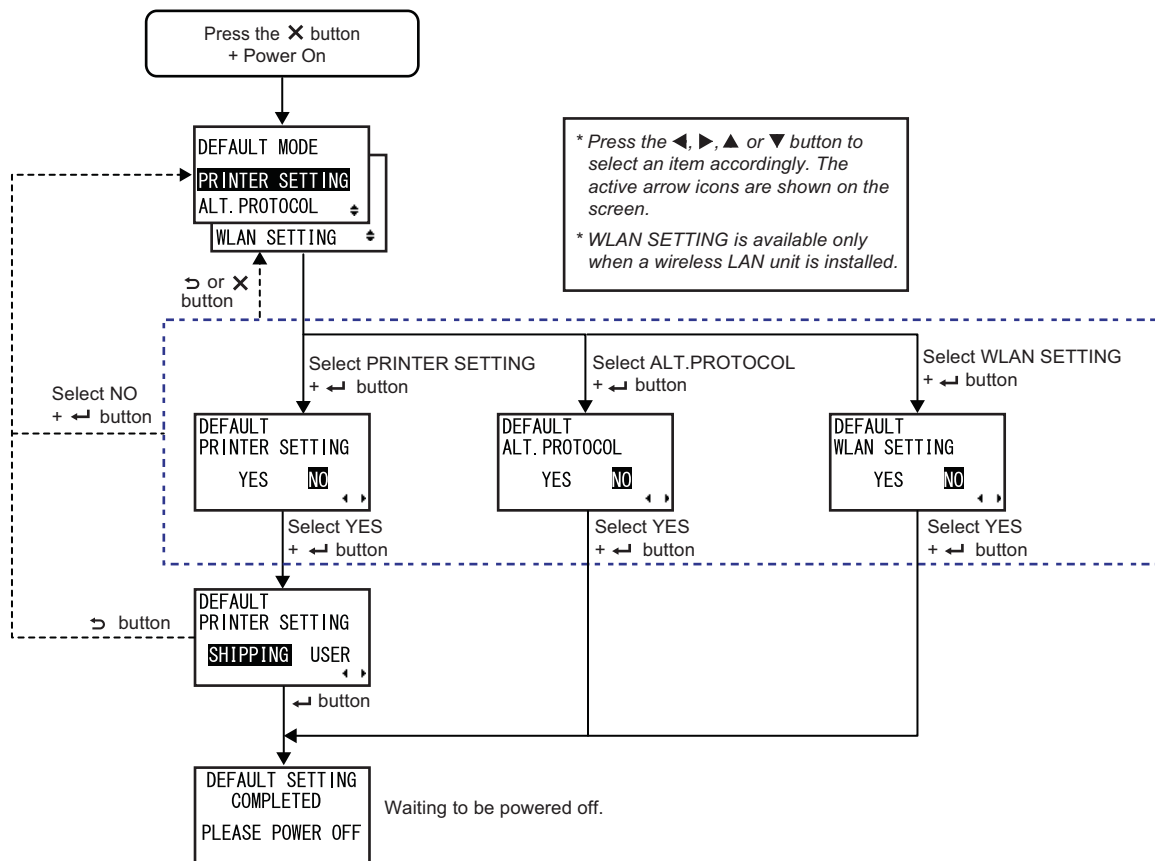
PITCH POSITION/OFFSET POSITION/DARKNESS	
<p>Adjust the print position, offset position and print darkness.</p> <p>The setting range for both PITCH POSITION and OFFSET POSITION is ± 3.75 mm (± 0.15") and is adjustable by 0.25 mm (0.01").</p> <p>The setting range for DARKNESS is from 00 to 99.</p> <p>Note:</p> <p>Press the ↵ ENTER button to start the test print.</p>	

TEST PRINT PRESS ENTER KEY	
<p>The test print is in progress.</p> <p>Press the ↵ ENTER button while printing to pause the test print operation. Press the ↵ ENTER button again to continue.</p>	

4.2.17 Default Setting Mode

The printer can be reset to the default setting as in the factory preset.

The flowchart shows the sequence of the setting screens for the default setting mode. The table describes each setting screen in detail.



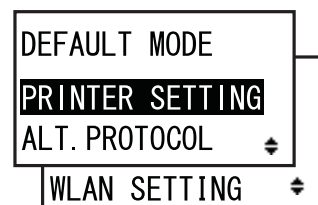
DEFAULT MODE

Select the item to initialize.

- **PRINTER SETTING:** Initialize the printer setting.
- **ALT. PROTOCOL:** Initialize the protocol code.
- **WLAN SETTING:** Initialize the WLAN setting.

Note:

WLAN SETTING shows only if a wireless LAN unit is installed.



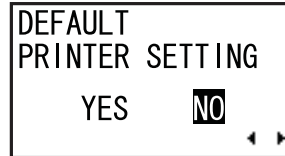
DEFAULT PRINTER SETTING

Select whether or not to initialize the printer setting.

- **YES:** Initialize the printer setting.
- **NO:** Cancel and return to the DEFAULT MODE screen.

Note:

Shows only if DEFAULT MODE is set to PRINTER SETTING.



DEFAULT PRINTER SETTING SHIPPING USER

Select the initialization type.

- **SHIPPING:** Initialize the printer to the shipping state.
- **USER:** Initialize the printer to the state with the SAVE USER DEF setting.

Note:

- Shows only if DEFAULT PRINTER SETTING is set to YES.
- If you have selected USER when the SAVE USER DEF is not registered, the printer will be initialized to the shipping state.



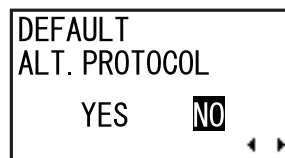
DEFAULT ALT. PROTOCOL

Select whether or not to initialize the protocol code.

- **YES:** Initialize the protocol code.
- **NO:** Cancel and return to the DEFAULT MODE screen.

Note:

Shows only if DEFAULT MODE is set to ALT. PROTOCOL.



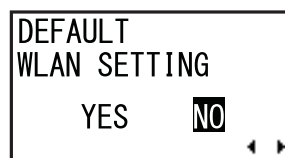
DEFAULT WLAN SETTING

Select whether or not to initialize the WLAN setting.

- **YES:** Initialize the WLAN setting.
- **NO:** Cancel and return to the DEFAULT MODE screen.

Note:

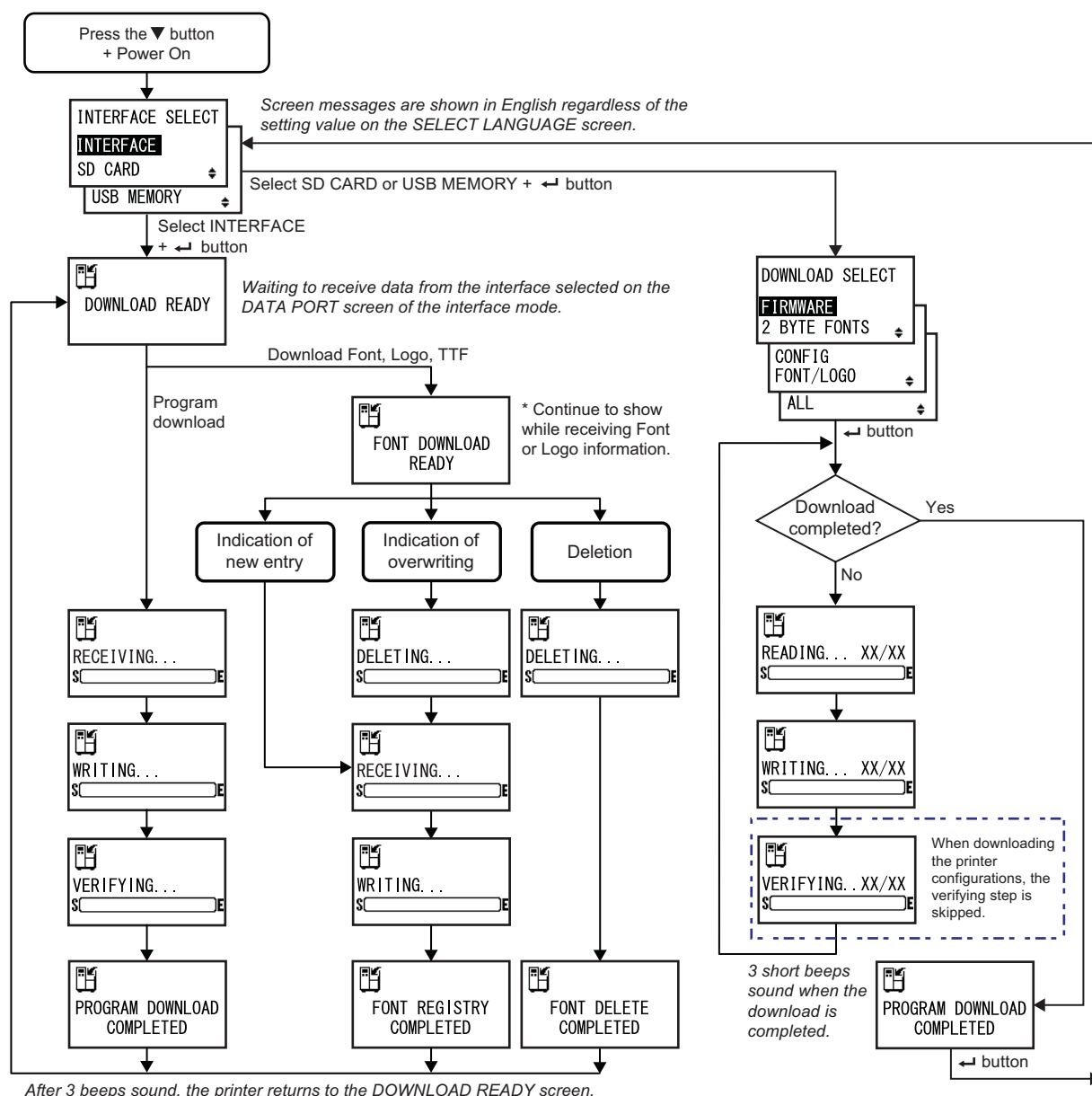
Shows only if DEFAULT MODE is set to WLAN SETTING.



DEFAULT SETTING COMPLETED	
Shows when the initialization has been completed.	<div>DEFAULT SETTING COMPLETED PLEASE POWER OFF</div>
Note: The setting will be effective only when you power on the printer again.	

4.2.18 Download Mode

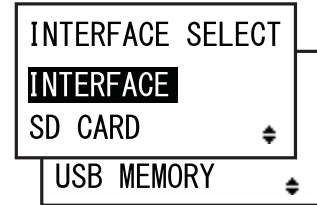
This download feature allows the operator to download data (firmware, font/logo, TrueType font, configuration) from the host computer through the interface, SD card or USB memory and write in the Flash ROM memory. When downloading is complete, the LCD screen will return to the original screen after three seconds. If an error occurs, an error message will show and the reason will be identified. The flowchart shows the sequence of the setting screens for the download mode. The table describes each setting screen in detail.



INTERFACE SELECT

Select the download method.

- **INTERFACE:** Download the program from the interface.
- **SD CARD:** Download the program from an SD card.
- **USB MEMORY:** Download the program from a USB memory.



DOWNLOAD READY

The printer is waiting to receive download data from the interface selected on the DATA PORT screen in the interface mode.

The following data will be received from the PC and written to the main ROM.

- (1) Firmware data
- (2) Font/logo data
- (3) TrueType font

When firmware data is received, it goes to the RECEIVING... screen.

When font, logo and TrueType font are received, it goes to the FONT DOWNLOAD READY screen.

Note:

Shows only if INTERFACE SELECT is set to INTERFACE.



FONT DOWNLOAD READY

The printer is waiting to receive font data.

When downloading the font for the first time, it goes to the RECEIVING... screen.

When overwriting or deleting existing font data, it goes to the DELETING... screen.

Note:

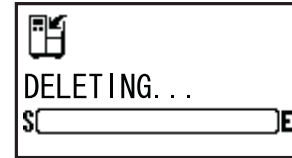
Shows only if INTERFACE SELECT is set to INTERFACE.



DELETING . .

The printer is deleting the existing font data.
 The bar on the lower portion of the screen indicates the data deletion progress.
 When overwriting font data after deleting, it goes to the RECEIVING... screen.
 When just deleting font data, it goes to the FONT DELETE COMPLETED screen.

Note:
 Shows only if INTERFACE SELECT is set to INTERFACE.



RECEIVING . .

The printer is receiving downloaded data.
 The bar on the lower portion of the screen indicates the data reception progress.
 After receiving downloaded data, it goes to the WRITING... screen.

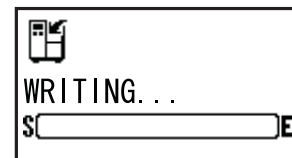
Note:
 Shows only if INTERFACE SELECT is set to INTERFACE.



WRITING . .

The printer is writing downloaded data.
 The bar on the lower portion of the screen indicates the data writing progress.
 After writing downloaded data, it goes to the FONT REGISTRY COMPLETED screen.

Note:
 Shows only if INTERFACE SELECT is set to INTERFACE.



VERIFYING . .

The printer is verifying the firmware data.
 The bar on the lower portion of the screen indicates the data verification progress.
 After verifying the firmware data, it goes to the PROGRAM DOWNLOAD COMPLETED screen.

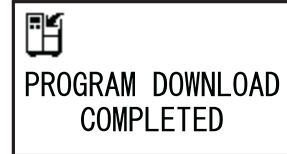
Note:
 Shows only if INTERFACE SELECT is set to INTERFACE.



PROGRAM DOWNLOAD COMPLETED

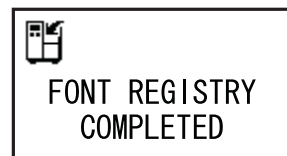
This screen shows the completion of the download.
 Three beeps sound when the program download is completed.
 If downloading through INTERFACE, it will return to the DOWNLOAD READY screen.

If downloading through SD CARD or USB MEMORY, press the **↵ ENTER** button to return to the INTERFACE SELECT screen.

**FONT REGISTRY COMPLETED**

This screen shows the completion of the font registry.
 Three beeps sound when the font registry is completed.
 The printer returns to the DOWNLOAD READY screen.

Note:
 Shows only if INTERFACE SELECT is set to INTERFACE.

**FONT DELETE COMPLETED**

This screen shows the completion of the font deletion.
 Three beeps sound when the font deletion is completed.
 The printer returns to the DOWNLOAD READY screen.

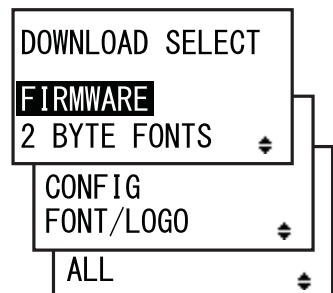
Note:
 Shows only if INTERFACE SELECT is set to INTERFACE.

**DOWNLOAD SELECT**

Select the item to be downloaded.

- **FIRMWARE:** Download "Firmware", "2 byte fonts" and "Outline font".
- **2 BYTE FONTS:** Download "2 byte fonts" and "Outline font".
- **CONFIG:** Download printer configurations.
- **FONT/LOGO:** Download font/logo data.
- **ALL:** Download all data.

Note:
 Shows only if INTERFACE SELECT is set to SD CARD or USB MEMORY.

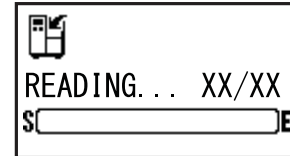


READING . . XX/XX (DOWNLOAD)

The printer is reading the downloaded data.
The bar on the lower portion of the screen indicates the data reading progress.
XX/XX shows the file number being read and total number of files.
After reading the data, it goes to the WRITING... screen.

Note:

Shows only if INTERFACE SELECT is set to SD CARD or USB MEMORY.

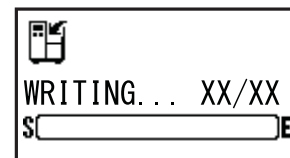


WRITING . . XX/XX (DOWNLOAD)

The printer is writing the downloaded data.
The bar on the lower portion of the screen indicates the data writing progress.
XX/XX shows the file number being written and total number of files.
After writing the data, it goes to the VERIFYING... screen.

Note:

Shows only if INTERFACE SELECT is set to SD CARD or USB MEMORY.

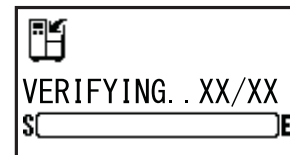


VERIFYING . . XX/XX (DOWNLOAD)

The printer is verifying the downloaded data.
The bar on the lower portion of the screen indicates the data verification progress.
XX/XX shows the file number being verified and total number of files.
After verifying the data, it goes to the PROGRAM DOWNLOAD COMPLETED screen.

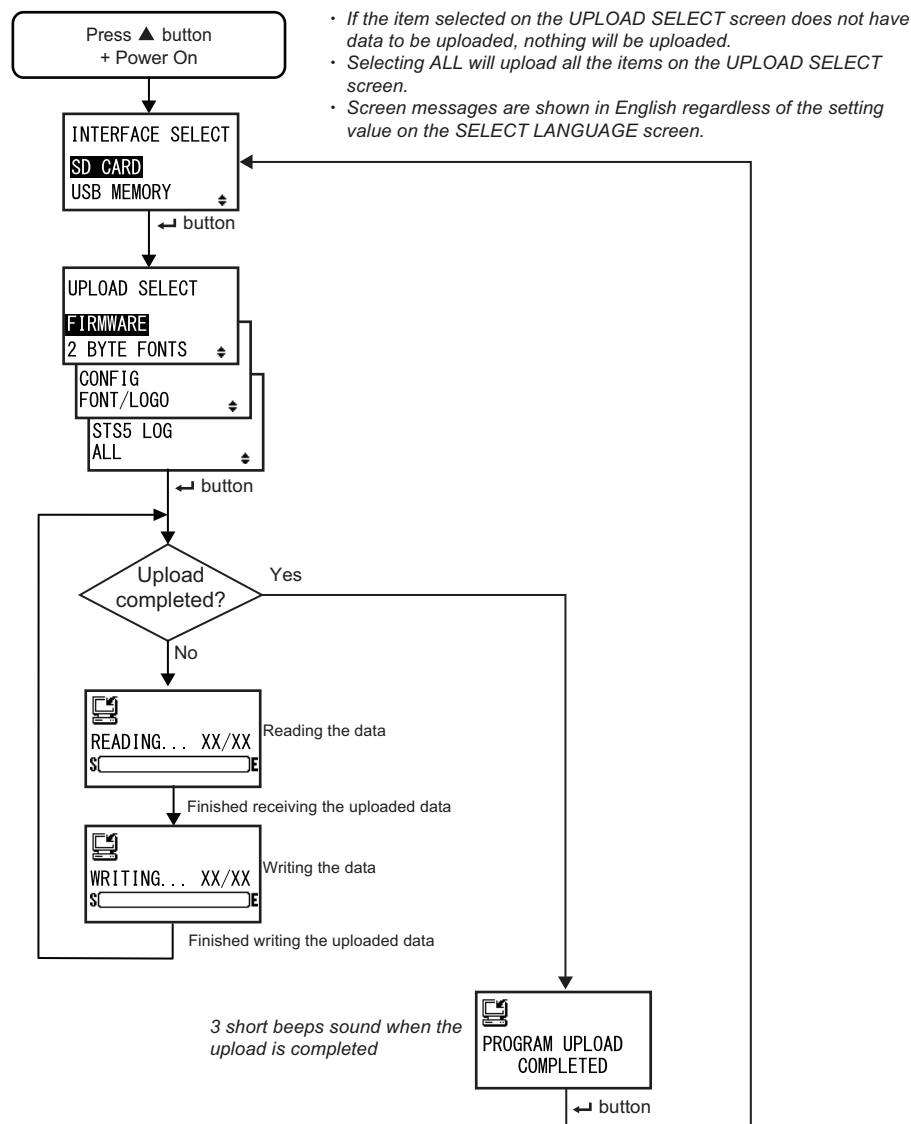
Note:


Shows only if INTERFACE SELECT is set to SD CARD or USB MEMORY.

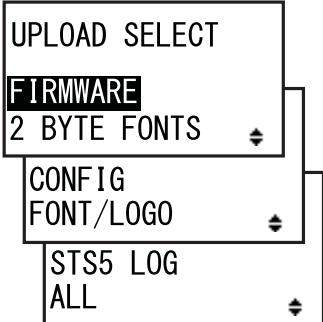


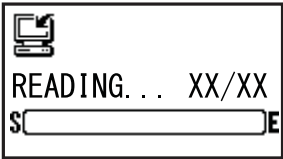
4.2.19 Upload Mode

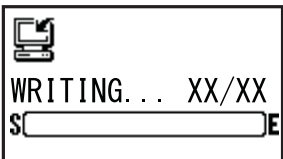
The upload feature allows the operator to upload data (firmware, font/logo, TrueType font, configuration, status5 log) from the printer and write it to an SD card or USB memory. When uploading is complete, the LCD screen will return to the original screen after three seconds. If an error occurs, an error message will show and the reason will be identified.



INTERFACE SELECT	
<p>Select the upload method.</p> <ul style="list-style-type: none">• SD CARD: Upload data to an SD card.• USB MEMORY: Upload data to a USB memory. <p>Note: The setting information of the wireless LAN is saved only when the wireless LAN is connected.</p>	

UPLOAD SELECT	
<p>Select the item to be uploaded.</p> <ul style="list-style-type: none">• FIRMWARE: Upload "Firmware".• 2 BYTE FONTS: Upload "2 byte fonts" and "Outline font".• CONFIG: Upload printer configurations.• FONT/LOGO: Upload font/logo data.• STS5 LOG: Upload Status5 log.• ALL: Upload all data.	

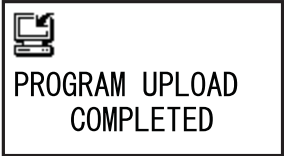
READING. . . XX/XX (UPLOAD)	
<p>The printer is reading the uploaded data. The bar on the lower portion of the screen indicates the data reading progress. XX/XX shows the file number being read and total number of files. After reading the data, it goes to the WRITING... screen.</p>	

WRITING. . . XX/XX (UPLOAD)	
<p>The printer is writing the uploaded data. The bar on the lower portion of the screen indicates the data writing progress. XX/XX shows the file number being written and total number of files.</p>	

PROGRAM UPLOAD COMPLETED

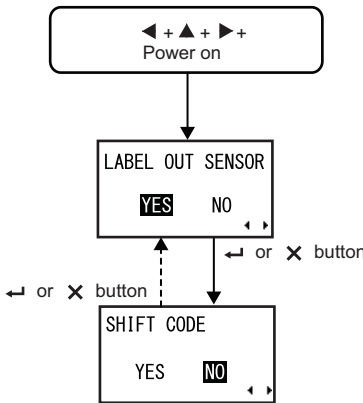
This screen shows the completion of the upload.
Three beeps sound when the program upload is completed.

Press the **↩ ENTER** button to return to the INTERFACE SELECT screen.



4.2.20 Hidden Setting Mode

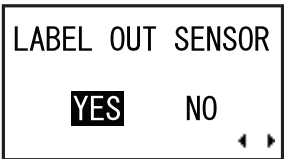
This mode allows the operator access to set the label out sensor status and work shift mode status. The flowchart shows the sequence of the setting screens for the hidden setting mode. The table describes each setting screen in detail.



LABEL OUT SENSOR

Enable or disable the paper end detection.

- **YES:** Enable the paper end detection.
- **NO:** Disable the paper end detection.

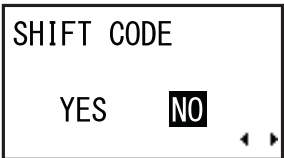


SHIFT CODE

Enable or disable the work shift setting mode.

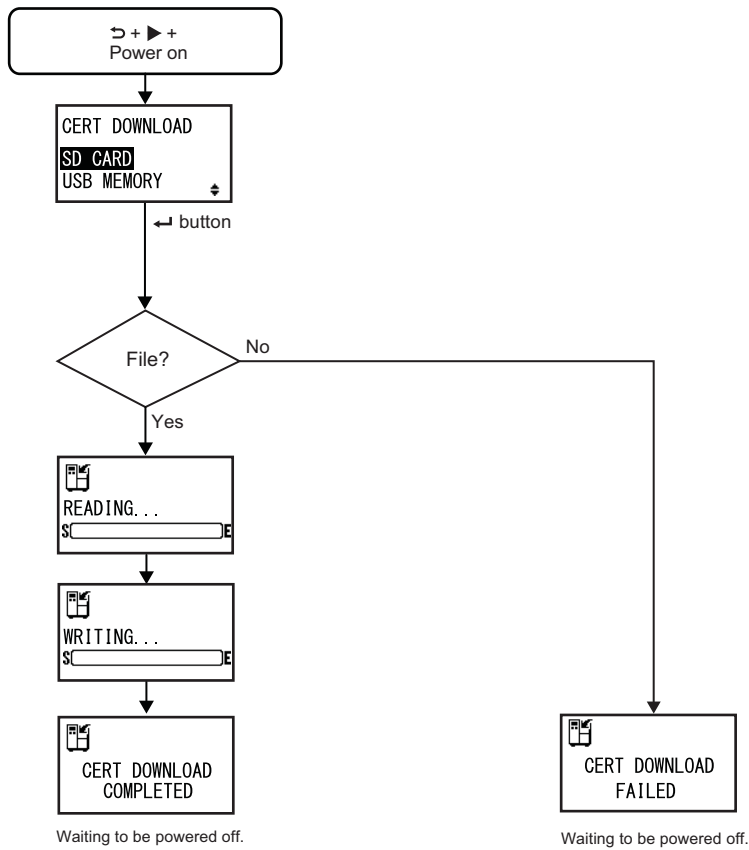
- **YES:** Enable the work shift setting mode.
- **NO:** Disable the work shift setting mode.

Note:
For details on the work shift setting mode, refer to [Section 4.2.6 Work Shift Setting Mode](#).



4.2.21 Wireless LAN Certificate Download Mode

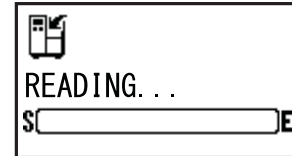
This mode allows the user to download the wireless LAN certification data. The flowchart shows the sequence of the setting screens for the wireless LAN certificate download mode. The table describes each setting screen in detail.



CERT DOWNLOAD	
Select the download method of the certification data. <ul style="list-style-type: none">• SD CARD: Download data from an SD card.• USB MEMORY: Download data from a USB memory.	<div>CERT DOWNLOAD SD CARD USB MEMORY</div>

READING . . (CERT DOWNLOAD)

The printer is reading the certification data.
The bar on the lower portion of the screen indicates the certification data reading progress.

**WRITING . . (CERT DOWNLOAD)**

The printer is writing the certification data.
The bar on the lower portion of the screen indicates the certification data writing progress.

**CERT DOWNLOAD COMPLETED**

This screen shows when the certification data download is completed.

Note:

The setting will be effective only when you power on the printer again.

**CERT DOWNLOAD FAILED**

This screen shows when the certification data download has failed.
Power on the printer and try again.

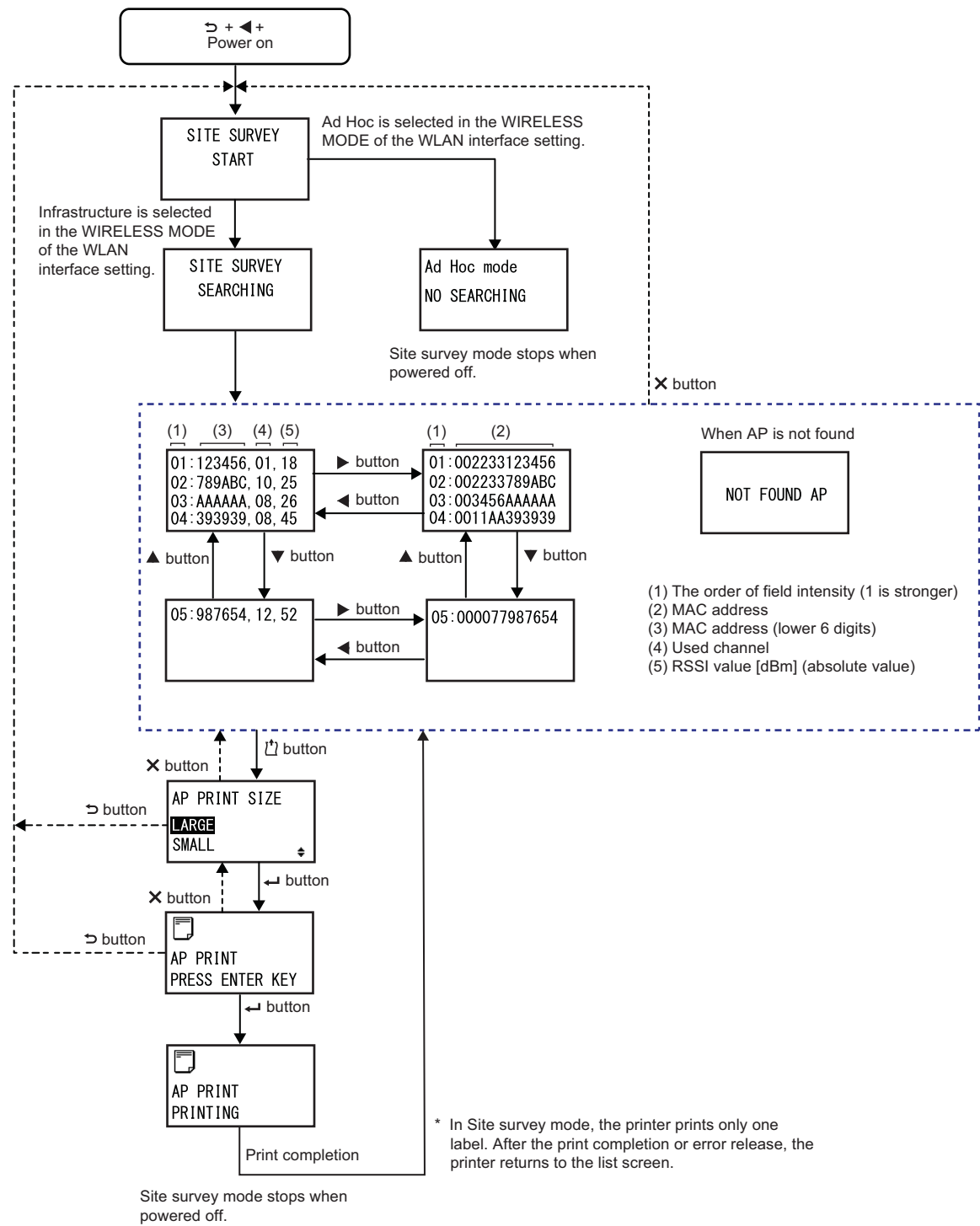
Note:

Make sure that there are certification files in the SD card or USB memory.



4.2.22 Site Survey Mode

This mode allows you to acquire the information of access points. The flowchart shows the sequence of the setting screens for the site survey mode. The table describes each setting screen in detail.



SITE SURVEY START

This is the initial screen of the site survey mode.

Press the **↵ ENTER** button to start the site survey.

If Infrastructure is selected in the WIRELESS MODE of the WLAN interface setting, the printer goes to the SITE SURVEY SEARCHING screen.

If Ad Hoc is selected in the WIRELESS MODE of the WLAN interface setting, the printer goes to the Ad Hoc mode screen.

SITE SURVEY
START

SITE SURVEY SEARCHING

The printer is acquiring information necessary for the site survey.

The field intensity, channel and MAC address for a maximum of sixty-four access points will be searched.

After acquiring the information, the printer automatically goes to the next screen.

Note:

Shows only if the WIRELESS MODE of the WLAN interface setting is set to Infrastructure.

SITE SURVEY
SEARCHING

Ad Hoc mode

This is a warning screen when the site survey mode is started if the WIRELESS MODE of the WLAN interface setting is set to Ad Hoc. Power on the printer again.

Ad Hoc mode
NO SEARCHING

SITE SURVEY INFORMATION	
<p>These screens show the information of the site survey. In the first line on the upper screen to the right, 01 indicates the strongest field density, 123456 indicates the last six digits of the MAC address, 01 indicates the channel in use and 18 indicates the absolute RSSI value in dBm.</p> <p>Each screen shows four access points. You can use the ▲/▼ arrow buttons to toggle between screens. A maximum of sixty-four access points can be shown. You can show the full MAC address (twelve digits) by pressing the ◀/▶ arrow buttons as shown below.</p>	<div><div>01:123456, 01, 18 02:789ABC, 10, 25 03:AAAAAA, 08, 26 04:393939, 08, 45</div><div>▲ button ▼ button</div><div>05:987654, 12, 52</div></div>


01:123456, 01, 18
02:789ABC, 10, 25
03:AAAAAA, 08, 26
04:393939, 08, 45


▶ button ◀ button

01:002233123456
02:002233789ABC
03:003456AAAAAA
04:0011AA393939

NOT FOUND AP	
<p>This screen shows when the printer cannot find an access point.</p> <p>Note: Press the ✕ CANCEL button to return to the SITE SURVEY START screen and try again.</p>	<div>NOT FOUND AP</div>

AP PRINT SIZE	
<p>Select the print size for the site survey information.</p> <ul style="list-style-type: none">• LARGE: Print the information with a width of 10 cm.• SMALL: Print the information with a width of 4 cm.	<div>AP PRINT SIZE LARGE SMALL ⬆</div>

AP PRINT PRESS ENTER KEY	
<p>The printer is ready to perform printing. Press the ⬅ ENTER button to start the test print of the site survey.</p>	<div> AP PRINT PRESS ENTER KEY</div>

AP PRINT PRINTING	
<p>The test print of the site survey is in progress.</p> <hr/> <p>Note: In site survey mode, the printer prints only one label. After the print completion or error release, the printer returns to the list screen.</p> <hr/>	<div> AP PRINT PRINTING</div>

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5

Cleaning and Performing Printer Adjustments

5.1 Maintenance

A dirty print head or platen roller not only affects the print quality but also causes printing errors. Use a cleaning kit or cleaning sheet to clean the printer regularly.

CAUTION

- Do not touch the power switch or connect or disconnect the power cord with wet hands. Doing so could cause an electric shock.
 - Disconnect the power cord from the AC outlet before you begin cleaning.
The print head and its surroundings are hot after printing. Wait until the printer cools down.
 - Touching the edge of the print head with your bare hand could cause injury.
 - Use a cleaning pen, cotton swab or cotton cloth from a cleaning kit to clean. Do not clean with a hard object. Doing so could cause damage.
 - Remove the media and ribbon before cleaning.
-

Note

You can purchase a cleaning kit or cleaning sheet from a SATO reseller or technical service center.

5.2 Maintenance of the Print Head and Platen Roller

Maintenance should be performed at the following regular intervals:

- After you print one media roll or print media for one hundred and fifty meters.
Use the cleaning kit to clean these parts:
 - Print head
 - Media sensors
 - Platen roller
 - Media guide
- After you print six media rolls or print media for nine hundred meters.
Use the cleaning sheet to clean these parts:
 - Print head
Use the cleaning kit to clean these parts:
 - Media guide
 - Media route
 - Platen roller
 - Feed roller
 - Ribbon route

Note

The above maintenance intervals are only for reference. Perform the cleaning when necessary.

5.2.1 Maintenance using the Cleaning Kit

The maintenance procedures using the cleaning kit are as follows:

Note

For details on the cleaning kit, refer to the manual attached to the cleaning kit.

- 1** Make sure that the printer is in power off mode, then disconnect the power cord from the AC outlet.
- 2** Open the **top cover**.

CAUTION

Open the top cover fully to prevent accidental drop of the cover.

- 3** Turn the **head lock lever** ① clockwise to unlock the print head.

⚠ CAUTION

- The print head and its surroundings are hot after printing. Be careful not to touch it, to avoid being burned.
- Touching the edge of the print head with your bare hand could cause injury.

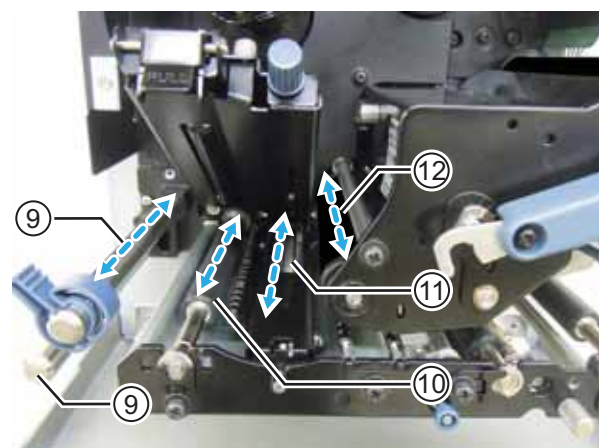
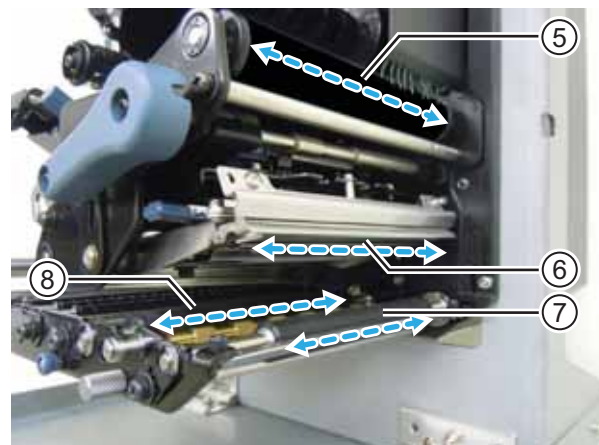
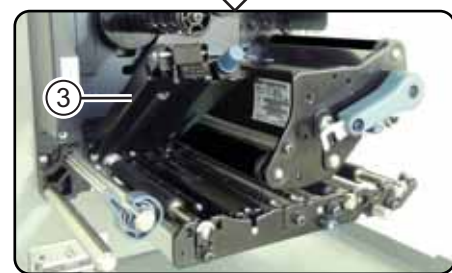
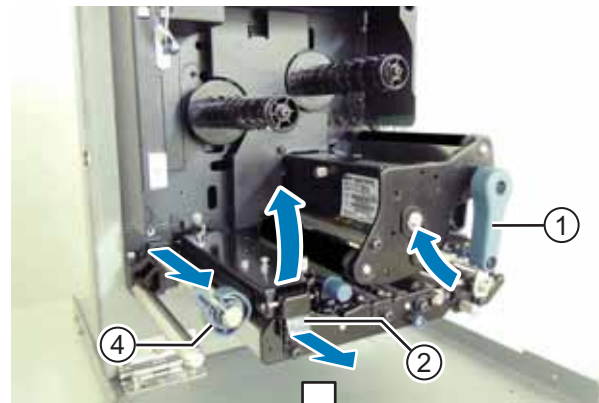
- 4** Pull the **feed lock latch** ② to unlock the **feed roller** and **media sensor assembly** ③.

The feed roller and media sensor assembly flipped open.

- 5** Pull the **media guide** ④ away from the printer.

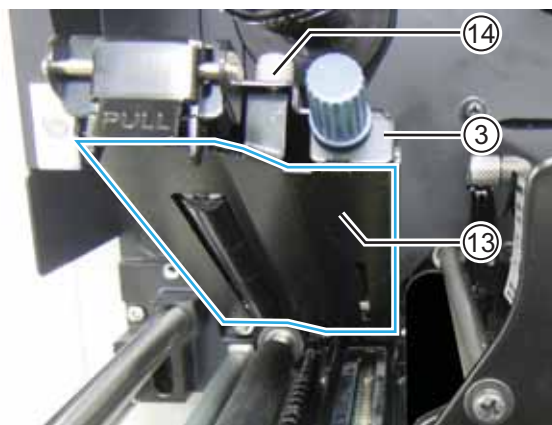
- 6** Clean the dirt on the **ribbon roller** ⑤, **print head** ⑥, **platen roller** ⑦ and **pressure roller** ⑧ using a cleaning pen or a cotton swab/cloth dabbed with cleaning liquid.

- 7** Clean the dirt on the **media shafts** ⑨, **feed roller** ⑩, **media sensor** ⑪ and **ribbon roller** ⑫ using a cleaning pen or a cotton swab/cloth dabbed with cleaning liquid.

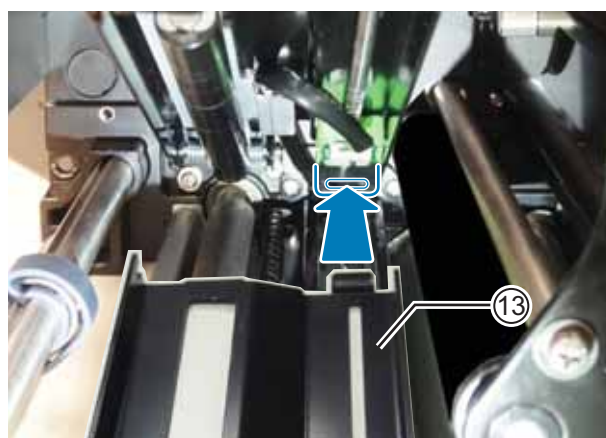


8 Clean the bottom of the **feed roller** and **media sensor assembly** ③ using the cotton cloth dabbed with cleaning liquid.

9 You can remove the **media sensor cover** ⑬ to clean the surface easily. Remove the **thumbscrew** ⑭ attached to the **media sensor cover**.

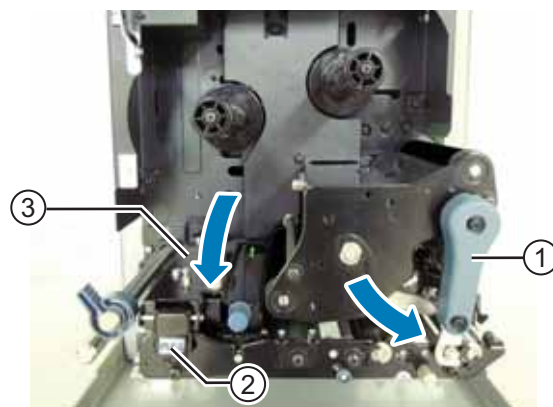


10 To assemble the **media sensor cover** ⑬, make sure that you insert the tab of the **media sensor cover** ⑬ to the slot as shown. Then, attach the **media sensor cover** ⑬ using the **thumbscrew** ⑭.



11 Turn the **head lock lever** ① counterclockwise to lock the print head.

12 Press the **feed roller** and **media sensor assembly** ③ down until the **feed lock latch** ② is locked.



5.2.2 Maintenance using the Cleaning Sheet

The maintenance procedures using the cleaning sheet are as follows:

- 1** Make sure that the printer is in power off mode, then disconnect the power cord from the AC outlet.
- 2** Open the **top cover**.

CAUTION

Open the top cover fully to prevent accidental drop of the cover.

- 3** Turn the **head lock lever** ① clockwise to unlock the print head.

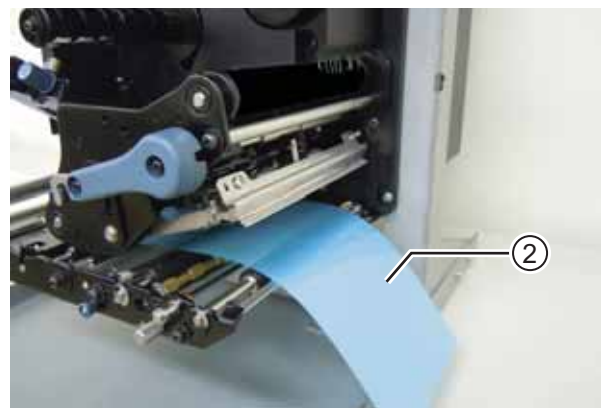
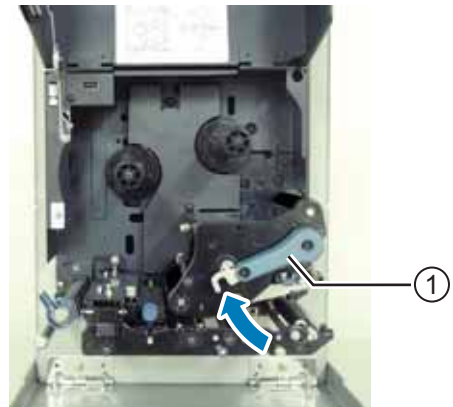
CAUTION

- The print head and its surroundings are hot after printing. Be careful not to touch it, to avoid being burned.
- Touching the edge of the print head with your bare hand could cause injury.

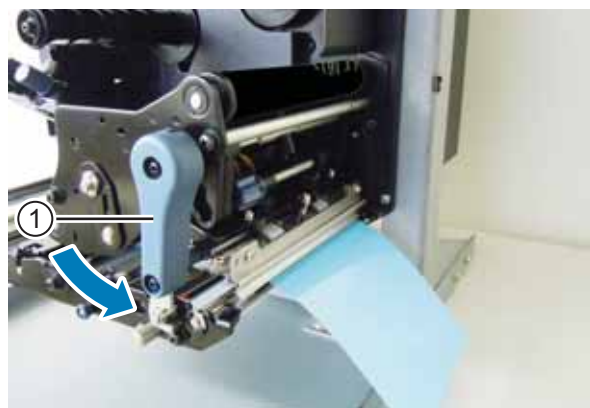
- 4** Place the **cleaning sheet** ② between the **print head** and the **platen roller**.

Note

Align the rough side of the cleaning sheet adjacent to the print head.



- 5** Turn the **head lock lever** ① counterclockwise to lock the print head.



- 6** Using two hands, pull the **cleaning sheet** away from the printer.

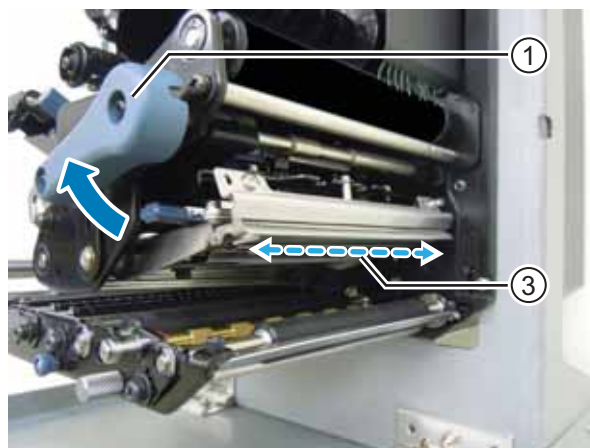
- 7** After you pull out the cleaning sheet, repeat steps 4 through 6, two or three more times.

When no more dirt appears on the cleaning sheet after you have pulled it out, stop repeating these steps.



- 8** Turn the **head lock lever** ① clockwise to unlock the **print head**.

- 9** Use a **cleaning pen** to clean the dirt on the **print head** ③.

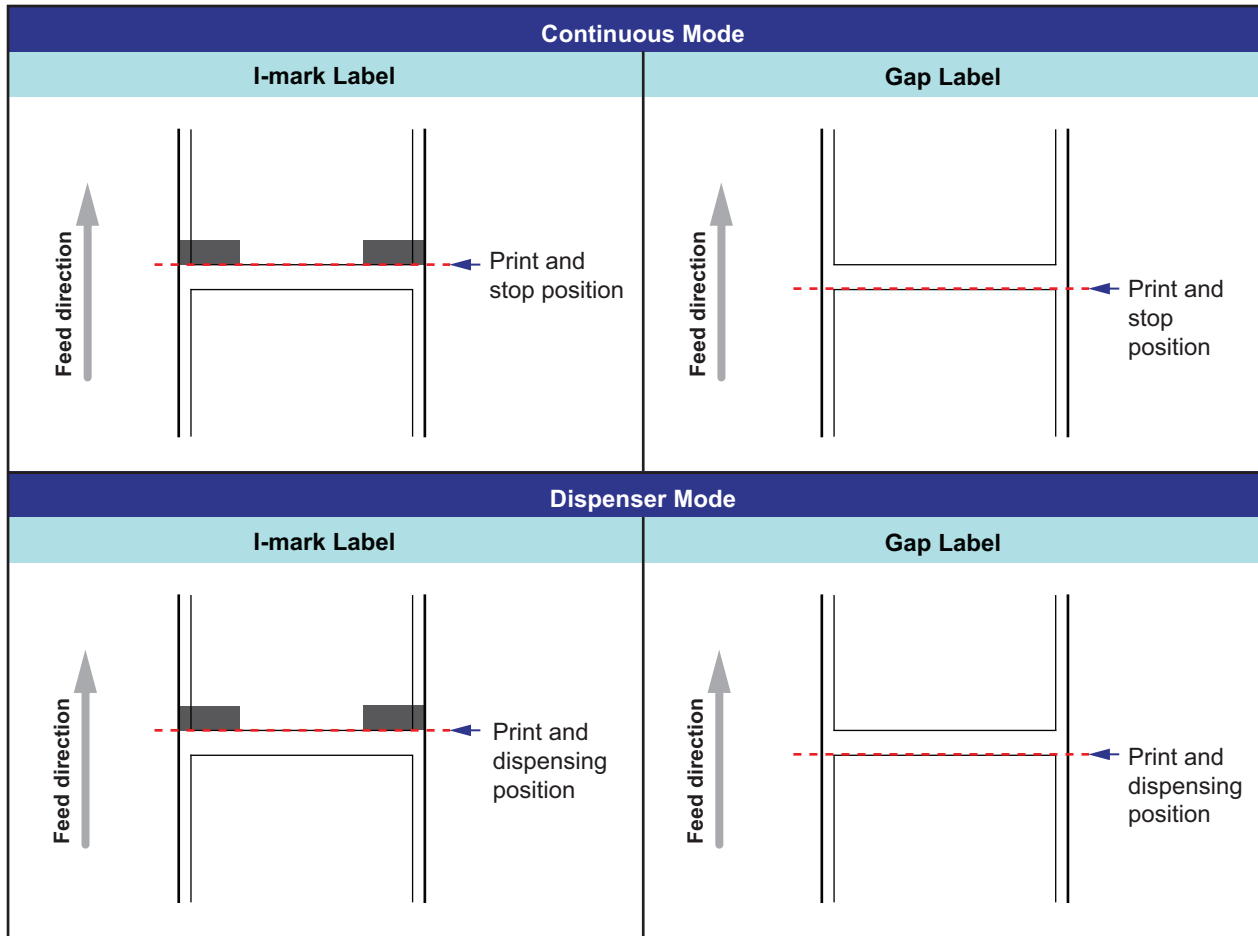


5.3 Adjusting the Base Reference Point

5.3.1 About the Base Reference Point

The base reference point is the point at which one determines the print position and the stop/dispensing position.

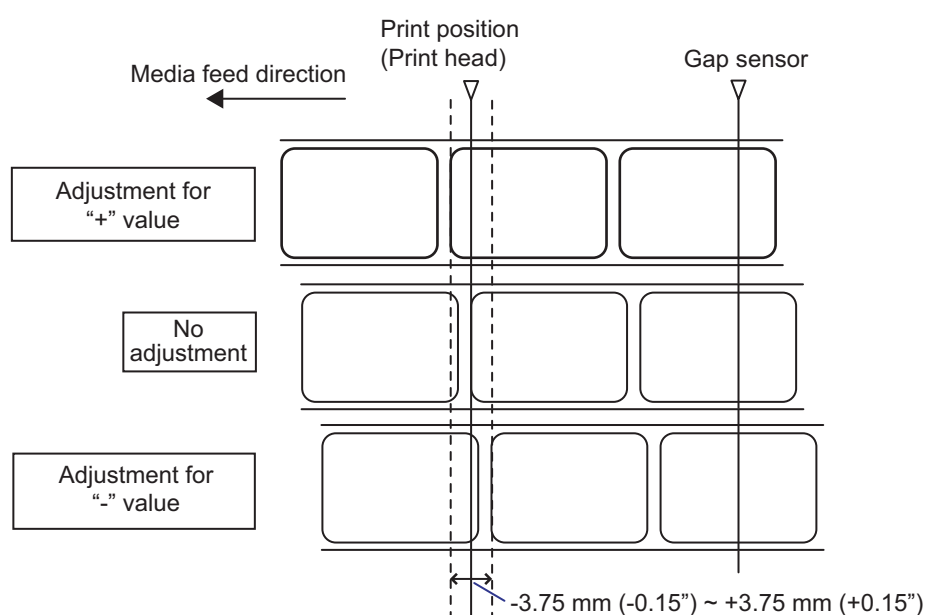
The base reference point differs depending on the operation mode or the media sensor you use.



5.3.2 Adjusting the Print Position

Adjustment Location	Adjustment Range
Adjustment Mode: Pitch Position	+3.75 mm to -3.75 mm (+0.15" to -0.15")

Print position is adjustable within the range of +3.75 mm to -3.75 mm (+0.15" to -0.15") in the adjustment mode described above. The shift experienced by the media, ribbon or print layout can be offset with the adjustment of the pitch position.



Note

The above base reference point (print position) will be the stop position when the sensor type is set to Gap sensor.

Adjust the print position using the following procedures:

- 1 When the printer is in online mode, press the **LINE** button to change the printer to offline mode.



- 2 Press the ▼ **arrow** button to enter the adjustment mode.

PITCH POSITION shows on the screen.

- 3 Change the setting value. Press the ▲/▼ **arrow** buttons to set the desired value.

Set the offset value using '+' to move the print position opposite the feed direction, and '-' to move the print position in the feed direction.

The setting value is adjustable by 0.25 mm (0.01") regardless of print resolution.

The setting range is from -3.75 mm (-0.15") to +3.75 mm (+0.15").

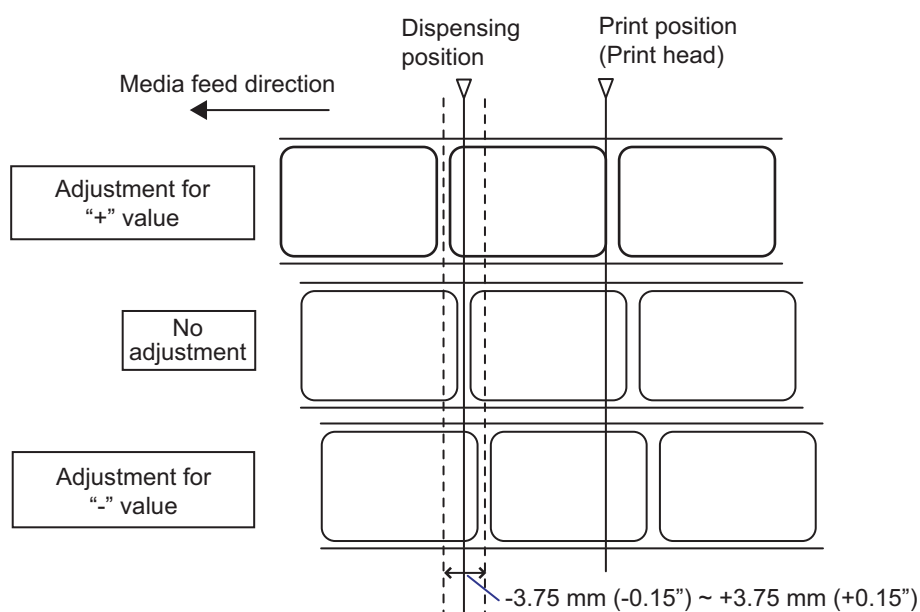
- 4 Press the ↵ **ENTER** button to save the setting and go to the next adjustment screen.



5.3.3 Adjusting the Media Stop Position

Adjustment Location	Adjustment Range
Adjustment Mode: Offset Position	+3.75 mm to -3.75 mm (+0.15" to -0.15")

The stop position for options (such as Dispenser) is adjustable within the range of +3.75 mm to -3.75 mm (+0.15" to -0.15") in the adjustment mode described above.

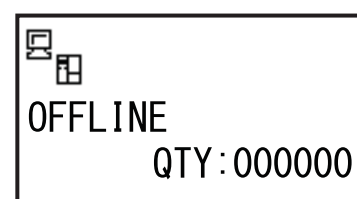


Note

The above dispensing position for printing indicates the label stop position when the media sensor is set to Gap sensor.

Adjust the stop position using the following procedures:

- 1 When the printer is in online mode, press the **LINE** button to change the printer to offline mode.



- 2** Press the **▼ arrow** button to enter the adjustment mode.

PITCH POSITION shows on the screen.



- 3** Press the **↵ ENTER** button to go to the next adjustment screen.

OFFSET POSITION shows on the screen.



- 4** Change the setting value. Press the **▲/▼ arrow** buttons to set the desired value.

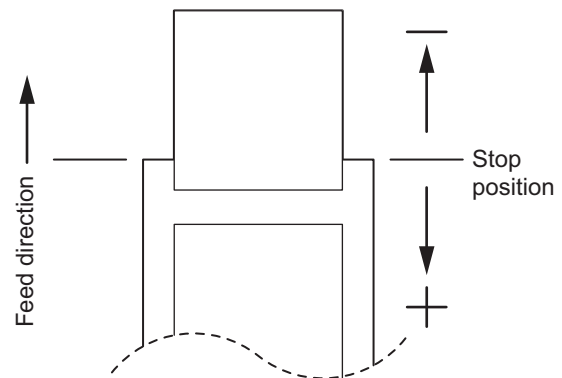
Set the offset value using '+' to move the stop position opposite the feed direction, and '-' to move the stop position in the feed direction. The setting value is adjustable by 0.25 mm (0.01") regardless of print resolution. The setting range is from -3.75 mm (-0.15") to +3.75 mm (+0.15").

- 5** Press the **↵ ENTER** button to save the setting and proceed to the next adjustment screen.

5.3.4 More about the Media Stop Position

Stop position of the label in dispenser mode.

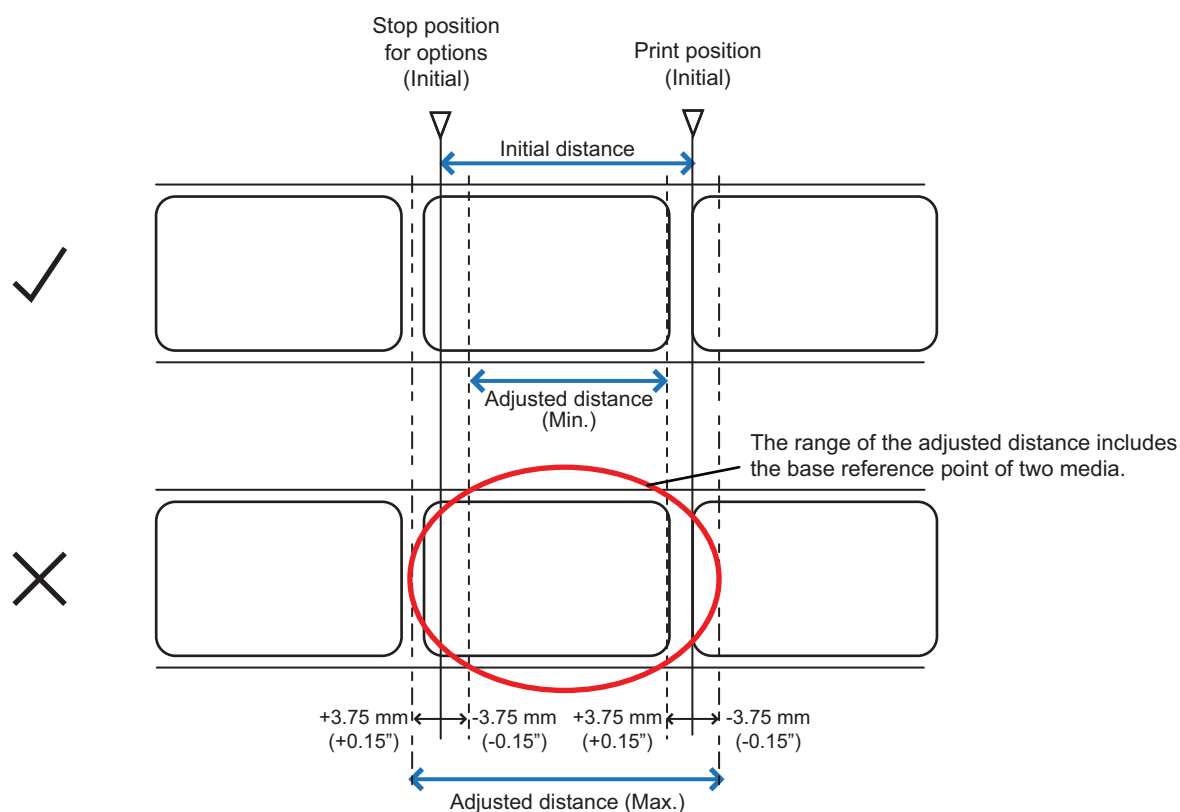
The regular position is to let the label stay about 1 mm (0.04") on the liner.



5.3.5 Limitation on Base Reference Point Adjustment

After adjusting the print position and the stop position, the distance between these two positions should not exceed one pitch size (including liner) of the media.

Refer to the figure and table below for the adjustment range of the distance between the print position and the stop position for options.



Adjustment range of the distance between the print position and the stop position for options:

Types of Options	Adjusted Distance (Min.)	Initial Distance	Adjusted Distance (Max.)
Dispenser	7.5 mm (0.3")	15.0 mm (0.6")	22.5 mm (0.9")

5.4 Adjusting the Print Quality

You can adjust the print quality by adjusting the print darkness and print speed.

5.4.1 Adjustment of the Print Darkness

The adjustment procedures for the print darkness are as follows:

Note

You can fine tune the print darkness by setting the **DARKNESS** in the adjustments mode. Refer to [Section 4.2.5 Adjustment Mode](#) for details.

- 1 When the printer is in online mode, press the **LINE** button to change the printer to offline mode.

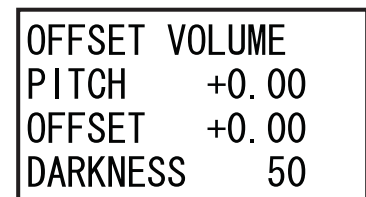
- 2 Press the **ENTER** button.
The printer changes to setting mode menu.



- 3 Select the **USER MODE** using the **▲/▼/◀/▶** arrow buttons.
USER MODE shows on the screen and the icon is highlighted in reverse.



- 4 Press the **ENTER** button to enter the user mode.
OFFSET VOLUME shows on the screen.



Note

If password function is enabled, PASSWORD is shown on the screen instead. In this case, enter the password first.

5 Press the **↵ ENTER** button again until PRINT DARKNESS shows on the screen.

6 Press the **▲/▼** buttons to select a value.

The setting range is from 1 to 10. 1 is the lightest and 10 is the darkest.

7 Press the **↵ ENTER** button to save the setting.

8 Press the **↩ FUNCTION** button to return to the setting mode menu.



5.4.2 Adjusting the Print Speed

The adjustment of the print speed not only changes the speed of printing but also affects the print quality. The setting range of the print speed varies depending on the following print resolution:

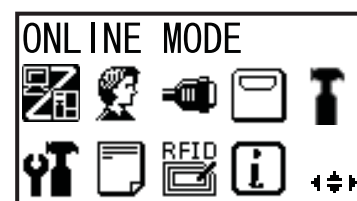
Model	Print Resolution	Print Speed Setting Range
S84-ex	203 dpi (8 dots/mm)	4 to 16 (inches/sec)
S84-ex	305 dpi (12 dots/mm)	4 to 14 (inches/sec)
S84-ex	609 dpi (24 dots/mm)	2 to 6 (inches/sec)
S86-ex	203 dpi (8 dots/mm)	4 to 14 (inches/sec)
S86-ex	305 dpi (12 dots/mm)	4 to 12 (inches/sec)

The adjustment procedures for the print speed are as follows:

1 When the printer is in online mode, press the **▶|| LINE** button to change the printer to offline mode.

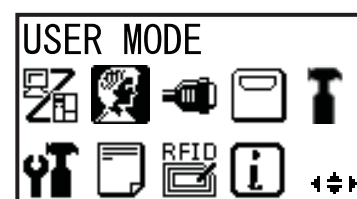
2 Press the **↵ ENTER** button.

The printer changes to setting mode menu.



3 Select the **USER MODE** using the **▲/▼/◀/▶ arrow** buttons.

USER MODE shows on the screen and the icon is highlighted in reverse.



- 4** Press the **↵ ENTER** button to enter the user mode.

OFFSET VOLUME shows on the screen.

Note

If password function is enabled, PASSWORD is shown on the screen instead. In this case, enter the password first.

OFFSET VOLUME	
PITCH	+0.00
OFFSET	+0.00
DARKNESS	50

- 5** Press the **↵ ENTER** button again until PRINT SPEED shows on the screen.
- 6** Press the **▲/▼** buttons to select a value.
- 7** Press the **↵ ENTER** button to save the setting.
- 8** Press the **↶ FUNCTION** button to return to the setting mode menu.

PRINT SPEED	
06 IPS	
⬆	

5.5 Adjusting the Media Sensors

You can check the media sensor condition and adjust the media sensor level for optimum performance.

5.5.1 Adjusting the Media Sensor Automatically

The automatic adjustment procedures for the media sensor are as follows:

- 1** When the printer is in online mode, press the **▶|| LINE** button to change the printer to offline mode.
- 2** Press the **↵ ENTER** button.
The printer changes to setting mode menu.
- 3** Select the **SERVICE MODE** using the **▲/▼/◀/▶ arrow** buttons and then press the **↵ ENTER** button.
SERVICE MODE setting screen shows.



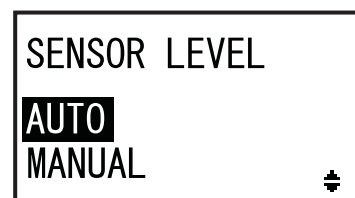
Note

If password function is enabled, PASSWORD is shown on the screen instead. Enter the password to continue.

- 4** Select the **SENSOR LEVEL** using the **▲/▼ arrow** buttons and then press the **↵ ENTER** button.
SENSOR LEVEL shows on the screen.



- 5** Select **AUTO** using the **▲/▼ arrow** buttons and then press the **↵ ENTER** button.
SENSOR SELECT shows on the screen.



- 6** Press the **▲/▼ arrow** buttons to select the type of sensor to be adjusted and then press the **↵ ENTER** button.

The instruction of placing the media shows.

SENSOR SELECT
I-MARK
GAP

When I-MARK is selected

INSERT WHITE
AREA OF LABELS
UNDER SENSOR.
PRESS ENTER KEY

When GAP is selected

REMOVE LABEL
PLACE LINER
UNDER SENSOR.
PRESS ENTER KEY

- 7** Open the **top cover** and unlock the **media feed** and **media sensor assembly** ①.

- 8** Place the **media/liner** ② on the media sensor.

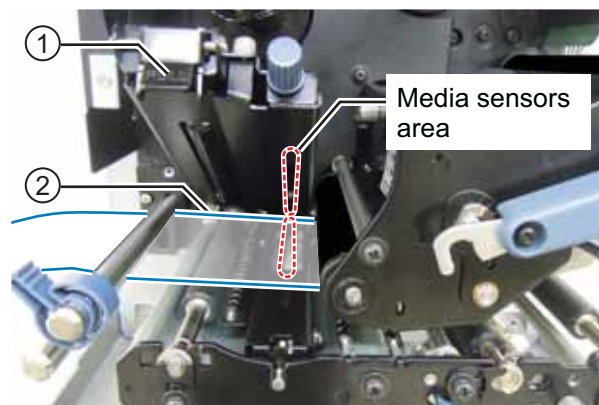
To adjust the **I-mark sensor**, place the white area of media under the media sensor.

To adjust the **gap sensor**, peel off the label and place the liner under the media sensor.

- 9** Press the **media feed** and **media sensor assembly** ① down to lock it.

To get the correct adjustment result, perform the adjustment after you have closed the **media sensor assembly**.

- 10** Press the **↵ ENTER** button to start the sensor adjustment.



- 11** The sensor adjustment result shows.
CALIBRATION COMPLETE shows when the automatic adjustment has succeeded.
CALIBRATION FAILED shows when the automatic adjustment has failed.

- 12** Press the **↵** **ENTER** button to proceed to next screen.

CALIBRATION
COMPLETE


PRESS ENTER KEY

CALIBRATION
FAILED

PRESS ENTER KEY

- 13** Press the **▲/▼** **arrow** buttons to select the following function and then press the **↵** **ENTER** button.

- **EXIT CALIBRATION**: Exit the automatic sensor adjustment mode.
Select **EXIT CALIBRATION** if COMPLETE is shown in step 11. The printer returns to SERVICE MODE setting screen.
- **RETRY**: Retry the automatic sensor adjustment.
Select **RETRY** if FAILED is shown in step 11. The printer goes to SENSOR SELECT screen and repeat steps 6 through 12.

CALIBRATION
EXIT CALIBRATION
RETRY 

Note

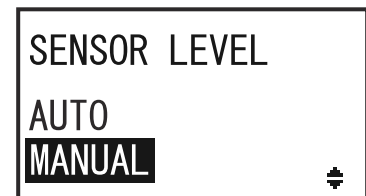
If CALIBRATION FAILED shows in step 11, clean the media sensor and repeat the above steps for auto adjustment. Select RETRY in step 13. If the problem persists, adjust the media sensor sensitivity level manually. Refer to the following procedures for manual adjustment.

5.5.2 Adjusting the I-mark Sensor Level Manually

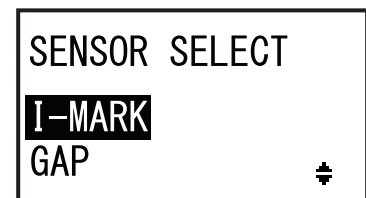
The adjustment procedures for the I-mark sensor level are as follows:

- 1** Go to the SENSOR LEVEL setting screen of SERVICE MODE.
Perform the procedures from steps 1 through 4 of [Section 5.5.1 Adjusting the Media Sensor Automatically](#).

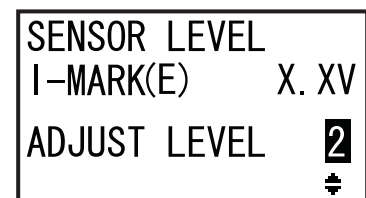
- 2** Select **MANUAL** using the **▲/▼ arrow** buttons and then press the **↵ ENTER** button.
SENSOR SELECT shows on the screen.



- 3** Press the **▲/▼ arrow** buttons to select I-MARK and then press the **↵ ENTER** button.
The light emission level adjustment of the I-mark sensor is shown.



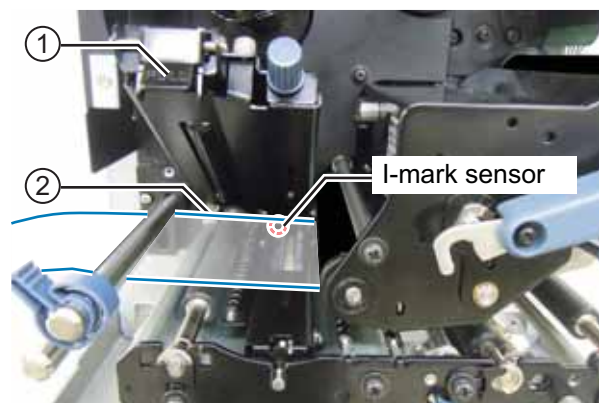
- 4** On the SENSOR LEVEL I-MARK(E) screen, press the **▲/▼ arrow** buttons to set ADJUST LEVEL to 2 and then press the **↵ ENTER** button.
The adjustment range of ADJUST LEVEL is from 0 to 3.
We recommend using the initial value which is 2.
The light reception level adjustment of the I-mark sensor is shown.



First, adjust the “Low” reception level (voltage) of the I-mark sensor.

- 5** Open the **top cover** and unlock the **media feed** and **media sensor assembly** ①.
- 6** Physically place the media ②, with the portion without the I-mark resting over the I-mark sensor.
- 7** Press the **media feed** and **media sensor assembly** ① down to lock it.

To get the correct adjustment result, close the **media sensor assembly** before performing the adjustment.

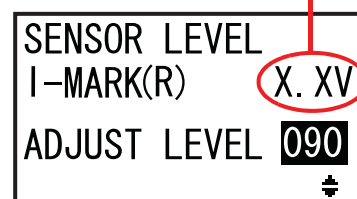


- 8** Press the **▲/▼ arrow** buttons to change **ADJUST LEVEL** until the **I-MARK(R)** value is 0.3 V or lower.

The adjustment range of **ADJUST LEVEL** is from 0 to 127.

- 9** Take a note of the **I-MARK(R)** value from the above procedures. This is the “Low” level value for the I-mark sensor.

Low level: $\leq +0.3V$



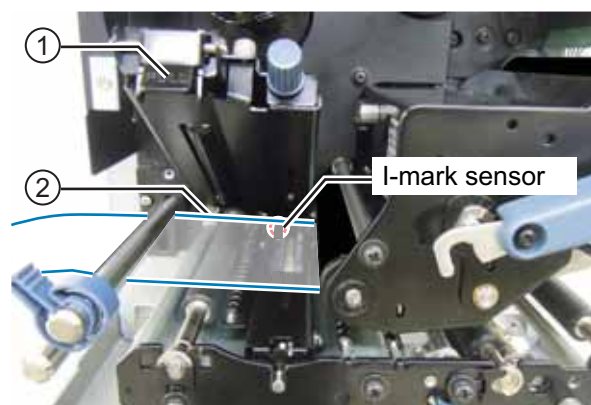
Next, check the “High” level (voltage) of the I-mark sensor.

- 10** Unlock the **media feed** and **media sensor assembly** ①.

- 11** Physically place the I-mark media ② again, so that the media sensor can sense the I-mark.

- 12** Press the **media feed** and **media sensor assembly** ① down to lock it.

To get the correct adjustment result, close the **media sensor assembly** before performing the adjustment.



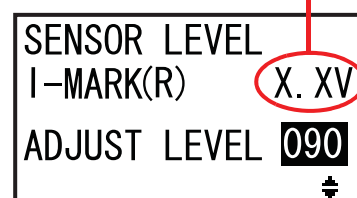
- 13** Check the new **I-MARK(R)** value. This is the “High” level value for the I-mark sensor.

If the difference between the “High” and the “Low” level value is 1.0 V or more, then the adjustment has satisfied the criteria.

If the difference between the “High” and the “Low” level value is less than 1.0 V, repeat the procedure from steps 5 through 13.

Hint: In step 8, adjust the **ADJUST LEVEL** such that the low level value is a little higher than 0.3 V.

High level



Criteria for Adjustment:

Low level (portion without I-mark):	$\leq +0.3V$
High level (I-mark position) - Low level:	$\geq +1.0V$

- 14** Press the **← ENTER** button to confirm the setting and proceed to the next adjustment screen.

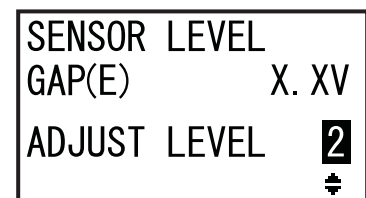
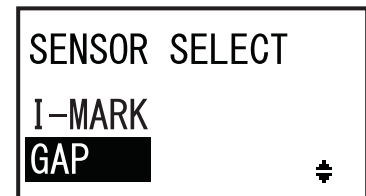
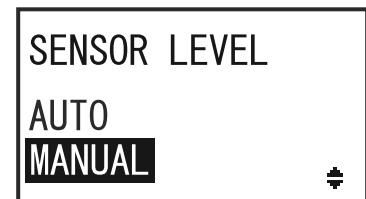
Note

If you are having difficulties in adjusting the sensor level properly, clean the media sensor portion. If the problem persists, contact your SATO reseller or technical support center to replace the media sensor.

5.5.3 Adjusting the Gap Sensor Level Manually

The adjustment procedures for the Gap sensor level are as follows:

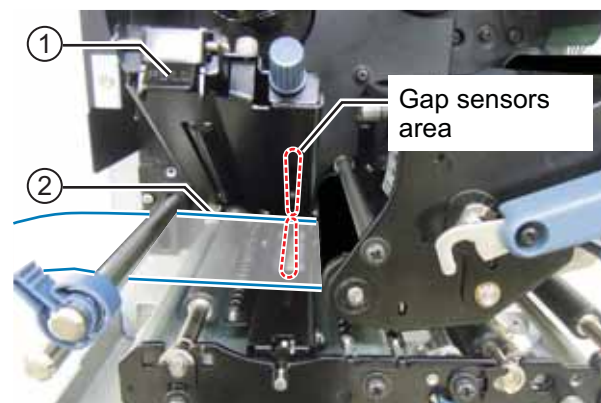
- 1** Go to the SENSOR LEVEL setting screen of SERVICE MODE.
Perform the procedures from steps 1 through 4 of [Section 5.5.1 Adjusting the Media Sensor Automatically](#).
- 2** Select **MANUAL** using the **▲/▼ arrow** buttons and then press the **↵ ENTER** button.
SENSOR SELECT shows on the screen.
- 3** Press the **▲/▼ arrow** buttons to select **GAP** and then press the **↵ ENTER** button.
The light emission level adjustment of the Gap sensor is shown.
- 4** On the SENSOR LEVEL GAP(E) screen, press the **▲/▼ arrow** buttons to set **ADJUST LEVEL** to 2 and then press the **↵ ENTER** button.
The adjustment range of **ADJUST LEVEL** is from 0 to 3.
We recommend using the initial value which is 2.
The light reception level adjustment of the Gap sensor is shown.



First, adjust the “Low” reception level (voltage) of the Gap sensor.

- 5** Open the **top cover** and unlock the **media feed** and **media sensor assembly** ①.
- 6** Physically place the liner ② without the label resting over the Gap sensor.
- 7** Press the **media feed** and **media sensor assembly** ① down to lock it.

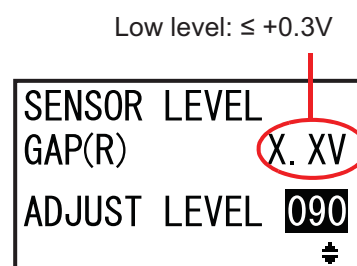
To get the correct adjustment result, close the **media sensor assembly** before performing the adjustment.



- 8** Press the **▲/▼ arrow** buttons to change ADJUST LEVEL until the GAP(R) value is 0.3 V or lower.

The adjustment range of ADJUST LEVEL is from 0 to 127.

- 9** Take a note of the GAP(R) value from the above procedures. This is the “Low” level value for the Gap sensor.



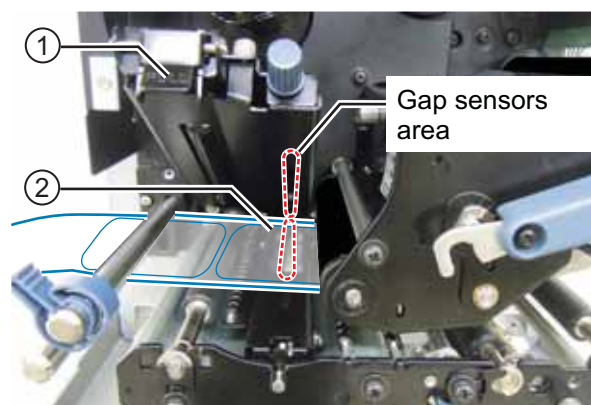
Next, check the “High” level (voltage) of the Gap sensor.

- 10** Unlock the **media feed and media sensor assembly** ①.

- 11** Physically place the label ② resting over the Gap sensor.

- 12** Press the **media feed and media sensor assembly** ① down to lock it.

To get the correct adjustment result, close the **media sensor assembly** before performing the adjustment.

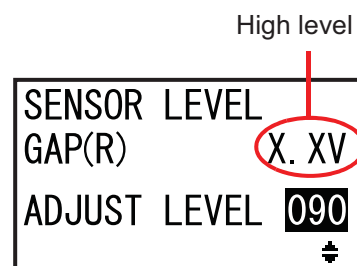


- 13** Check the new GAP(R) value. This is the “High” level value for the Gap sensor.

If the difference between the “High” and the “Low” level value is 1.0V or more, then the adjustment has satisfied the criteria.

If the difference between the “High” and the “Low” level value is less than 1.0V, repeat the procedure from steps 5 through 13.

Hint: In step 8, adjust the ADJUST LEVEL such that the low level value is a little higher than 0.3 V.



Criteria for Adjustment:

Low level (liner portion):	$\leq +0.3V$
High level (label portion) - Low level:	$\geq +1.0V$

- 14** Press the **← ENTER** button to confirm the setting and precede to the next adjustment screen.

Note

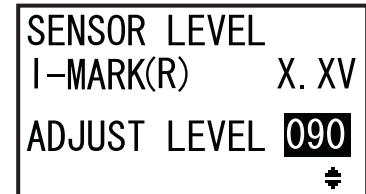
If you are having difficulties in adjusting the sensor level properly, clean the media sensor portion. If the problem persists, contact your SATO reseller or technical support center to replace the media sensor.

5.5.4 Adjusting the Paper End Sensor

This printer uses an I-mark sensor to sense the Paper end error.

The checking and adjustment procedures for the Paper end (I-mark) sensor level are as follows:

- 1 Go to the **SENSOR LEVEL I-MARK(R)** setting screen of **SERVICE MODE**.



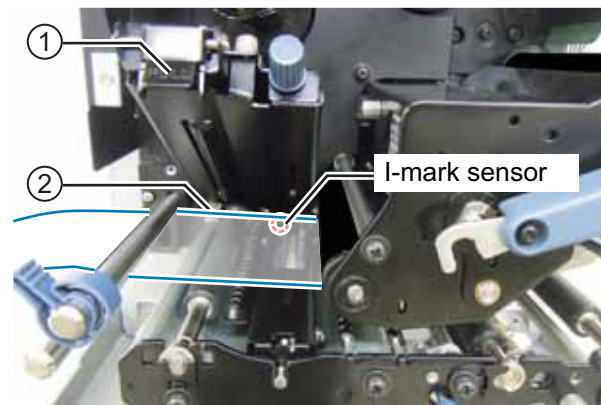
First, check the **I-MARK(R) value (voltage)** of the Paper end (I-mark) sensor when the liner is placed on the sensor.

- 2 Open the **top cover** and unlock the **media feed and media sensor assembly** ①.

- 3 Physically place the liner ② without the label resting over the I-mark sensor.

- 4 Press the **media feed and media sensor assembly** ① down to lock it.

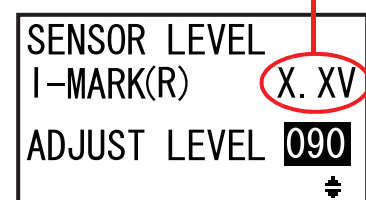
To get the correct adjustment result, close the **media sensor assembly** before performing the adjustment.



- 5 Check if the **I-MARK(R) value** is **2.0 V** or lower.

If not, change **ADJUST LEVEL** using **▲/▼ arrow** buttons until the **I-MARK(R) value** is **2.0V** or lower.

I-MARK(R) level: $\leq +2.0V$



Next, check the I-MARK(R) value (voltage) of the Paper end (I-mark) sensor when no media is placed on the sensor.

6 Unlock the **media feed and media sensor assembly** ①.

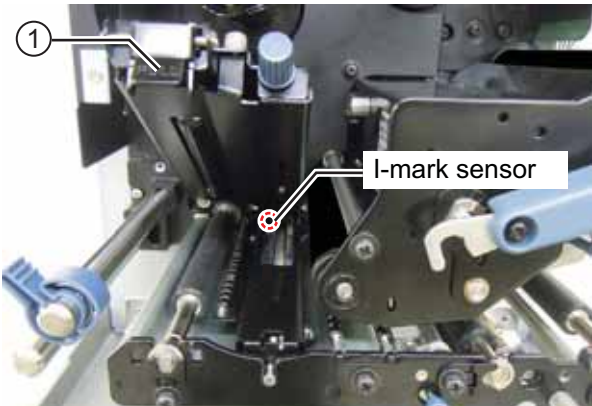
7 Remove all the media from the media sensor.

8 Press the **media feed and media sensor assembly** ① down to lock it.

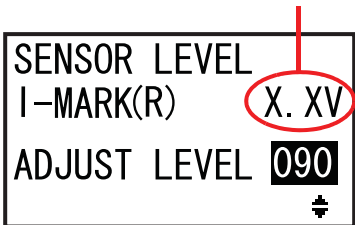
To get the correct adjustment result, close the **media sensor assembly** before performing the adjustment.

9 Check if the new I-MARK(R) value is 2.2V or higher.

If not, change ADJUST LEVEL using ▲/▼ arrow buttons until the I-MARK(R) value is 2.2V or higher.



I-MARK(R) level $\geq +2.2V$



Criteria for Adjustment:

I-MARK(R) value (liner without label):	$\leq +2.0V$
I-MARK(R) value (without any media):	$\geq +2.2V$

10 Press the **↵ ENTER** button to confirm the setting and proceed to the next adjustment screen.

5.6 Adjusting the Head Pressure Balance

Print head balance refers to the equalization of pressure between the print head and the platen roller. If the print head balance is out of adjustment, the printed image will be darker on one side of the media than the other and the media will be prone to travel in the direction of greater pressure.

Setting the Criteria of the Head Pressure Balance

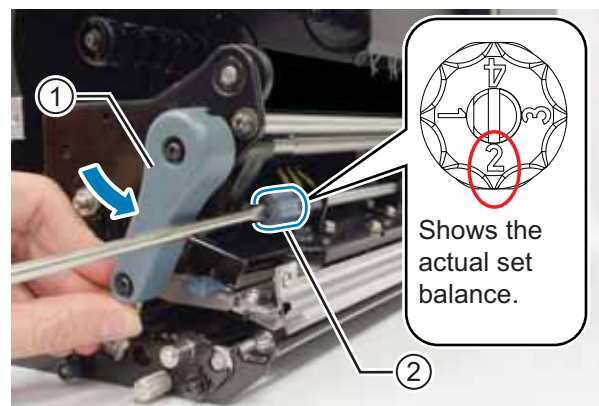
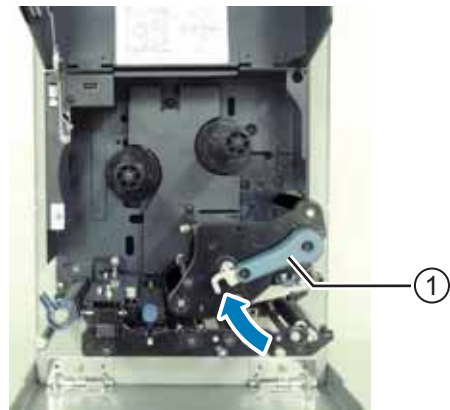
- Set the pressure balance according to the media width.
- Set the head pressure according to the media thickness, including the liner.

Required tool:

Slotted screw driver

The adjustment procedures for the pressure balance are as follows:

- 1 Open the **top cover** of the printer.
- 2 Turn the **head lock lever** ① clockwise to unlock the print head.
- 3 Then, turn the **head lock lever** ① back before it locks. You can find the **adjustment dials** ② beside the **head lock lever** as shown.



- 4** Use the slotted screw driver to turn the **adjustment dials** ②. Set the pressure balance according to the media width and the media thickness.

Media Thickness		0.05 to 0.20 mm (0.002" to 0.0079") Thin paper/normal label, etc.		0.20 to 0.31 mm (0.0079" to 0.30122") Thick paper/tag, etc.	
Media Width	S84-ex	30 to 128 mm (1.18" to 5.04")	10 to <30 mm (0.39" to <1.18")	30 to 128 mm (1.18" to 5.04")	10 to <30 mm (0.39" to <1.18")
	S86-ex	80 to 177 mm (3.15" to 6.97")	51 to <80 mm (2.01" to <3.15")	80 to 177 mm (3.15" to 6.97")	51 to <80 mm (2.01" to <3.15")
Pressure Balance Gradation		①	③	②	④

Notes

- The factory default setting is ②.
- The thickness of the media includes the liner.

5.7 Adjusting the Head Position

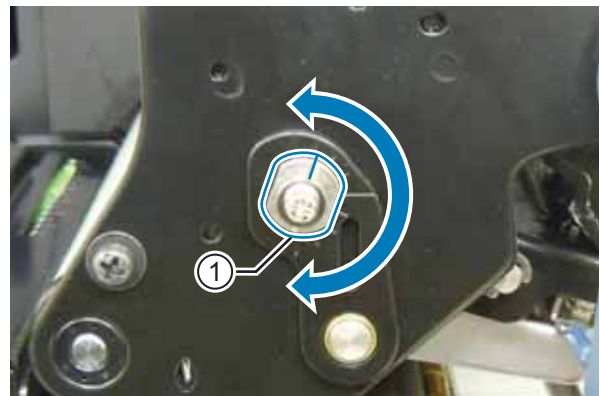
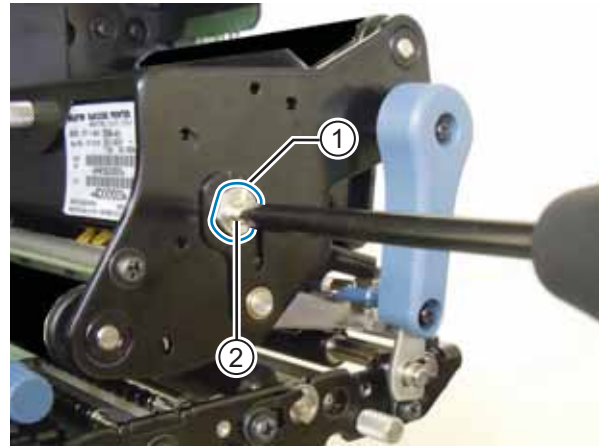
5.7.1 Left - Right Pressure Balance Setting

Required tool:

Phillips screwdriver

The adjustment procedures for the pressure balance are as follows:

- 1** Open the **top cover** of the printer.
- 2** Make sure that the **head lock lever** is in the lock position.
If it is not locked, turn the **head lock lever** counterclockwise to lock the print head.
- 3** Locate the **adjust collar** ① on the side of the **print head assembly**.
- 4** Loosen the **screw** ② attached to the **adjust collar** ①.
Do not remove the screw.
- 5** Rotate the **adjust collar** ① to adjust the head pressure balance.
 - Rotate the **adjust collar** counterclockwise to increase the head pressure on the frame side.
 - Rotate the **adjust collar** clockwise to increase the head pressure on the opposite side.



Note

If the printer orientation is opposite from the photo, the adjustment direction is reversed.

- 6** Hold the **adjust collar** ① in the set position and tighten the **screw** ②.

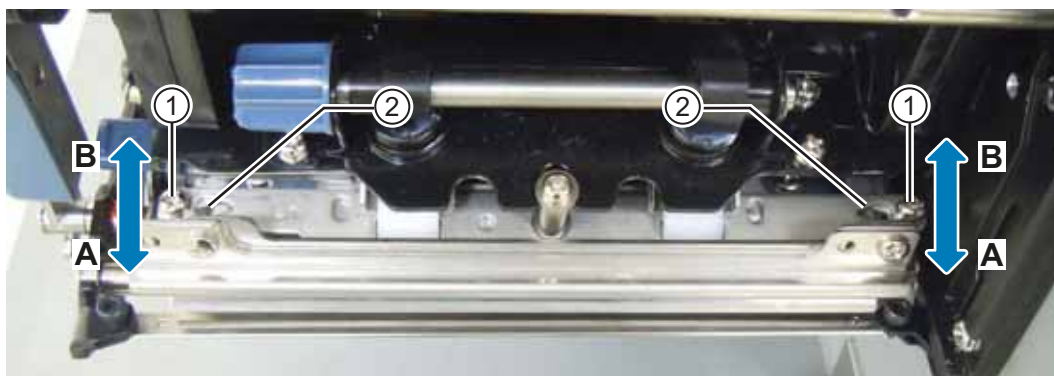
5.7.2 Front - Rear Head Alignment

Required tools:

- Phillips screwdriver
- Slotted screwdriver

The adjustment procedures for the head alignment are as follows:

- 1** Open the **top cover** of the printer.
- 2** Make sure that the **head lock lever** is in the lock position.
If it is not locked, turn the **head lock lever** counterclockwise to lock the print head.
- 3** Locate two **screws** ① from the front of the **print head assembly**.



- 4** Loosen the **screws** ① using the Phillips screwdriver.
Do not remove the screws.
- 5** Insert the slotted screwdriver into the **regulation apertures** ② on the left and right sides. Adjust the head position by turning the slotted screwdriver in the relevant direction.
 - Direction A: Print head position moves forward.
 - Direction B: Print head position moves backward.
- 6** Tighten the **screws** ①.

5.8 Adjusting the Ribbon Tension Balance

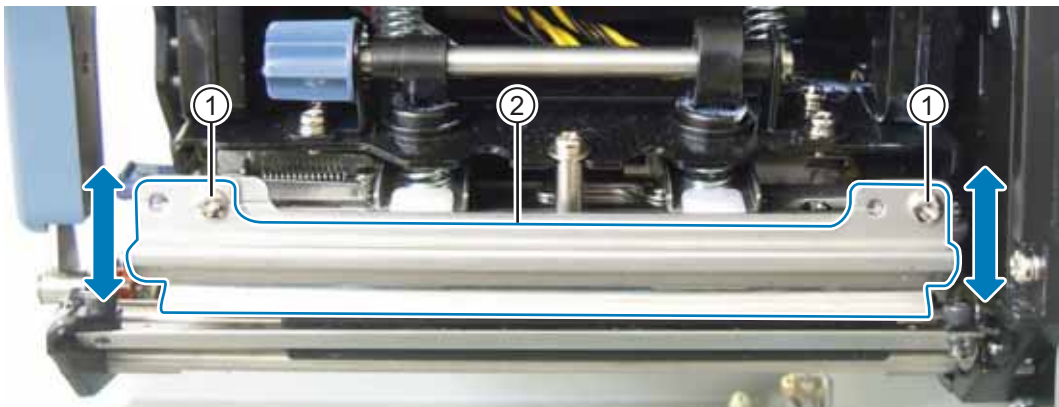
If the ribbon is not spread smoothly over the print head, print voids will occur at the point of the ribbon fold. Typically, this is the result of the axis of the ribbon spindle, print head and the ribbon adjustment plate not being perfectly parallel.

Required tool:

Phillips screwdriver

The adjustment procedures for the ribbon tension are as follows:

- 1** Open the **top cover** of the printer.
- 2** Turn the **head lock lever** clockwise to unlock the print head.
- 3** Locate two **screws** ① from the front of the **print head assembly**.



- 4** Loosen the **screws** ① attached to the **ribbon adjustment plate** ②.
Do not remove the screws.
- 5** Adjust the **ribbon adjustment plate** ② as shown below.
 - Adjust the left side of the plate upward when a wrinkle occurs on the right.
 - Adjust the right side of the plate upward when a wrinkle occurs on the left.
- 6** Hold the **ribbon adjustment plate** ② in the set position and tighten the **screws** ①.
- 7** Perform a test print to check the printing quality.
The ribbon must not be wrinkled or meander.
- 8** Repeat the procedure from steps 1 through 6 until the ribbon tension is even on both sides.

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6

Troubleshooting

This chapter explains the errors which can occur on the printer and the displays for indicating the current status.





6.1 When an Error Message Occurs

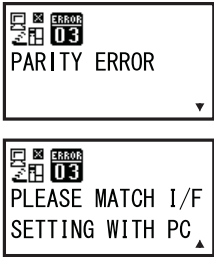
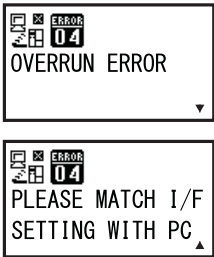
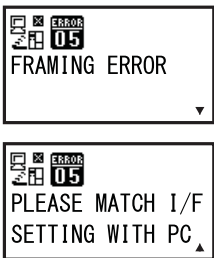
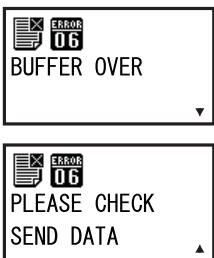
When there is an error on the printer, the error message will show on the screen.
The error message and the countermeasure message alternate every three seconds.
These screens can be switched using the ▲ / ▼ arrow buttons.


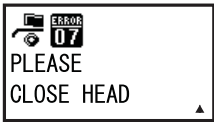





CAUTION



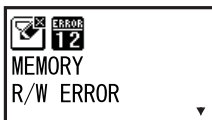

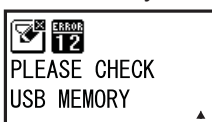


Where parts replacement is concerned, contact your SATO reseller or technical support center to perform internal inspections and repairs.







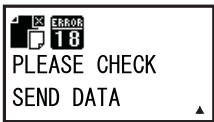
The error message, its cause and the countermeasures are as follows.

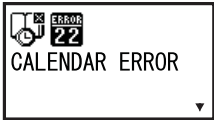
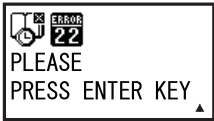






Error				
No.	Message	LED/Buzzer	Cause	Countermeasure
01	Machine error	Lights red.	Defective circuit board.	Replace the main board.
	 	One long beep. To clear the error: Power off the printer.		
02	Flash ROM error	Lights red.	Flash ROM is not accessible.	Replace the main board.
	 	One long beep. To clear the error: Power off the printer.	Number of write has been exceeded.	

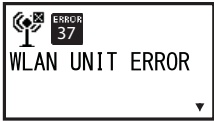





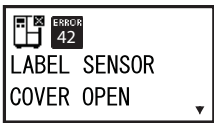
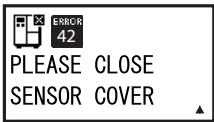
Error				
No.	Message	LED/Buzzer	Cause	Countermeasure
03	Parity error	Flashes blue and red alternately.	RS-232C settings are incorrect.	Adjust the interface settings correctly.
		Three short beeps. To clear the error: Power off the printer.	The cable connection is incorrect.	Check and connect the cable correctly.
04	Overrun error	Flashes blue and red alternately.	RS-232C settings are incorrect.	Adjust the interface settings correctly.
		Three short beeps. To clear the error: Power off the printer.	The cable connection is incorrect.	Check and connect the cable correctly.
05	Framing error	Flashes blue and red alternately.	RS-232C settings are incorrect.	Adjust the interface settings correctly.
		Three short beeps. To clear the error: Power off the printer.	The cable connection is incorrect.	Check and connect the cable correctly.
06	Buffer overflow	Flashes blue and red alternately.	The size of the received data exceeds the size of the receive buffer.	Do not send data that exceeds the size of the receive buffer.
		Three short beeps. To clear the error: Power off the printer.	The communication settings between the printer and the host are incorrect.	Set the communication between the printer and the host correctly.

Error				
No.	Message	LED/Buzzer	Cause	Countermeasure
07	Head open	Flashes red.	The print head is unlocked.	Lock the print head.
	 	Three short beeps. To clear the error: Close the print head.	The sensor for sensing the open/close status of the print head is defective.	Replace the sensor for sensing the open/close status of the print head.
08	Paper end	Flashes red.	The media is not loaded.	Load the media correctly.
	 	Three short beeps. To clear the error: Open and close the print head.	The media is not loaded correctly.	
			The sensitivity of the media sensor is not set correctly.	Adjust the sensor level.
			The media has jammed.	Remove the jammed media.
			The media sensor is dirty.	Clean the media sensor.
			The cable of the media sensor is disconnected.	Connect the cable of the media sensor correctly.
09	Ribbon end	Flashes red.	The ribbon is not loaded.	Load a new ribbon.
	 	Three short beeps. To clear the error: Open and close the print head.	The ribbon is damaged.	
			The ribbon is not loaded correctly.	Load the ribbon correctly.
			The ribbon is torn.	Clean and adjust the ribbon path
10	Sensor error	Lights red.	The media sensor level is incorrect.	Adjust the media sensor level.
		Three short beeps. To clear the error: Open and close the print head.	The sensor type is incorrect.	Use the correct sensor type.
			Meandering media.	Clean and adjust the media path.

Error				
No.	Message	LED/Buzzer	Cause	Countermeasure
11	Print head error  	Lights red. One long beep. To clear the error: Power off or change the head check conditions.	The print elements are worn out.	Change print head check conditions to only check for missing elements in barcodes and try to adjust missing elements to white bars. Refer to Section 6.1.2 More Information about Head Check Function for details.
			The print head is damaged.	Replace the print head. Refer to Section 7.7.1 Replacing the Print Head for details.
12	Memory write error  Printer memory:  USB memory: 	Flashes red. One long beep. To clear the error: Power off the printer.	The USB memory is disconnected while writing.	Connect the USB memory.
			The copy area in the memory is not sufficient.	Make sure that the memory has sufficient copy area.
			Writing to the memory fails.	Replace the memory.
			The USB memory is not formatted.	Format the USB memory in the memory mode. Refer to Section 4.2.11 Memory Mode for details.
	SD card write error  	Flashes red. One long beep. To clear the error: Power off the printer.	The SD card is not connected.	Connect the SD card.
			The SD card is not connected correctly.	Connect the SD card correctly.
			The SD card is disconnected while writing.	Connect the SD card.
		SD card read/write fails.	Replace the SD card.	
		The SD card is not formatted.	Format the SD card in the memory mode. Refer to Section 4.2.11 Memory Mode for details.	
		The SD card is write- protected.	Release the write-protect of the SD card.	

Error				
No.	Message	LED/Buzzer	Cause	Countermeasure
13	Memory full error	Flashes red.	The space in the memory is not sufficient.	Delete unwanted data from the memory.
	 	One long beep. To clear the error: Power off the printer.		
14	Download data error	Lights red.	The downloaded data is incorrect.	Check the downloaded data.
		One long beep.	The download area is not sufficient.	Check the downloaded data size.
17	BCC check error	Flashes red.	The BCC code of the data to be sent (one item) is incorrect.	Check the data to be sent and the communication settings. ▶▶ LINE button: Continue printing from the print data where the BCC error occurred. Send the SUB command: Clear the BCC error and continue printing from where it stopped.
	 	Three short beeps. To clear the error: Press the ▶▶ LINE button or cancel the print job.		
18	Item No. error	Flashes red.	Sequence number of print data (one item) is not increased by one.	Check the data to be sent and the communication settings. ▶▶ LINE button: Continue printing from the print data where the Item No. error occurred. Send the SUB command: Clear the Item No. error and continue printing from where it stopped.
	 	Three short beeps. To clear the error: Press the ▶▶ LINE button or cancel the print job.	*The sequence number is not in sequential order.	

Error				
No.	Message	LED/Buzzer	Cause	Countermeasure
22	<p>Calendar error</p>  	<p>Lights red.</p> <p>One long beep.</p> <p>To clear the error: Power off the printer.</p>	<p>The date and time of the calendar IC are incorrect or the calendar IC is not installed.</p>	<p>Check if you have installed the calendar IC or replace the calendar PCB.</p>
26	<p>Overheat error</p>  	<p>Flashes blue and red alternately.</p> <p>One long beep.</p> <p>To clear the error: Stop the operation of the printer and wait until the temperature decreases.</p>	<p>The temperature of the printer has exceeded its tolerance value.</p>	<p>Stop the operation of the printer to let the temperature decrease.</p>
27	<p>Command error</p>  	<p>Flashes red.</p> <p>Three short beeps.</p> <p>To clear the error: Press the ▶ LINE button.</p>	<p>Incorrect command or parameter in the print data.</p> <p>Caaa: position of error occurrence <bb>: error command name cc: error code</p>	<p>Check the print data. Refer to Section 6.1.1 More Information about Command Error for details.</p>
35	<p>CRC check error</p>  	<p>Flashes red.</p> <p>Three short beeps.</p> <p>To clear the error: Press the ▶ LINE button or cancel the print job.</p>	<p>The CRC code of the data to be sent (one item) is incorrect.</p>	<p>Check the data to be sent and the communication settings.</p> <p>▶ LINE button: Continue printing from the print data where the CRC error occurred.</p> <p>Send the SUB command: Clear the CRC error and continue printing from where it stopped.</p>

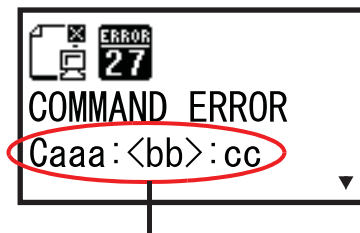
Error				
No.	Message	LED/Buzzer	Cause	Countermeasure
37	Wireless LAN error	Flashes blue and red alternately. Three short beeps. To clear the error: Power off the printer.	No wireless LAN unit is connected while the printer is in wireless LAN download mode.	Make sure that the wireless LAN unit is connected correctly.
	 		The printer failed to connect to the wireless LAN unit.	Change the wireless LAN unit. *When you change the wireless LAN, the data port and sub port in the communication settings change depending on the settings.
40	Cover open error	Flashes red. Three short beeps. To clear the error: Close the cover.	The cover is opened.	Close the cover.
	 		The sensor for sensing the open/close status of the cover is defective.	Replace the sensor for sensing the open/close status of the cover.
41	Saver error	Lights red. One long beep. To clear the error: Power off the printer.	The print head cannot stop at the specified position.	Adjust the saver head position.
	 			Replace the saver sensor. Replace the saver motor and the motor driver PCB. Replace the saver cam.
42	Sensor cover open error	Flashes red. Three short beeps. To clear the error: Close the sensor cover.	The sensor cover is unlocked.	Lock the sensor cover.
	 		The sensor for sensing the open/close status of the sensor cover is defective.	Replace the sensor for sensing the open/close status of the sensor cover.

6.1.1 More Information about Command Error

Printer motion when detecting a command error

When COMMAND ERROR is set to ENABLE in advanced mode, the command error information is shown on the error message (second line), and the print operation is paused.

This error can be cleared by pressing the **▶|| LINE** button, but the data in which an error was detected is discarded and cannot be printed.



Command error information

Location of error occurrence

"Caaa" in the command error message shows the location of command error.

The number of ESC commands from ESC+A is shown in "aaa".

Note that the ESC+A command is not included in the number of ESC commands, which can be shown up to 999. If the number of ESC commands exceeds 999, it is shown as "999".

Example)

When a command error is detected by the Horizontal Print Position <H> command.

-----: [ESC]A

C001: [ESC]V100

C002: [ESC]H999999 => Location of the command error

C003: [ESC]L0202

C004: [ESC]M,ABCDEF

C005: [ESC]Q1

C006: [ESC]Z

In this case, C002 is the location of the error.

Error command name

The command name, in which an error was detected, is shown in "<bb>".

* A one-byte command name is left aligned.

Error code

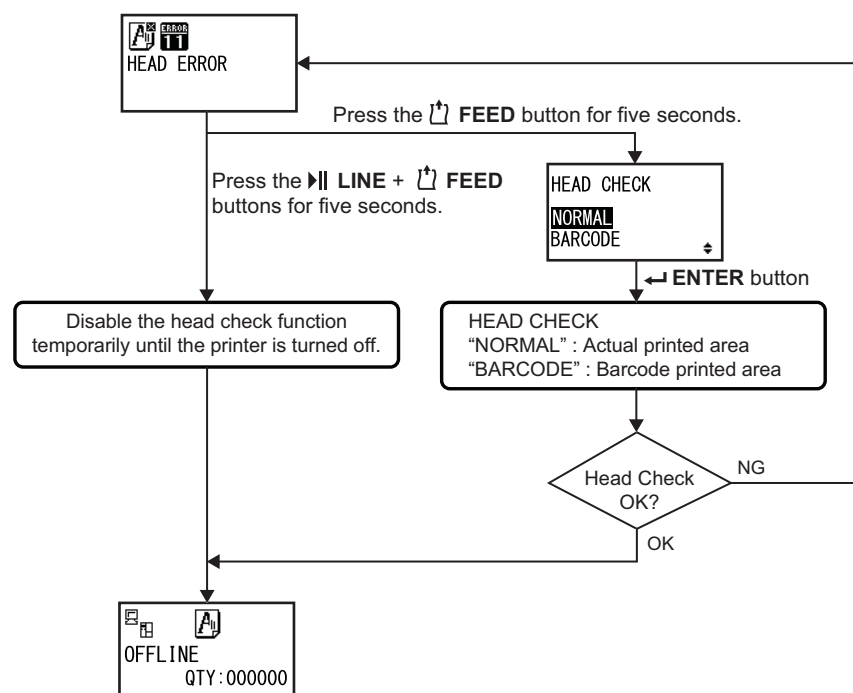
The cause of command error will be indicated in the code in "cc" where an error is being shown.

Code <cc>	Cause
01	Analyzed improper command.
02	Received improper parameter.
03	Analyzed improper graphic and external character data.
04	Specified memory area (card slot) is inappropriate. Tried to write on a write-protected media.
05	Number specified by registration command has already been taken.
06	Exceeded the registration area. (Memory full).
07	Data is not registered.
08	The specified print start position is outside the printable area.
09	The printing image is outside the printable area. (Barcode only).

6.1.2 More Information about Head Check Function

The head check function detects the integrity of the heating elements in the print head. However, malfunctions cannot be detected instantaneously — a few printed media may start showing printing defects before the printer warns of a print head error.

After detection of a print head error, use a scanner to check all affected media.



When a print head error occurs during normal printing (barcodes, text and graphics)

- 1** Press and hold down the **FEED** button for five seconds.
HEAD CHECK setting screen shows.
- 2** Select BARCODE using the **▲/▼ arrow** buttons and then press the **ENTER** button.
- 3** See if printing can be resumed normally.

If printing resumes, the print head fault does not fall on the barcode area for the current print job. As such, printing may be continued but with degraded print quality and readable barcodes.

If the head check error still occurs and the current print job has to be completed, printing can be forced to resume by holding down the **LINE** and **FEED** buttons for five seconds.

Read the caution note below before you proceed with this operation.

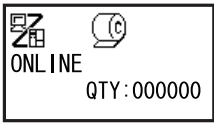


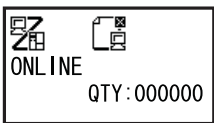
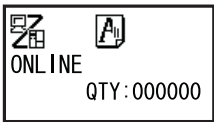
CAUTION




Although restricting the head check type to BARCODE allows you to continue printing, or forcing the printer to resume printing, you should only do so in order to complete an urgent print job. Check the printed media to make sure the output is usable in spite of the head error. As soon as possible, stop using the print head to prevent further damage. If necessary, replace the print head.

6.2 When a Warning Message Occurs

When a warning message is shown on the screen, the printer continues issuing media.

The warning message, its cause and the countermeasures are as follows:

Warning				
No.	Message	LED/Buzzer	Cause	Countermeasure
01	Label near end 	Lights blue. No beep sound To clear the error: Open and close the print head.	The remaining amount of media is not enough.	Replace the media. Refer to Section 3.5 Loading Media for details.
02	Ribbon near end 	Lights blue. No beep sound To clear the error: Open and close the print head.	The remaining amount of ribbon is not enough.	Replace the ribbon. Refer to Section 3.2 Loading the Ribbon for details.
03	Receive buffer nearly full 	Lights blue. No beep sound	Available space for receive buffer is low.	Do not send data from the host until the analysis of received data is completed.
04	Command error 	Lights blue. One short beep To clear the error: The icon will be cleared by receiving the next item or canceling the job.	Command error has been detected.	Check the print data.
05	Head error 	Lights blue. No beep sound	A head check error is detected when "NORMAL" has been selected for the HEAD CHECK setting screen. Change the HEAD CHECK setting to "BARCODE" and continue the print job.	Replace the print head. Refer to Section 7.7.1 Replacing the Print Head for details.

Warning				
No.	Message	LED/Buzzer	Cause	Countermeasure
06	Clean print head and platen roller  CLEAN HEAD & PLATEN ROLLER	Lights blue. One short beep To clear the error: Press the ↩ ENTER button.	The set notification interval has been reached.	Clean the print head and platen roller. Refer to Section 5.2 Maintenance of the Print Head and Platen Roller for details.
07	Change print head  CHANGE PRINT HEAD	Lights blue. One short beep To clear the error: Press the ↩ ENTER button.	The set notification interval has been reached.	Replace the print head. Refer to Section 7.7.1 Replacing the Print Head for details.
08	Change platen roller  CHANGE PLATEN ROLLER	Lights blue. One short beep To clear the error: Press the ↩ ENTER button.	The set notification interval has been reached.	Replace the platen roller. Refer to Section 7.7.2 Replacing the Platen Roller for details.

6.3 When the LED Lights Red/Blue

The LED will light or flash to show the current status of the printer.
The status when the LED lights or flashes is as follows:

LED	Printer Status	Countermeasure
Light off.	The power is off or the printer is in offline mode.	Power on the printer or change it to online mode.
Lights blue.	The printer is in online mode.	You can operate the printer.
Lights red/ Flashes red/ Flashes blue and red alternately	An error has occurred.	Clear the error according to the message.

6.4 Troubleshooting Table

Check the items below when the printer does not operate correctly.

WARNING

- Do not touch the power switch or connect or disconnect the power cord while your hands are wet. Doing so could cause an electric shock.
- Disconnect the power cord from the AC outlet before you perform the cleaning.

Note

You can purchase a cleaning kit or cleaning sheet from a SATO reseller or technical service center.

6.4.1 No Power/Nothing on the Screen

No.	What to check	Countermeasure
1	Is the power cord fully connected to the AC outlet?	Connect the power cord to the AC outlet fully.
2	Is the power cord fully connected to the printer?	Connect the power cord to the AC input terminal of the printer fully.
3	Is the printer fuse blown?	Replace the printer fuse. Contact a SATO reseller or technical service center for replacement.
4	Is the power cord damaged?	Replace the power cord. Contact a SATO reseller or technical service center for the specific power cord for this printer. Do not use power cords that are not designed specifically for this printer.
5	Is there electricity at the AC outlet that supplies the power to the printer?	Check if there is electricity at the AC outlet. Connect to another AC outlet.
6	Is the main board defective?	Replace the main board. Contact a SATO reseller or technical service center for replacement.

6.4.2 Cannot Feed the Media

No.	What to check	Countermeasure
1	Are the media and ribbon designed for the printer?	Use media and ribbon designed for the printer.
2	Are the media and ribbon loaded correctly?	Load the media and the ribbon correctly.

No.	What to check	Countermeasure
3	Is the media or the ribbon deformed?	Use the media or ribbon that is not deformed. You cannot feed the media or ribbon that is deformed.
4	Is the media guide set correctly?	Adjust the media guide.
5	Is the correct sensor type set?	Set the correct sensor type.
6	Is the sensitivity of the sensor set correctly?	Adjust the sensor level.
7	Is the platen roller dirty?	If the platen roller is dirty, clean it with the cleaning kit. For printer cleaning, refer to Section 5.2 Maintenance of the Print Head and Platen Roller .
8	Is the platen roller damaged?	Replace the platen roller.
9	Does the interface operate correctly?	Check the interface according to the Interface Troubleshooting .
10	Is the data or signal sent from the computer incorrect?	Power on the device again. Check the data sent from the computer and the communication conditions.
11	Is the main board defective?	Replace the main board. Contact a SATO reseller or technical service center for replacement.

6.4.3 Can Feed the Media but Cannot Print

No.	What to check	Countermeasure
1	Are the media and ribbon designed for use with the printer?	Use the media and ribbon designed for the printer.
2	Is the correct sensor type set?	Set a correct sensor type.
3	Is the print head installed correctly?	Install the print head correctly.
4	Is the pressure of the print head too strong or too weak?	Adjust the pressure of the print head with the head pressure adjustment dial.
5	Is the print head dirty or is a label attached to it?	If the print head is dirty, clean it using the cleaning pen. If a label is attached to the print head, remove it. If the glue of label is attached to the print head, clean it using a cleaning kit. Do not clean using a hard object. Doing so could cause damage to the print head. For printer cleaning, refer to Section 5.2 Maintenance of the Print Head and Platen Roller .

No.	What to check	Countermeasure
6	Is the media sensor dirty?	If the media sensor is dirty, clean it using the cleaning kit. For printer cleaning, refer to Section 5.2 Maintenance of the Print Head and Platen Roller .
7	Does the interface operate correctly?	Check the interface according to the Interface Troubleshooting .
8	Is the data or signal sent from the computer incorrect?	Power on the device again. Check the data sent from the computer and the communication conditions.
9	Is the print head defective?	Replace the print head and reset the counter.
10	Is the main board defective?	Replace the main board. Contact a SATO reseller or technical service center for replacement.

6.4.4 Bad Print Quality

No.	What to check	Countermeasure
1	Are the media and ribbon designed for use with the printer?	Use media and ribbon designed for the printer.
2	Are the media and ribbon loaded correctly?	Check if the media and ribbon are loaded correctly.
3	Is the tension of the ribbon correct?	Adjust the tension of the ribbon.
4	Is the print head installed correctly?	Install the print head correctly.
5	Is the pressure of the print head too strong or too weak?	Adjust the pressure of the print head with the head pressure adjustment dial.
6	Is the print speed too fast?	Adjust the print speed.
7	Is the print darkness too low or too high?	Adjust the print darkness.
8	Is the platen roller dirty?	If the platen roller is dirty, clean it using the cleaning kit. For printer cleaning, refer to Section 5.2 Maintenance of the Print Head and Platen Roller .
9	Is the print head dirty or is a label attached to it?	If the print head is dirty, clean it using the cleaning pen. If a label is attached to the print head, remove it. If the glue of label is attached to the print head, clean it using a cleaning kit. Do not clean using a hard object. Doing so could cause damage to the print head. For printer cleaning, refer to Section 5.2 Maintenance of the Print Head and Platen Roller .
10	Is the print head defective?	Replace the print head and reset the counter.

No.	What to check	Countermeasure
11	Is the platen roller damaged?	Replace the platen roller.
12	Is the main board defective?	Replace the main board. Contact a SATO reseller or technical service center for replacement.

6.4.5 Incorrect Print Position

No.	What to check	Countermeasure
1	Are the media and ribbon designed for use with the printer?	Use media and ribbon designed for the printer.
2	Are the media and the ribbon loaded correctly?	Check if the media and the ribbon are loaded correctly.
3	Is the media or the ribbon deformed?	Use the media or ribbon that is not deformed. You cannot feed the media or ribbon that is deformed.
4	Is the print head installed correctly?	Adjust the print head.
5	Is the media guide set correctly?	Adjust the media guide.
6	Is the correct sensor type set?	Set the correct sensor type.
7	Is the sensitivity of the sensor set correctly?	Adjust the sensor level.
8	Is the offset set correctly?	Adjust the offset.
9	Is the pitch offset or base reference point offset set correctly?	Adjust the pitch offset or base reference point offset.
10	Is the platen roller dirty?	If the platen roller is dirty, clean it using the cleaning kit. For printer cleaning, refer to Section 5.2 Maintenance of the Print Head and Platen Roller .
11	Is the media sensor dirty?	If the media sensor is dirty, clean it using the cleaning kit. For printer cleaning, refer to Section 5.2 Maintenance of the Print Head and Platen Roller .
12	Is the data or signal sent from the computer incorrect?	Power on the device again. Check the data sent from the computer and the communication conditions.
13	Is the platen roller damaged?	Replace the platen roller.

6.5 Interface Troubleshooting

When an interface error occurs on the printer, check with the check list related to that interface.

6.5.1 USB Interface

No.	Item to check
1	Check that the USB cable is connected correctly.
2	Check that the cable is not damaged.
3	Check the configuration of the printer. Check the setting of the USB interface through the INTERFACE MODE menu.
4	If there are multiple USB ports on the computer, connect to another port.
5	Disconnect other USB devices from the computer.
6	Power on the printer and the computer again.
7	Install the USB driver again.

6.5.2 LAN Ethernet Interface

No.	Item to check
1	Check that the LAN cable is connected correctly.
2	Check that the cable is not damaged.
3	Check the configuration of the printer. Check the setting of the LAN Ethernet interface through the INTERFACE MODE menu.
4	Check that the allocated IP address is accessible by PING.
5	Check that the power of the HUB is on.
6	Check that the HUB is not defective.
7	Power on the printer again.

6.5.3 Bluetooth Interface (Optional)

No.	Item to check
1	Check that the Bluetooth function is on.
2	Check that the devices using the same frequency band, such as wireless LAN enabled devices or microwaves are not in use.
3	Check that there is no obstacle such as a metal rack between the printer and the host.
4	Check the configuration of the printer. Check the setting of the Bluetooth interface through the INTERFACE MODE menu.
5	Power on the printer and the computer again.
6	Install the Bluetooth driver again.

6.5.4 RS-232C Interface

No.	Item to check
1	Check that the RS-232C cable is connected correctly.
2	Check that the cable is not damaged.
3	Check the configuration of the printer. Check the setting of the RS-232C interface through the INTERFACE MODE menu.
4	If there are multiple RS-232C ports on the computer, connect to another port.
5	Power on the printer and the computer again.

6.5.5 IEEE1284 Interface

No.	Item to check
1	Check that the printer cable is connected to the LPT port of the computer correctly.
2	Check that the cable is not damaged.
3	If you are using a Windows printer driver, check that the correct port is selected.
4	Check the configuration of the printer. Check the setting of the IEEE1284 interface through the INTERFACE MODE menu.
5	Connect to another port.
6	Power on the printer again.

6.5.6 External Signal Interface (EXT)

No.	Item to check
1	Check that the printer and the external device are connected with a cable correctly.
2	Check that the cable is not damaged.
3	Check that the power of the external device is on.
4	Check the configuration of the printer. Check the setting of the external signal (EXT) interface.
5	Power on the printer and the external device again.

6.5.7 Wireless LAN Interface (Optional)

No.	Item to check
1	Check that the wireless LAN function is on.
2	Check that the devices using the same frequency band, such as wireless LAN enabled devices or microwaves are not in use.
3	Check that there is no obstacle such as a metal rack between the printer and the host.
4	Check the configuration of the printer. Check the setting of the wireless LAN interface through the INTERFACE MODE menu.
5	Power on the printer again.

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7

Appendix

7.1 List of Initial Values

The initial value refers to the setting value of the printer when it was shipped from the factory. If you reset the printer in default setting mode, the setting values of the printer will change back to the factory default values. The tables below show the initial value of each setting item and the type of reset that changes the value back to the initial value.

CAUTION

It is generally not necessary to perform the initialization. Doing so will remove all the customer settings.

7.1.1 Normal Mode

Setting Item	Initial Value	Default (User)	Default (Shipping)
ADJUSTMENT MODE			
PITCH POSITION	+0.00 mm	Yes	No
OFFSET POSITION	+0.00 mm	Yes	No
DARKNESS	50	Yes	No
VOLUME LEVEL	2	Yes	Yes
LCD Brightness	Midrange	Yes	No

7.1.2 User Mode

Setting Item	Initial Value	Default (User)	Default (Shipping)
PRINT SPEED	S84-ex 8 dots/mm: 06 IPS 12 dots/mm: 06 IPS 24 dots/mm: 03 IPS S86-ex 8 dots/mm: 06 IPS 12 dots/mm: 06 IPS	Yes	Yes
PRINT DARKNESS	06	Yes	Yes
PITCH OFFSET	+0.00 mm	Yes	Yes
CHARACTER CODE	UTF-8	Yes	Yes
2 BYTE FONTS	GB18030	Yes	Yes
2 BYTE FONTS	MINCHO	Yes	Yes
NOTIFICATION FUNCTION SETTING	NO	Yes	Yes
NOTICE FUNCTION	CLEAN PRINTER	Yes	Yes

Setting Item	Initial Value	Default (User)	Default (Shipping)
NOTICE FUNCTION	DISABLE	Yes	Yes
CLEAN PRINTER NOTICE DISTANCE	0 m	Yes	Yes
CHANGE ROLLER NOTICE DISTANCE	0 km	Yes	Yes
CHANGE HEAD NOTICE DISTANCE	0 km	Yes	Yes

7.1.3 Interface Mode

Setting Item	Initial Value	Default (User)	Default (Shipping)
INTERFACE AUTO SELECT	DISABLE	Yes	Yes
INTERFACE SETTING	NO	-	-
PORT SELECT	DATA PORT	Yes	Yes
DATA PORT	USB	Yes	Yes
SUB PORT	NONE	Yes	Yes
LAN			
DHCP SETTING	DISABLE	Yes	No
IP ADDRESS	192.168.001.001	Yes	No
SUBNET MASK	255.255.255.000	Yes	No
GATEWAY ADDRESS	0.0.0.0	Yes	No
PORT NUMBER1	1024	Yes	No
PORT NUMBER2	1025	Yes	No
PORT NUMBER3	9100	Yes	No
PROTOCOL	STATUS5	Yes	Yes
ITEM NO. CHECK	DISABLE (When STATUS5 is selected)	Yes	Yes
BCC CHECK	DISABLE (When STATUS5 is selected)	Yes	Yes
STATUS REPLY TIMING	ENQ (When STATUS4 is selected)	Yes	Yes
WLAN			
DHCP SETTING	Disable	Yes	No
IP ADDRESS	192.168.001.001	Yes	No
SUBNET MASK	255.255.255.000	Yes	No
GATEWAY ADDRESS	192.168.001.002	Yes	No
COMMUNICATION MODE	AD HOC	Yes	No
SSID	SATO_PRINTER	Yes	No
CHANNEL	06	Yes	No
PROTOCOL	STATUS5	Yes	Yes

Setting Item	Initial Value	Default (User)	Default (Shipping)
WLAN			
ITEM NO. CHECK	DISABLE (When STATUS5 is selected)	Yes	Yes
BCC CHECK	DISABLE (When STATUS5 is selected)	Yes	Yes
STATUS REPLY TIMING	ENQ (When STATUS4 is selected)	Yes	Yes
IEEE1284			
PROTOCOL	STATUS5	Yes	Yes
ITEM NO. CHECK	DISABLE (When STATUS5 is selected)	Yes	Yes
BCC CHECK	DISABLE (When STATUS5 is selected)	Yes	Yes
Receive Buffer	1 ITEM (When STATUS4 is selected)	Yes	Yes
IEEE1284 ACK SIGNAL	00.5us (When 1ITEM is selected)	Yes	Yes
RS-232C			
BAUDRATE	19200	Yes	Yes
PARITY BIT	NONE	Yes	Yes
STOP BIT	1 BIT	Yes	Yes
CHARACTER BIT	8 BIT	Yes	Yes
PROTOCOL	STATUS5	Yes	Yes
ITEM NO. CHECK	DISABLE (When STATUS5 is selected)	Yes	Yes
BCC CHECK	DISABLE (When STATUS5 is selected)	Yes	Yes
RECEIVE BUFFER	1 ITEM (When READY/BUSY, XON/XOFF is selected)	Yes	Yes
USB			
Protocol	STATUS5	Yes	Yes
ITEM NO. CHECK	DISABLE (When STATUS5 is selected)	Yes	Yes
BCC CHECK	DISABLE (When STATUS5 is selected)	Yes	Yes
Bluetooth			
Authentication Level	NONE	Yes	Yes
PIN CODE	0000000000000000	Yes	Yes
DEVICE NAME	SATO_PRINTER	Yes	Yes
DISCOVERY SETTING	ENABLE	Yes	Yes
PARAMETER SETTING(ISI)	0800	Yes	Yes
PARAMETER SETTING(ISW)	0012	Yes	Yes
PARAMETER SETTING(PSI)	0800	Yes	Yes
PARAMETER SETTING(PSW)	0012	Yes	Yes
PROTOCOL	STATUS4	Yes	Yes
CRC CHECK	DISABLE	Yes	Yes

Setting Item	Initial Value	Default (User)	Default (Shipping)
IGNORE CR/LF	NO	Yes	Yes
IGNORE CAN/DLE	NO (When STATUS4, MULTI is selected in IEEE1284)	Yes	Yes
SNTP FUNCTION	DISABLE	Yes	No
NTP SERVER IP	000.000.000.000	Yes	No
TIME ZONE	00:00	Yes	No
ERROR NOTICE	DISABLE	Yes	No

7.1.4 Memory Mode

Setting Item	Initial Value	Default (User)	Default (Shipping)
SLOT SETTING	No	Yes	Yes
CARD SLOT SELECT SLOT0	RAM	Yes	Yes
CARD SLOT SELECT SLOT1	FROM	Yes	Yes
CARD SLOT SELECT SLOT2	SD	Yes	Yes
MEMORY MODE	MEMORY SIZE	-	-
STORED CONTENTS	FORM OVERLAY	-	-
MEMORY FORMAT	NO	-	-
FORMAT START	NO	-	-

7.1.5 Advanced Mode

Setting Item	Initial Value	Default (User)	Default (Shipping)
PRINTER TYPE	DISPENSER	Yes	Yes
BACKFEED MOTION	BEFORE	Yes	Yes
PRINT METHOD	TRANSFER (Set to DIRECT with direct thermal model)	Yes	Yes
PITCH SENSOR	ENABLE (When CONTINUOUS is selected)	Yes	Yes
SENSOR TYPE	GAP	Yes	Yes
COMMAND ERROR	DISABLE	Yes	Yes
HEAD CHECK	DISABLE	Yes	Yes
HEAD CHECK	NORMAL (When HEAD CHECK is enabled)	Yes	Yes
HEAD CHECK MODE	ALL (When HEAD CHECK is enabled)	Yes	Yes
HEAD CHECK PAGE NO.	000001 (When CHECK PAGE is selected)	Yes	Yes
EXTERNAL SIGNAL SETTING	NO	-	-
EXTERNAL SIGNAL	ENABLE	Yes	Yes
EXTERNAL SIGNAL	TYPE4	Yes	Yes
EXTERNAL REPRINT	DISABLE	Yes	Yes
CONTINUOUS PRINT	DISABLE	Yes	Yes
ENHANCED REPRINT	DISABLE	Yes	Yes
I/O SIGNAL SETTING	NO	-	-
INPUT SIGNAL			
PRINT START	20Pin	Yes	Yes
REPRINT	8Pin	Yes	Yes
LABEL NEAR	7Pin	Yes	Yes
FEED	21Pin	Yes	Yes
OUTPUT SIGNAL			
PAPER END	17Pin	Yes	Yes
RIBBON END	16Pin	Yes	Yes
MACHINE ERR	4Pin	Yes	Yes
PRINT END	5Pin	Yes	Yes
ONLINE	6Pin	Yes	Yes
RIBBON NEAR	18Pin	Yes	Yes
DECIDED?	NO	-	-

Setting Item	Initial Value	Default (User)	Default (Shipping)
EXTERNAL SIGNAL SETTING			
I/O SIGNALS INITIALIZE	NO	-	-
ZERO SLASH	YES	Yes	Yes
AUTO ONLINE	Yes	Yes	Yes
PRINT OFFSET	V:+0000 H:+0000	Yes	Yes
PRINT DENSITY	300, only for S84-ex (12 dots/mm)	Yes	Yes
SET CALENDAR	NO	-	-
CALENDAR	11/01/01 00:00	No	Yes
CALENDAR INPUT	11/01/01 00:00	No	Yes
CALENDAR DAY OF WEEK CODE	SUNDAY 1 MONDAY 2 TUESDAY 3 WEDNESDAY 4 THURSDAY 5 FRIDAY 6 SATURDAY 7	No	Yes
CALENDAR MONTH CODE	JANUARY A FEBRUARY B MARCH C APRIL D MAY E JUNE F JULY G AUGUST H SEPTEMBER J OCTOBER K NOVEMBER L DECEMBER M	No	Yes
CALENDAR CASE FORMAT	MIXED	No	Yes
CALENDAR CHECK	DISABLE	Yes	Yes
CHARACTER PITCH	PROPORTIONAL	Yes	Yes
PROTOCOL CODE	STANDARD	Yes	Yes
NON STANDARD CODE SETTING	STX=7Bh, ETX=7Dh, ESC=5Eh, ENQ=40h, CAN=21h, NULL=7Eh, OFFLINE=5Dh	Yes with Default (ALT. PROTOCOL)	
RIBBON SAVER	DISABLE	Yes	Yes
MODE SELECT	SBPL	Yes	Yes
JOB MODIFICATION	DISABLE	Yes	Yes
ROTATE LABEL DEG:	0	Yes	Yes

Setting Item	Initial Value	Default (User)	Default (Shipping)
LABEL SIZE ADJ WIDTH:	S84-ex 8 dots/mm: 0832 12 dots/mm: 1248 24 dots/mm: 2496 S86-ex 8 dots/mm: 1340 12 dots/mm: 2010	Yes	Yes
LABEL SIZE ADJ HEIGHT:	S84-ex 8 dots/mm: 20000 12 dots/mm: 18000 24 dots/mm: 9600 S86-ex 8 dots/mm: 9992 12 dots/mm: 14988	No	No
LCD POWER SAVING	00 MIN	Yes	Yes
LED INDICATION	ON	Yes	Yes
ERROR INDICATION	NONE	Yes	Yes

7.1.6 Hex Dump Mode

Setting Item	Initial Value	Default (User)	Default (Shipping)
SELECT DUMP DATA	RECEIVE DATA	-	-
HEX DUMP	NORMAL	-	-

7.1.7 Test Print Mode

Setting Item	Initial Value	Default (User)	Default (Shipping)
TEST PRINT MODE	CONFIGURATION	-	-
TEST PRINT SIZE	S84-ex: 10 cm S86-ex: 16 cm (When CONFIGURATION, BARCODE, HEAD CHECK is selected)	-	-
	LARGE (When FACTORY, WLAN is selected)	-	-
PITCH POSITION	+0.00 mm	Yes	No
OFFSET POSITION	+0.00 mm	Yes	No
DARKNESS	50	Yes	No

7.1.8 Default Setting Mode

Setting Item	Initial Value	Default (User)	Default (Shipping)
DEFAULT MODE	PRINTER SETTING	-	-
DEFAULT PRINTER SETTING	NO	-	-
DEFAULT ALT.PROTOCOL	NO	-	-
DEFAULT WLAN SETTING	NO	-	-

7.1.9 Service Mode

Setting Item	Initial Value	Default (User)	Default (Shipping)
SERVICE MODE	SENSOR LEVEL	-	-
SETTING			
AUTO ONLINE FEED	NO	Yes	Yes
FEED ON ERROR	NO	Yes	Yes
FUNCTION KEY	NONE	Yes	No
REPRINT W/FEED	NO	Yes	Yes
CALENDAR REPRINT	YES	Yes	No
FORWARD/BACKFEED DISTANCE	DEFAULT	Yes	No
EXT 9PIN SELECT	MODE1	Yes	No
BACKFEED SPEED	FAST		
EURO CODE	D5	No	No
SELECT LANGUAGE	ENGLISH	Yes	Yes
PRIORITY SETTING	COMMAND	Yes	No
RIBBON NEAR END	ENABLE	Yes	No
LABEL RE-DETECT	ENABLE	Yes	Yes
SET PASSWORD	OFF	-	-
PASSWORD NO.	0000	No	No
COMPATIBLE MODE	OFF	Yes	No
COMPATIBLE MODE HEAD SIZE	NORMAL	Yes	No
MEDIA LENGTH	S84-ex 8 dots/mm: 2500 mm 12 dots/mm: 1500 mm 24 dots/mm: 400 mm S86-ex: 1249 mm	Yes	No
TRACE MODE	DISABLE	Yes	No

Setting Item	Initial Value	Default (User)	Default (Shipping)
SERVICE MODE			
SETTING			
SAVE PRINT LOG	DISABLE	Yes	No
MEMORY SELECT	SD CARD	Yes	No
CLEAR PRINT LOG	NO	-	-
OUTPUT PRINT LOG FROM SUBPORT	DISABLE	Yes	No
RIBBON TENSION ADJUSTMENT	S84-ex 8 dots/mm: 12 12 dots/mm: 5 24 dots/mm: 1 S86-ex 8 dots/mm: 12 12 dots/mm: 5	Yes	No
THROUGHPUT	NORMAL	Yes	Yes
FEED OFFSET	000 mm	Yes	Yes
BACKFEED OFFSET	000 mm	Yes	Yes
TOTAL QTY DISPLAY	NO	Yes	No
PLUG & PLAY	DISABLE	Yes	No
REGION CODE	US	Yes	No
REPLY PERIOD	NORMAL	Yes	No
ENQ REPLY DELAY TIME	0000 ms	Yes	No
FONT SELECT			
GB18030	YES	Yes	No
BIG5	YES	Yes	No
KSX101	YES	Yes	No

7.1.10 Hidden Setting Mode

Setting Item	Initial Value	Default (User)	Default (Shipping)
LABEL OUT SENSOR	YES	Yes	No
SHIFT CODE	NO	No	Yes

7.1.11 Work Shift Setting Mode

Setting Item	Initial Value	Default (User)	Default (Shipping)
SELECT SHIFT	1	No	Yes
ENTER SHIFT TIME	24:00	No	Yes
HOW MANY CHR?	01	No	Yes
ENTER SHIFT NAME	<space>	No	Yes

7.1.12 Simple Standalone Mode

Setting Item	Initial Value	Default (User)	Default (Shipping)
STANDALONE MODE	LOAD	-	-
OUTPUT LABEL QTY	000001	-	-

7.1.13 Wireless LAN Setting

Setting Item	Overview	Contents	Default (WLAN)	Initial Value
MACAddress	MAC address	Not configurable	No	NULL
IPSetupMethod	Setting of DHCP/BOOTP	0: DISABLE 1: ENABLE	Yes	DISABLE
LocalIPAddress	IP Address	xxx.xxx.xxx.xxx	Yes	192.168.1.1
SubnetMask	Subnet Mask	xxx.xxx.xxx.xxx	Yes	255.255.255.0
GatewayAddress	Gateway Address	xxx.xxx.xxx.xxx	Yes	192.168.1.2
DNSPrimaryIPAddress	DNS primary address	xxx.xxx.xxx.xxx	Yes	0.0.0.0
DNSSecondaryIPAddress	DNS secondary address	xxx.xxx.xxx.xxx	Yes	0.0.0.0
WLANMode	Wireless LAN mode setting	0: Ad Hoc mode 1: Infrastructure mode	Yes	Ad Hoc mode
ESSID	SSID	1 - 32 characters	Yes	"SATO_PRINTER"
Channel	Channel number	1 - 13	Yes	6
WLANNetworkAuth	Network authentication	0: Open System 1: Shared key 2: WPA 3: WPA2	Yes	Open System
WEPKeyUse	WEP key OFF/ON	0: DISABLE 1: ENABLE	Yes	DISABLE
WEPKey1	WEP key 1	5 or 13 characters 10 or 26 digits in hex	Yes	"B"
WEPKey2	WEP key 2	5 or 13 characters 10 or 26 digits in hex	Yes	"B"
WEPKey3	WEP key 3	5 or 13 characters 10 or 26 digits in hex	Yes	"B"
WEPKey4	WEP key 4	5 or 13 characters 10 or 26 digits in hex	Yes	"B"
WEPKeyIndex	WEP Key Index	1 - 4	Yes	1
EAPAuth	802.1x authentication OFF/ON	0: DISABLE 1: ENABLE	Yes	DISABLE
EAPAuthMode	802.1x authentication	0: LEAP 1: EAP-TLS 2: EAP-TTLS 3: EAP-PEAP 4: EAP-FAST	Yes	EAP-TLS
WPAauthentication	WPA/WPA2 Authentication setting	0: PSK 1: EAP	Yes	PSK
WPAPSKMode	WPA/WPA2 Encryption Method setting	0: TKIP 1: AES	Yes	TKIP
WPAPSK	Advanced shared key	8 - 63 characters	Yes	"sato printer"
EAPUserName	EAP authenticated user name	0 - 64 characters	Yes	NULL

Setting Item	Overview	Contents	Default (WLAN)	Initial Value
EAPPassword	EAP Authentication password	0 - 32 characters	Yes	NULL
EAPCertKeyPassword	EAP password for secret key acquisition	0 - 32 characters	Yes	NULL
EAPCertRoot	CA route certification file size	File size	No	0
WPAEAPAuthMode	WPA802.1x authentication	0: LEAP 1: EAP-TLS 2: EAP-TTLS 3: EAP-PEAP 4: EAP-FAST	Yes	EAP-TLS
WPAEAPUserName	WPAEAP authenticated user name	0 - 64 characters	Yes	NULL
WPAEAPPassword	WPAEAP Authentication password	0 - 32 characters	Yes	NULL
EAPTTLSInAuth	TTLS internal authentication	0: PAP 1: CHAP 2: MSCHAP 3: MSCHAPv2	Yes	PAP
EAPTTLSServerAuth	TTLS server authentication	0: OFF 1: ON	Yes	OFF
EAPPEAPInAuth	PEAP internal authentication	0: MSCHAPv2	Yes	MSCHAPv2
EAPPEAPServerAuth	PEAP server authentication	0: OFF 1: ON	Yes	OFF
EAPFASTPacAuto	PAC file auto provisioning	0: OFF 1: ON	Yes	OFF
EAPCertKey	File size of the secret key	File size	No	0
WLANRegionCode	Regional code	0: specified value of the module (JP) 1: US 2: Canada 3: Europe 4: Malaysia 5: Singapore 6: Korea 7: China 8: Japan	No	US
RoamingThreshold	Threshold for roaming condition	-94 to -35 (dBm)	Yes	80
AssociationThreshold	Threshold for association process	-94 to -35 (dBm)	Yes	85
RoamingScanWaitTime	The time from scan end to scan start	3 - 300 (sec)	Yes	300
WLANPeriodicArpInterval	ARP packet send intervals for monitoring the connection status with AP	3000 - 60000 (ms)	Yes	3000
WLANBeaconLostCount	Detected disconnection count number by beacon lost of the access point	1 - 60	Yes	15

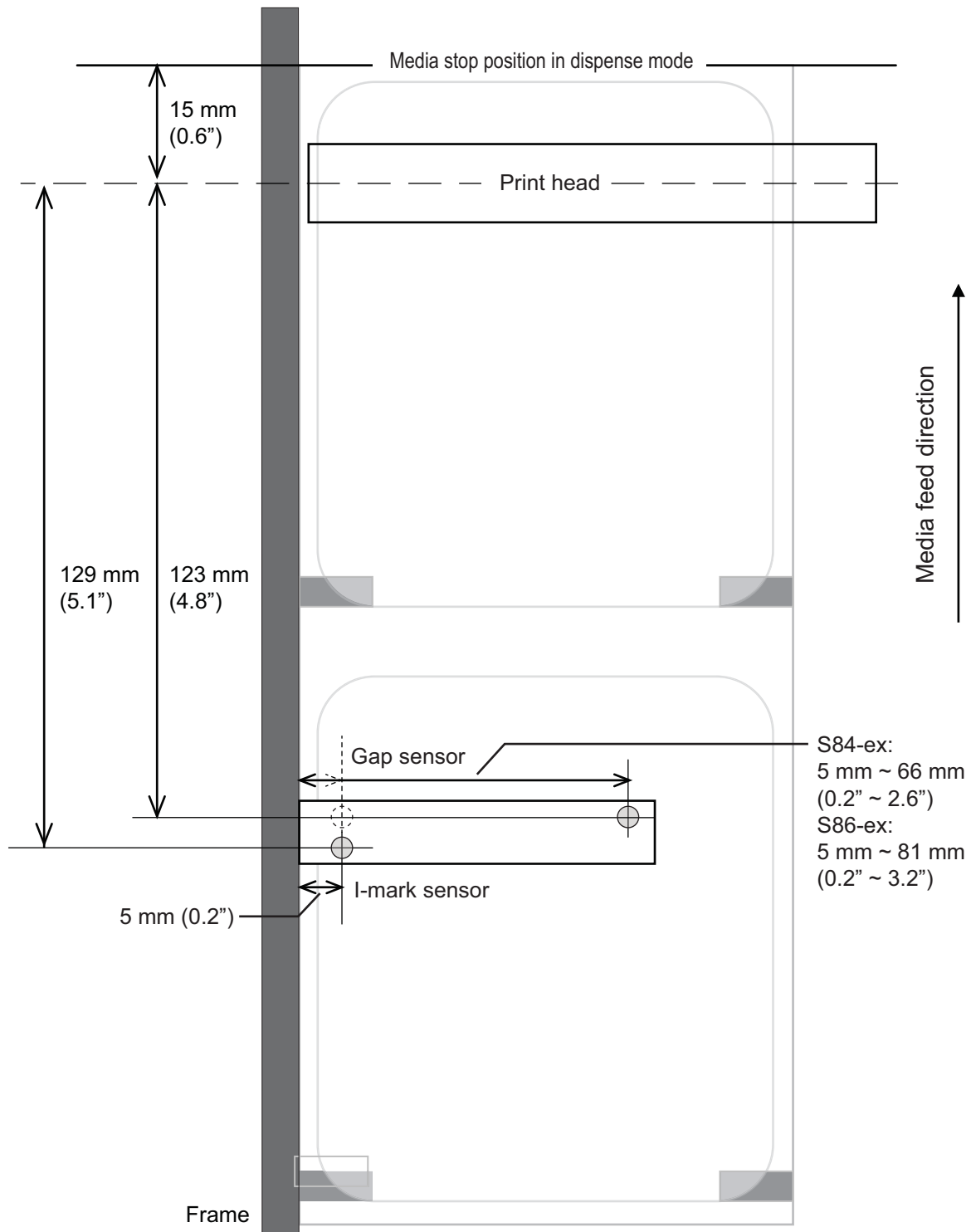
Setting Item	Overview	Contents	Default (WLAN)	Initial Value
EAPPreAuth	Enable/Disable the EAP advanced authentication	0: DISABLE 1: ENABLE	Yes	DISABLE
FtpEnableLoginAccount	FTP authentication method	0: OFF (No user authentication) 1: ON (User authentication)	Yes	OFF
FtpLoginUser	FTP login user name	1 - 32 characters	Yes	"guest"
FtpLoginPassword	Password for the FTP login user	0 - 32 characters	Yes	"guest"
FtpDiscTimeout	Disconnected timeout time of the control connection	10 - 900 (sec)	Yes	30
RawProtocol	Communication protocol	0: Status 4 (cycle response) 1: Status 4 (ENQ response) 2: Status 3/5	Yes	Status 5
RawRecvBufferSize	Receive buffer size	4096	Yes	4096
RawDiscTimeout	Disconnection timeout	0 - 3600 (sec)	Yes	60
RawEnableDiscTimeout	ENABLE/DISABLE disconnection timeout	0: DISABLE 1: ENABLE	Yes	ENABLE
LpdDiscTimeout	Disconnection timeout time	10 - 900 (sec)	Yes	30
WebAppLoginUser	WEB page login user name	0 - 63 characters	Yes	"admin"
WebAppLoginPassword	WEB page login password	0 - 63 characters	Yes	""
Language	Language	0: Japanese 1: English	Yes	English
DebugMode	Setting of the debug mode	0: DISABLE 1: ENABLE (log + print data)	Yes	DISABLE
SignalLevel1	Field intensity setting threshold 1	Absolute value from 00 to 99	Yes	85
SignalLevel2	Field intensity setting threshold 2	Absolute value from 00 to 99	Yes	74
SignalLevel3	Field intensity setting threshold 3	Absolute value from 00 to 99	Yes	64
FWversion	Firmware version of the WLAN module	x.x.x.	No	NULL
BuildDate	Firmware date of the WLAN module	YYYYMMDD	No	NULL
RootPassword	Login password of the TELNET root user	0 - 16 half-width alphanumeric characters	Yes	NULL
KeepAliveTime	Retry intervals of TCP KeepAlive packet	30 - 300 (sec)	Yes	180
KeepAliveCount	Retry number of TCP KeepAlive packet (times)	1 - 99	Yes	17
FtpClientEnableService	FTP client setting	0: DISABLE 1: ENABLE	Yes	DISABLE

Setting Item	Overview	Contents	Default (WLAN)	Initial Value
FtpClientLoginUser	FTP client user name	1 - 32 characters	Yes	"sato"
FtpClientLoginPassword	FTP client password	1 - 32 characters	Yes	"sato"
FtpServerIPAddress	FTP server IP address	xxx.xxx.xxx.xxx	Yes	0.0.0.0
FtpServerURL	FTP server URL	0 - 48 characters	Yes	"ftp://sato.co.jp"
FtpServerPort	FTP port number	1 - 65535	Yes	21
FtpConnectRetryPeriod	Reconnection interval	1 - 100	Yes	10
FtpConnectRetryTimes	Reconnection number of retry	0: no retry 1 - 10 255: keep retrying until connected	Yes	5
FtpJobTimeout	Job timeout	0 - 600 (sec)	Yes	300
FtpUsePassiveMode	ENABLE/DISABLE Passive mode	0: DISABLE 1: ENABLE	Yes	DISABLE

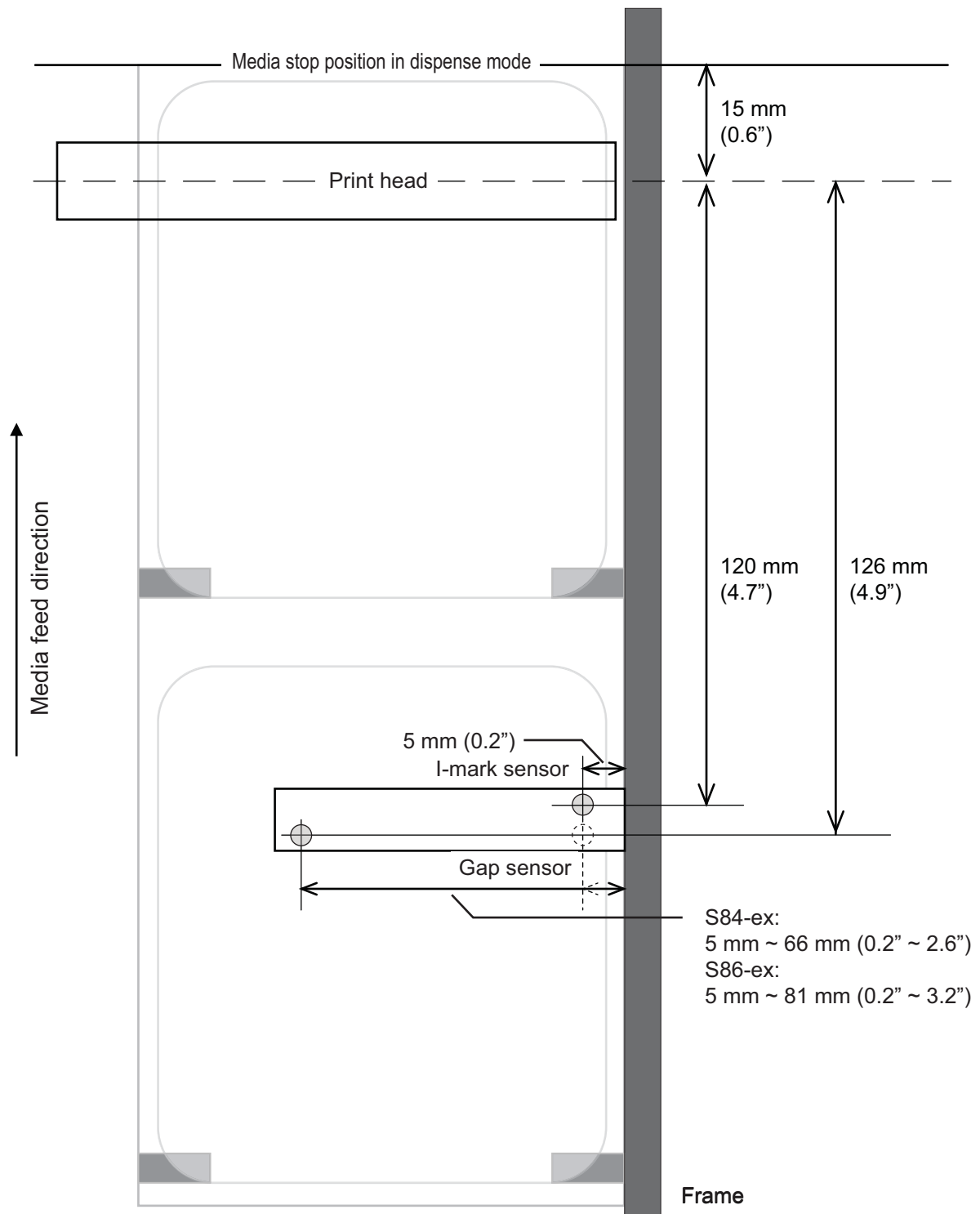
7.2 Media Sensor Positions and Media Stop Positions

The media sensor positions and the media stop position are as follows:

S84-ex/S86-ex (Americas: Standard/Right Hand, Europe/Asia: Left Hand) printer:



S84-ex/S86-ex (Americas: Opposite/Left Hand, Europe/Asia: Right Hand) printer:



7.3 About Compatible Mode

When you set the COMPATIBLE MODE to ON in the service mode menu, you can match the printer operation to the existing models.

Refer to **COMPATIBLE MODE** in **Function Settings** of the service mode menu.

7.3.1 Compatible Mode

The following table shows the operation of the compatible mode.

Item	Compatible Mode	
	ON	OFF
Print density change. A function to draw data according to the head density when the head density is 12 dots/mm.	Head dot density setting screen is shown in the advanced mode. - S84-ex Select from 100, 150, 300 - S86-ex Select from 150, 300	No setting screen.

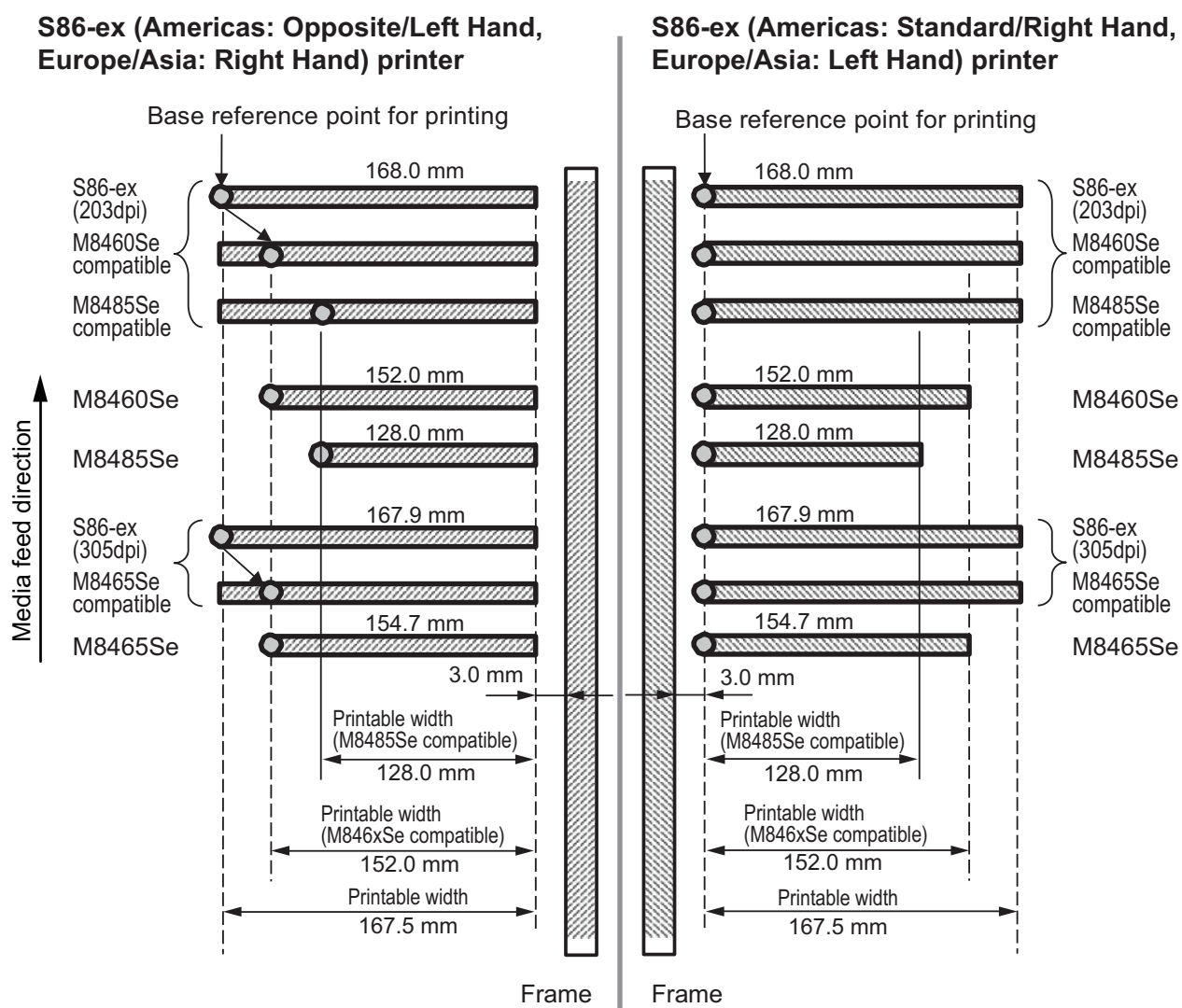
7.3.2 Compatible Mode - Print Head Width (only for S86-ex printer)

The following table shows the operation of the compatible mode (print head width).

Item	S86-ex 203dpi			S86-ex 305dpi	
	NORMAL	M8460Se	M8485Se	NORMAL	M8465Se
Printable width	167.5 mm (6.59")	152.0 mm (5.98")	128.0 mm (5.04")	167.5 mm (6.59")	152.0 mm (5.98")
The maximum print position offset setting	1340	1216	1024	2010	1824
Label size adjustment (width) • Maximum value	1340	1216	1024	2010	1824
The maximum print vertical position setting <H>	1340	1216	1024	2010	1824
Ruled line, frame border print setting <FW> • The maximum length of the border line	1340	1216	1024	2010	1824
White and black inverse printing setting <(> • The maximum value for the horizontal inverse area	1340	1216	1024	2010	1824
Copy within label <WD> • The maximum value for the horizontal direction	1340	1216	1024	2010	1824
Mirror rotation setting <RM> • The maximum value for the horizontal direction	1340	1216	1024	2010	1824

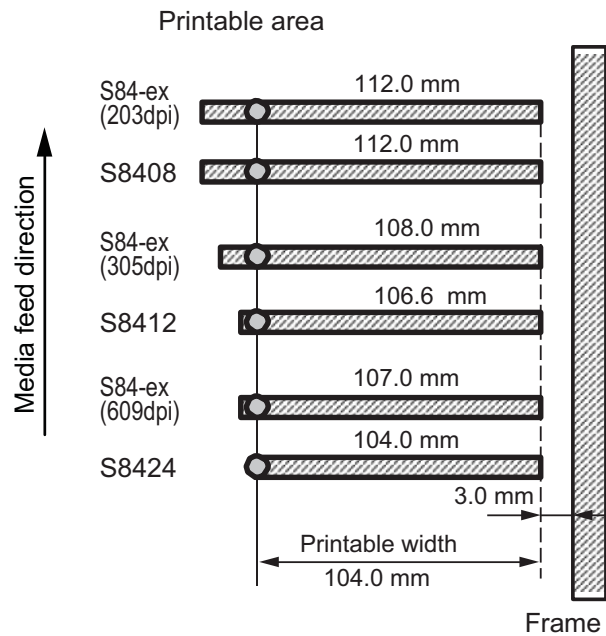
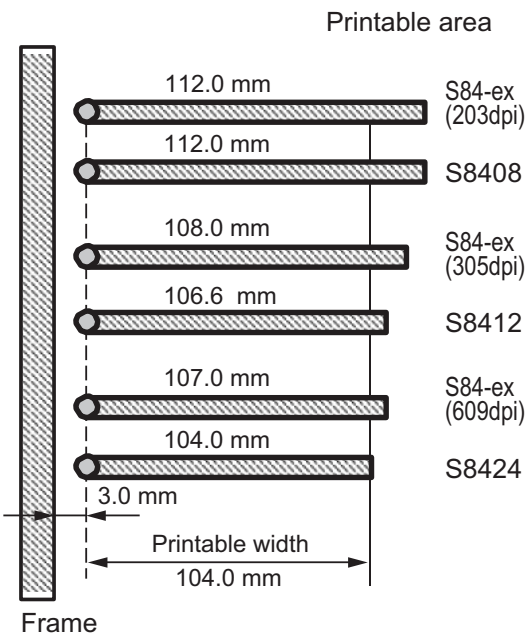
Item	S86-ex 203dpi			S86-ex 305dpi	
	NORMAL	M8460Se	M8485Se	NORMAL	M8465Se
Graphics print <G> • The maximum byte for the horizontal direction	168	152	128	252	228
Media size <A1> • The maximum label width	1340	1216	1024	2010	1824
Base offset setting <A3> • The maximum value for the horizontal direction offset	1340	1216	1024	2010	1824
Printer operation register setting <PG> • The maximum label width	1340	1216	1024	2010	1824
Printer operation register setting <PC> • The maximum label width	1340	1216	1024	2010	1824
Form overlay registration <&S> • The maximum horizontal direction available range	1340	1216	1024	2010	1824
Graphics registration <GI>	168	152	128	252	228
Print configuration request <SOH+MG> • The maximum label width	1340	1216	1024	2010	1824
Print configuration request <SOH+MG> • The maximum offset value for the horizontal base point	1340	1216	1024	2010	1824

7.3.3 Print Head Width and Printable Area Range



Print head width and printable width

Print Head Density	S86-ex		M8460Se/M8465Se		M8485Se	
	Print Head Width	Printable Width	Print Head Width	Printable Width	Print Head Width	Printable Width
8 dots/mm (203dpi)	168 mm (6.61")	167.5 mm (6.59")	152 mm (5.98")	152 mm (5.98")	128 mm (5.04")	128 mm (5.04")
12 dots/mm (305dpi)	167.9 mm (6.61")	167.5 mm (6.59")	154.7 mm (6.09")	152 mm (5.98")	-	-

S84-ex (Americas: Opposite/Left Hand, Europe/Asia: Right Hand) printer

S84-ex (Americas: Standard/Right Hand, Europe/Asia: Left Hand) printer


Print head width and printable width

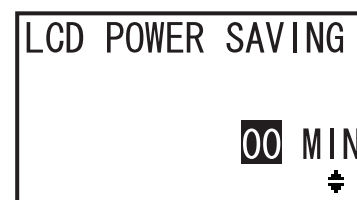
Print Head Density	S84-ex		S8400	
	Print Head Width	Printable Width	Print Head Width	Printable Width
8 dots/mm (203dpi)	112 mm (4.41")	104 mm (4.09")	112 mm (4.41")	104 mm (4.09")
12 dots/mm (305dpi)	108 mm (4.25")	104 mm (4.09")	106.6 mm (4.2")	104 mm (4.09")
24 dots/mm (609 dpi)	107 mm (4.21")	104 mm (4.09")	104 mm (4.09")	104 mm (4.09")

7.4 LCD Power Saving Mode

This function is designed to reduce power consumption by setting the LCD backlight to off when the printer is not operated for a specified period of time. The time required for the LCD backlight to light off can be set at LCD POWER SAVING setting screen in the advanced mode.

Refer to [Section 4.2.13 Advanced Mode](#) for the flowchart to access the setting. The setting procedures of the LCD power saving mode are as follows:

- 1** In offline mode, press the **↵ ENTER** button.
The printer changes to setting mode menu.
- 2** Select the **ADVANCED MODE** using the **▲/▼/◀/▶ arrow** buttons and then press the **↵ ENTER** button.
- 3** Press the **↵ ENTER** button again until LCD POWER SAVING shows on the screen.
- 4** Press the **▲/▼** buttons to select a value.
The setting range is from 00 to 15 MIN.
When "00" is selected, this function is disabled and the LCD backlight is always on.
- 5** Press the **↵ ENTER** button to save the setting.



Conditions to set the LCD backlight to off

Under the following conditions, the LCD backlight lights off when the time specified on the LCD POWER SAVING setting screen has elapsed. With this function, only the LCD backlight lights off and the on-screen message remains the same.

- The printer has not received the print data* (ESC+A~ESC+Z) in various interfaces.
* Each protocol's status return request, cancel request and incorrect data are omitted.
- No button is pressed.
- The printer is not in error mode.
- The printer is neither printing nor feeding media.
- The printer is in online mode, offline mode or hex dump mode.
This function is disabled in download mode.

Conditions to set the LCD backlight to on

Any of the following conditions will light the LCD backlight on again.

- The printer receives the print data* from various interfaces.
* Each protocol's status return request, cancel request and incorrect data are omitted.
- Any button on the operator panel is pressed.
- Printer error such as "Head open" occurs.
- The printer starts the printing operation.

Pressing any button while the LCD backlight is off will only light the LCD backlight back on. The function of the button is invalid.

(For example, the printer does not go offline by pressing the **▶|| LINE** button when the LCD backlight is off in online mode.)

7.5 Input/Output Signal of the External Signal

This section provides additional information about setting the pin number of the input/output signal in the **INPUT SIGNAL/OUTPUT SIGNAL** screen of the advanced mode menu.

Setting Conditions

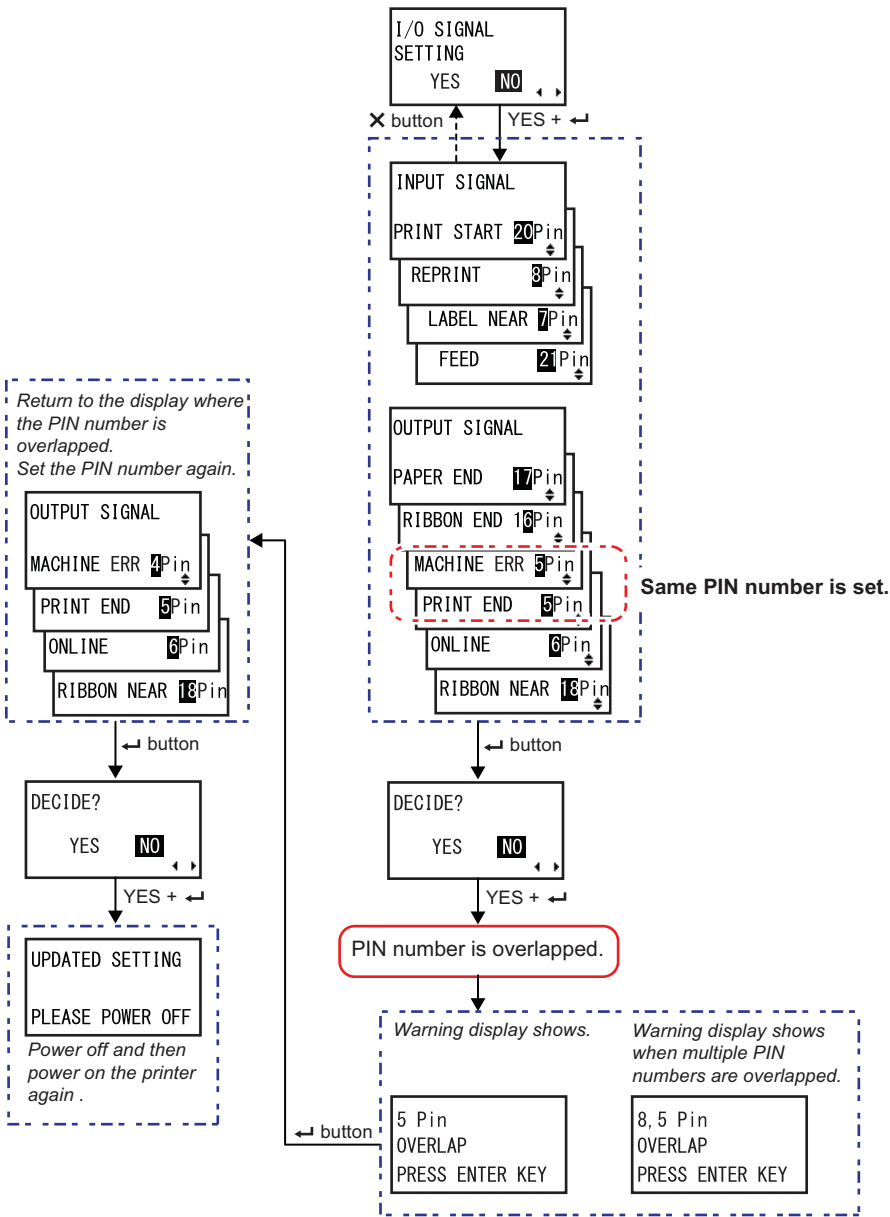
Signal Name	Input/Output	Pin No. (Default Value)	Overlapping	Available Pin No.
PRINT START	Input	20	Not Allowed	20, 8
Reprint	Input	8	Not Allowed	
FEED	Input	21	Not Allowed	21, 7, - Note: When “-” is selected, the function is disabled.
LABEL NEAR	Input	7	Not Allowed	
Paper End	Output	17	Allowed	4, 5, 6, 16, 17, 18, - Note: When “-” is selected, there is no output.
Ribbon End	Output	16	Allowed	
MACHINE ERR	Output	4	Allowed	
PRINT END * ¹	Output	5	Not Allowed	
ONLINE	Output	6	Allowed	
RIBBON NEAR	Output	18	Allowed	

*¹ You cannot select “-” for the PRINT END output signal.

Notes

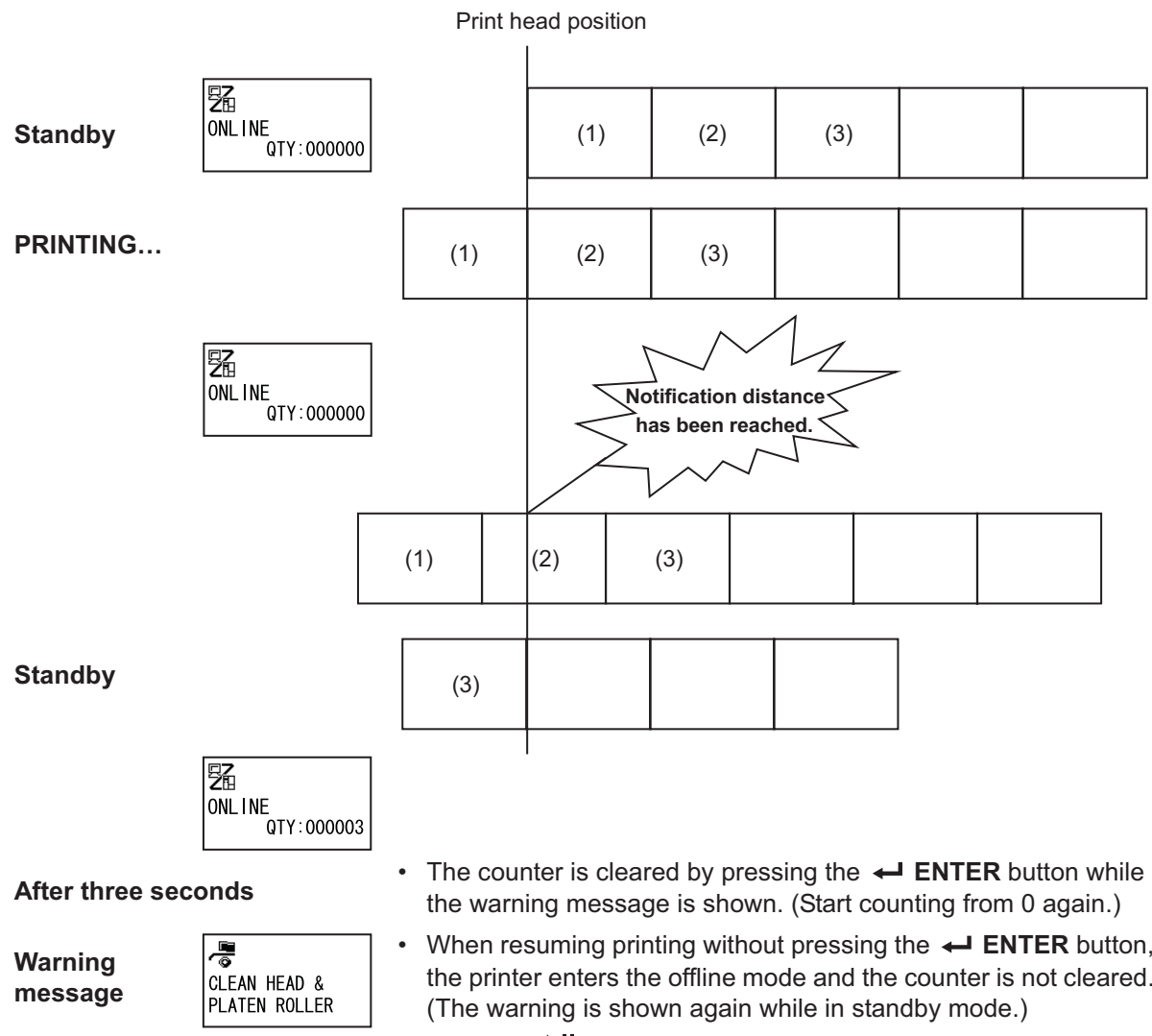
- When multiple errors are allocated to one pin, the signal is output when one of the errors occurs.
- All errors need to be released in order to switch the signal output back to normal.

When the PIN number is overlapped in the Input/Output signal setting



7.6 Notification Function

This section shows the media motion when the set notification interval has been reached. You can set the notification function in the **NOTIFICATION FUNCTION SETTING** screen of the user mode menu.



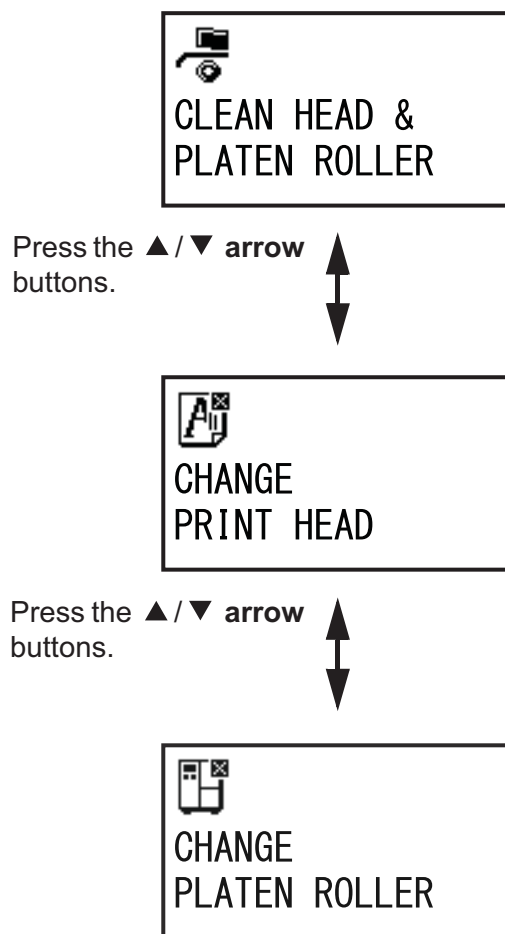
- The counter is cleared by pressing the **ENTER** button while the warning message is shown. (Start counting from 0 again.)
- When resuming printing without pressing the **ENTER** button, the printer enters the offline mode and the counter is not cleared. (The warning is shown again while in standby mode.)
- When the **LINE** button is pressed, the printer enters online or offline mode from the warning screen. The same goes for other buttons, entering each screen.

When multiple notifications occur at the same time

The warning screen can be changed by pressing the ▲/▼ **arrow** buttons.

To release the warning, press the ↵ **ENTER** button at each screen.

When the warning is released by pressing the ↵ **ENTER** button, the warning screen is deleted and the printer goes to the next screen.



7.7 Replacing Consumable Parts

Some consumable parts, such as the print head and platen roller, will wear out over time and can be replaced easily. This section describes the procedures to replace these parts.

Notes

- Use only SATO genuine consumable parts for replacement.
Contact your SATO reseller or technical support center for parts ordering information.
 - Regular cleaning may extend the life span of some print heads and platen rollers. Refer to [Section 5.2 Maintenance of the Print Head and Platen Roller](#) for details.
-

7.7.1 Replacing the Print Head

You can easily remove and replace a damaged or worn print head.

Before replacement

Perform a factory test print and check the head counter.

WARNING

- Do not touch the power switch or connect or disconnect the power cord while your hands are wet. Doing so could cause an electric shock.
 - Disconnect the power cord from the AC outlet before you replace the print head.
 - Wear gloves before replacing the print head, to prevent damage to the print head.
-

1 Make sure that the printer is in power off mode, then disconnect the power cord from the AC outlet.

2 Open the top cover.

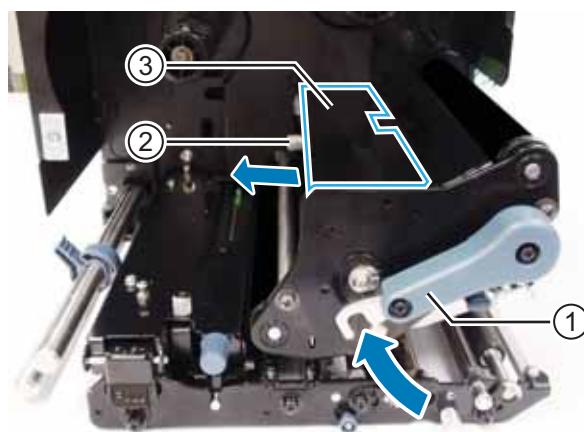
CAUTION

Open the top cover fully to prevent accidental drop of the cover.

- 3** Turn the **head lock lever** ① clockwise to unlock the **print head**.

⚠ CAUTION

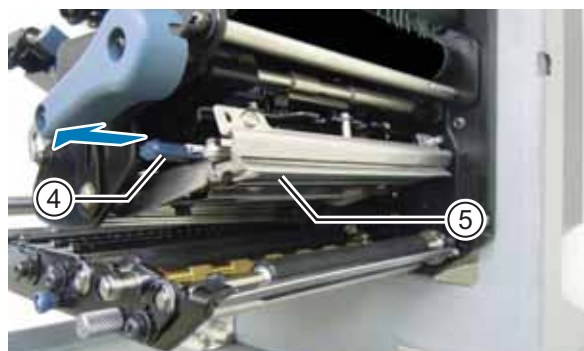
- The print head and its surroundings are hot after printing. Be careful not to touch it, to avoid being burned.
- Touching the edge of the print head with your bare hand could cause injury.



- 4** Remove the **thumbscrew** ② that attaches the **cover** ③ on top of the **print head assembly**. Remove the **cover** ③ and place it aside.

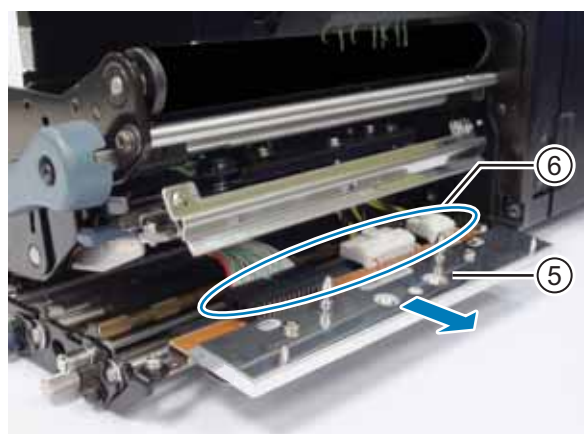
- 5** Pull the **tab** ④ to remove the **print head** ⑤.

Support the print head with your hand when the **print head** is released.



- 6** Pull out the **print head** ⑤ and remove all the **connectors** ⑥ from the **print head** ⑤.

- 7** Connect the **connectors** to the new **print head**.

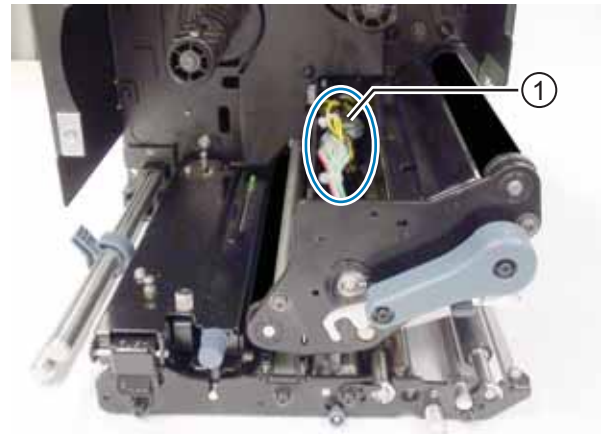


8 Pull back and arrange the **cables** ⑦ from the top of the **print head assembly**.

9 Install the **print head** to the print head assembly.

Align the print head and press the print head upward until it is latched.

10 Attach the **cover** ③ back to the top of the **print head assembly** with the **thumbscrew** ②.



⚠ CAUTION

When attaching the cover, be careful not to clamp the wire.

After replacement

- Adjust the print darkness.
- Make sure that the print head opens and closes without difficulties.

7.7.2 Replacing the Platen Roller

You can easily remove and replace a damaged or worn platen roller.

1 Make sure that the printer is in power off mode, then disconnect the power cord from the AC outlet.

2 Open the top cover.

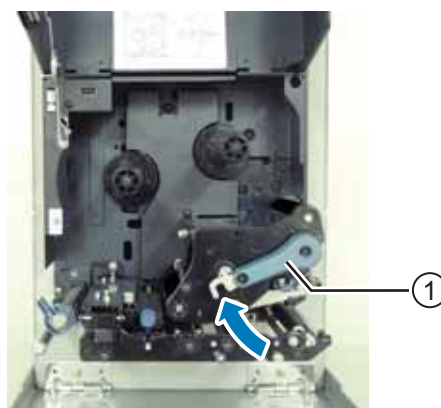
⚠ CAUTION

Open the top cover fully to prevent accidental drop of the cover.

- 3** Turn the **head lock lever** ① clockwise to unlock the **print head**.

⚠ CAUTION

- The print head and its surroundings are hot after printing. Be careful not to touch it, to avoid being burned.
- Touching the edge of the print head with your bare hand could cause injury.

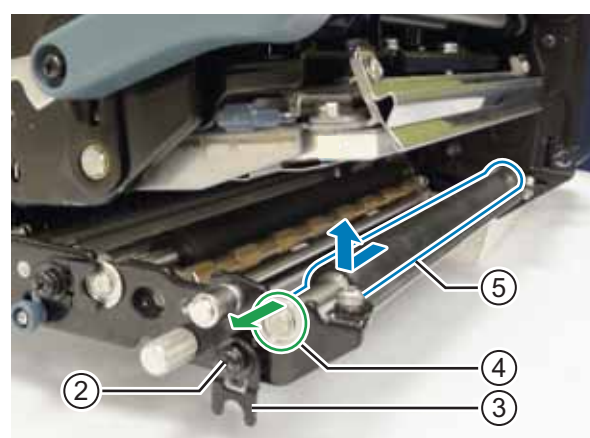


- 4** Loosen the **screw** ② until the **bearing clamp** ③ is released.

Do not remove the screw.

- 5** Remove the **bearing** ④ from the chassis and the shaft of the **platen roller** ⑤.

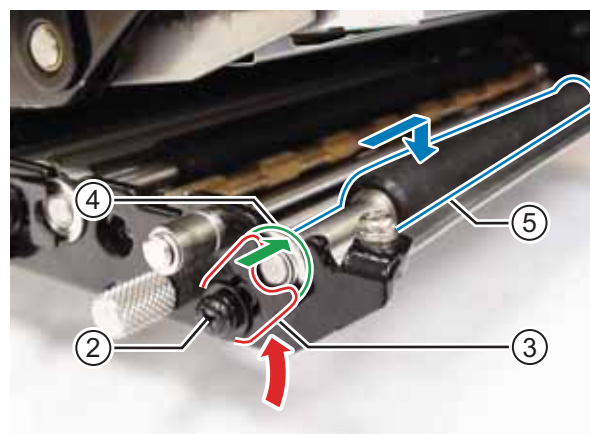
- 6** Pull out the **platen roller** ⑤ from the printer and replace it with a new **platen roller**.



- 7** Insert the gear end of the **platen roller** ⑤ fully into the printer's center frame.

- 8** Place the **bearing** ④ back to the chassis and the shaft of the **platen roller**.

- 9** Rotate the **bearing clamp** ③ onto the **bearing** ④ and attach it with the **screw** ②.



After replacement

- Adjust the print darkness.

7.7.3 Replacing the Pressure Roller

You can easily remove and replace a damaged or worn pressure roller.

- 1** Make sure that the printer is in power off mode, then disconnect the power cord from the AC outlet.
- 2** Open the top cover.

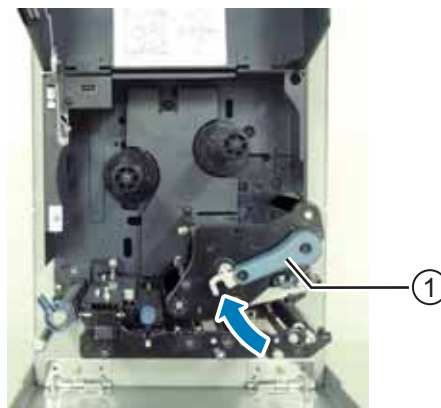
CAUTION

Open the top cover fully to prevent accidental drop of the cover.

- 3** Turn the **head lock lever** ① clockwise to unlock the **print head**.

CAUTION

- The print head and its surroundings are hot after printing. Be careful not to touch it, to avoid being burned.
- Touching the edge of the print head with your bare hand could cause injury.



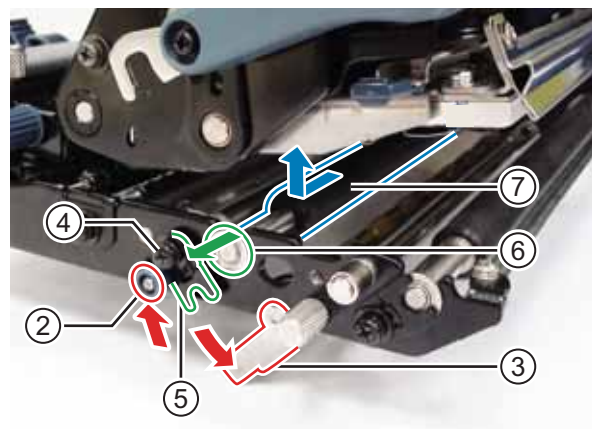
- 4** Push the **pressure roller release tab** ② up to release the **pressure roller plate** ③.

- 5** Loosen the **screw** ④ until the **bearing clamp** ⑤ is released.

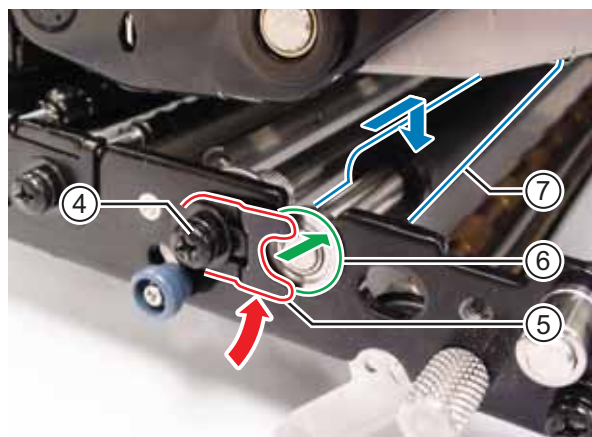
Do not remove the screw.

- 6** Remove the **bearing** ⑥ from the chassis and the shaft of the **pressure roller** ⑦.

- 7** Pull out the **pressure roller** ⑦ from the printer and replace it with a new **pressure roller**.



- 8** Insert the gear end of the **pressure roller** ⑦ fully into the printer's center frame.
- 9** Place the **bearing** ⑥ back to the chassis and the shaft of the **pressure roller**.
- 10** Rotate the **bearing clamp** ⑤ onto the **bearing** ⑥ and attach it with the **screw** ④.
- 11** Push the center of the **pressure roller plate** to latch it in place.



7.7.4 Replacing the Media Feed Roller

You can easily remove and replace a damaged or worn media feed roller.

- 1** Make sure that the printer is in power off mode, then disconnect the power cord from the AC outlet.
- 2** Open the top cover.

CAUTION

Open the top cover fully to prevent accidental drop of the cover.

- 3** Turn the **head lock lever** ① clockwise to unlock the **print head**.

CAUTION

- The print head and its surroundings are hot after printing. Be careful not to touch it, to avoid being burned.
- Touching the edge of the print head with your bare hand could cause injury.

- 4** Pull the **feed lock latch** ② to unlock the **feed roller and media sensor assembly** ③.

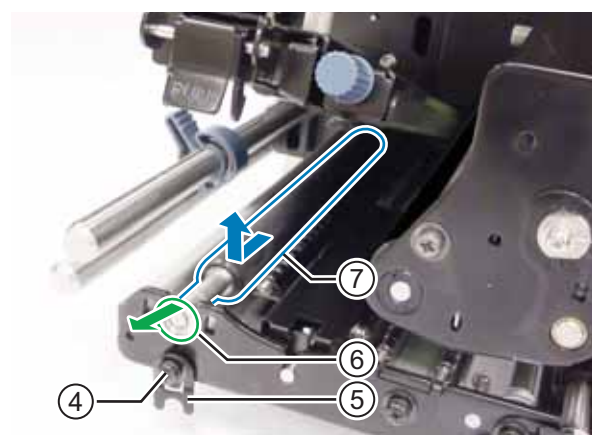
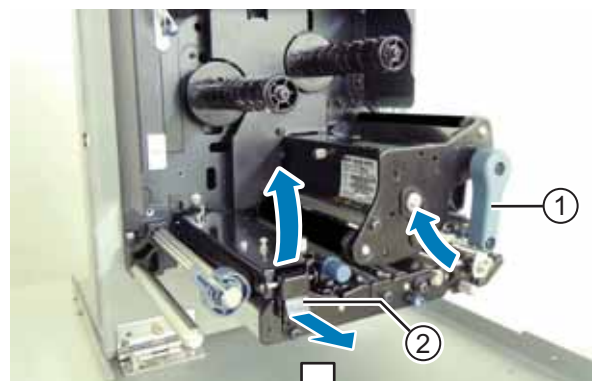
The feed roller and media sensor assembly will flip open.

- 5** Loosen the **screw** ④ until the **bearing clamp** ⑤ is released.

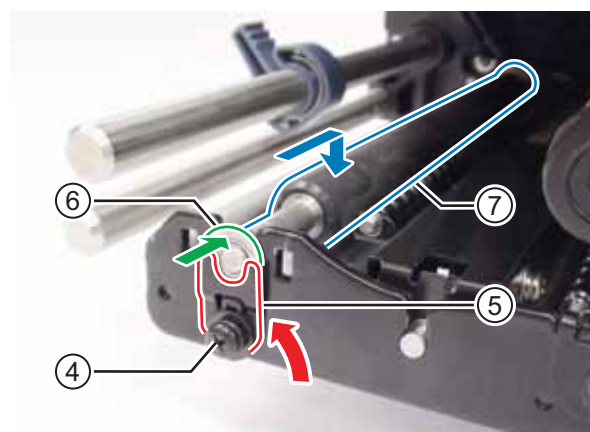
Do not remove the screw.

- 6** Remove the **bearing** ⑥ from the chassis and the shaft of the **media feed roller** ⑦.

- 7** Pull out the **media feed roller** ⑦ from the printer and replace it with a new **media feed roller**.



- 8** Insert the gear end of the new **media feed roller** ⑦ fully into the printer's center frame.
- 9** Place the **bearing** ⑥ back to the chassis and the shaft of the **media feed roller**.
- 10** Rotate the **bearing clamp** ⑤ onto the **bearing** ⑥ and attach it with the **screw** ④.



7.7.5 Replacing the Fan Filter

The fan filter prevents atmospheric debris from being drawn into the printer.

- 1** Peel off the old **fan filter** ① from the rear of the printer.
- 2** Clean the printer to remove any adhesive residue on the surface.

Note


You can purchase a cleaning kit from a SATO reseller or technical service center.

- 3** Remove the backing paper from the new **fan filter** ① and paste the **fan filter** ① over the fan exhaust holes.



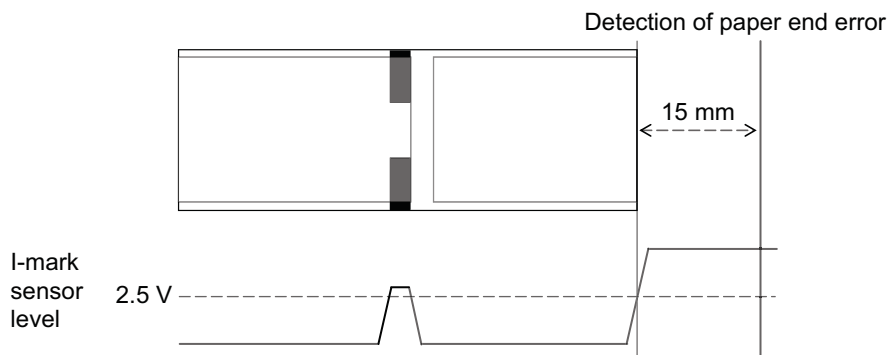
7.8 Media Motion of the Printer Operation

7.8.1 Feed Motion

When the pitch sensor is disabled, media will be fed while pressing the  **FEED** button.
When the pitch sensor is enabled, one media will be fed according to the backfeed motion setting.

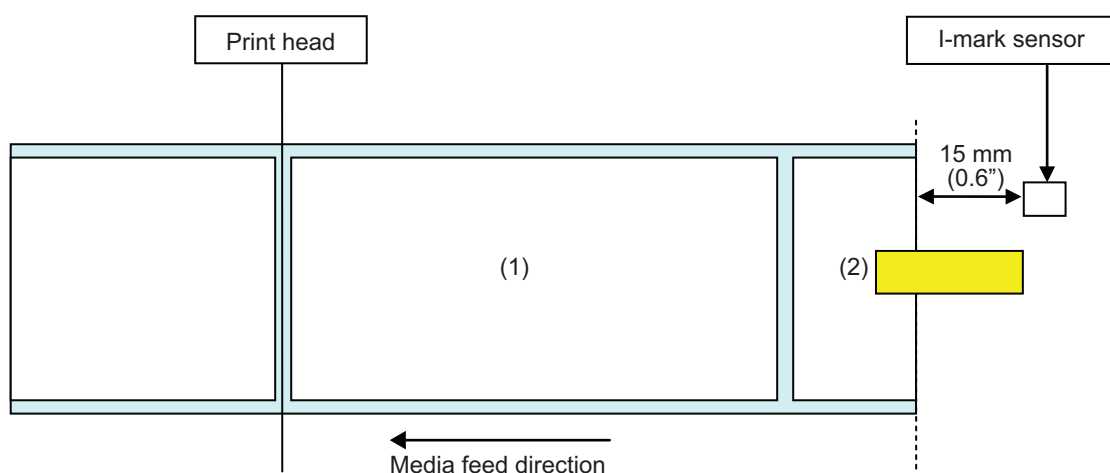
7.8.2 Paper End

When the I-mark sensor level has changed to high for 15 mm (0.6"), it will be considered as the paper end.



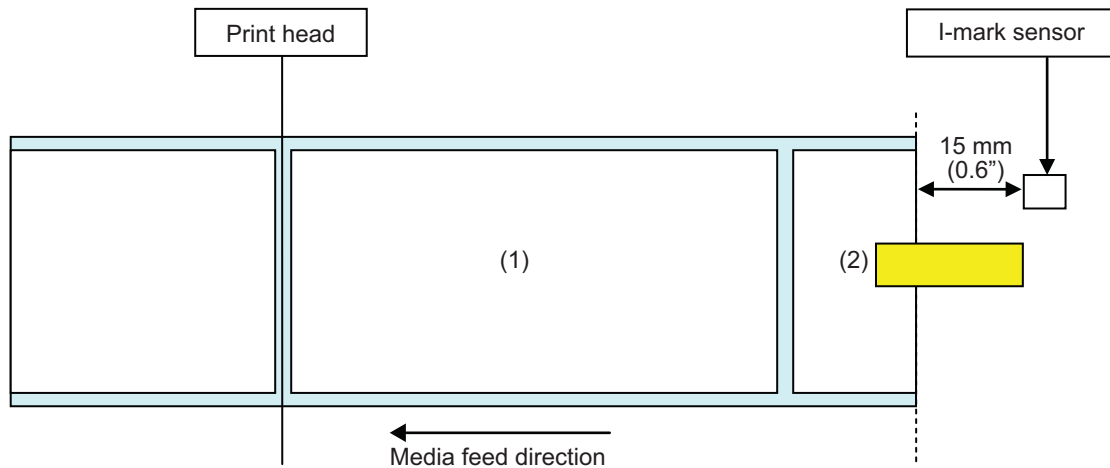
Paper End Detection in Feed Operation

After the paper end is detected, the printer stops the feed operation immediately and generates an error.

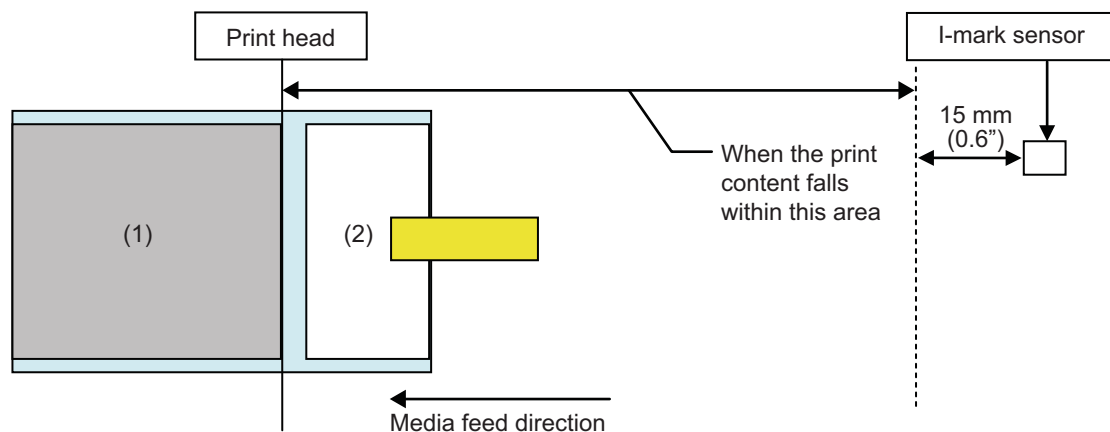


Paper End Detection in Print Motion

Operation varies by the number of remaining print steps when the paper end occurs during print operation.

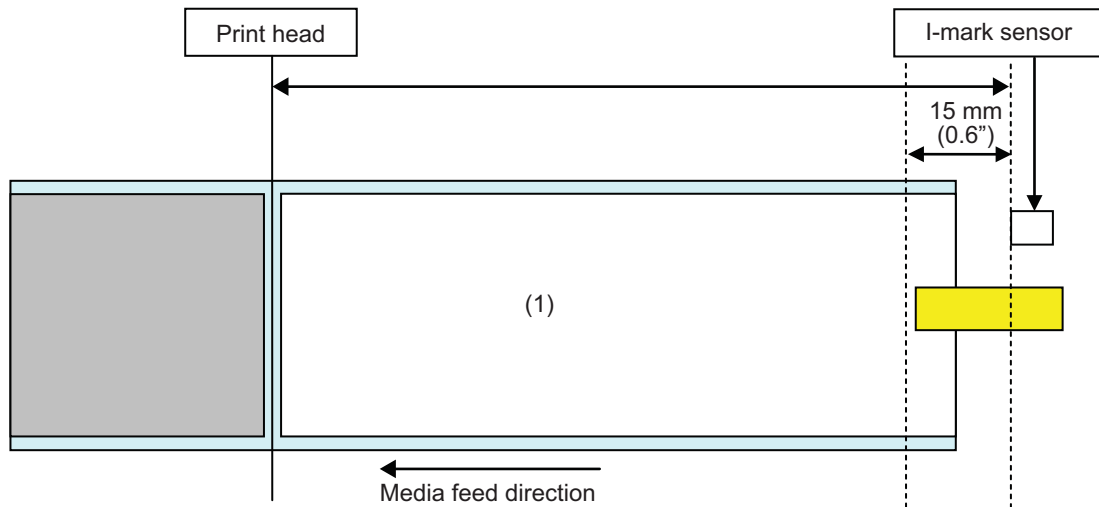


[When the print content falls within the area from the print head position to 15 mm (0.6") less than the I-mark sensor.]



- After completing the print of media (1), "Paper end error" will occur.
- After releasing the error, media (1) will not be printed again.

[When the media pitch size is between the print head position and the I-mark sensor and is more than 15 mm (0.6").]



- "Paper end error" will occur while printing the media (1), right after detecting "paper end".
- If an error occurs while printing, media (1) will be printed again after releasing the error. If the print job is completed at the time an error occurs, media (1) will not be printed again.

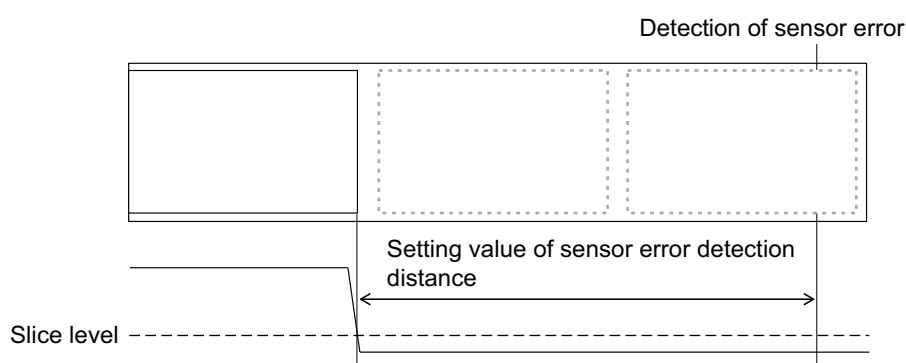
7.8.3 Sensor Error

Detection of a sensor error is performed by the gap sensor or the I-mark sensor when the pitch sensor is enabled, and the detection distance of the sensor error varies depending on the condition such as the type of sensor.

Detection method for each sensor type

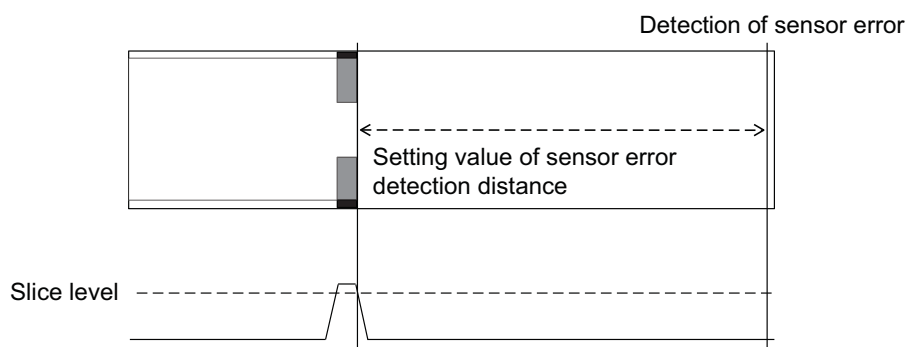
Gap Sensor

When using the Gap sensor:



I-mark Sensor

When using the I-mark sensor:



Distance to detect the sensor error

Detection distance of sensor error is determined by the head density and the vertical print area. In addition, it varies by the setting of the maximum media length.

1) Detection distance of sensor error by the vertical print area

Head density	Vertical print area after editing		
	$V > 1250 \text{ mm}$	$1250 \text{ mm} \geq V > 510 \text{ mm}$	$510 \text{ mm} \geq V$
8 dots/mm (203 dpi)	2510 mm	1250 mm	510 mm
12 dots/mm (305 dpi)	1510 mm	1250 mm	510 mm
24 dots/mm (609 dpi)	1250 mm	1250 mm	510 mm

2) Detection distance of sensor error according to the maximum media length (MEDIA LENGTH) setting

The detection distance setting of the sensor error according to the maximum media length is only available when using the gap sensor.

Distance between the head position and the gap sensor > Maximum media length > 24 mm

Detection distance of the sensor error = Maximum media length - 6 mm

7.8.4 Ribbon Error

Ribbon end detection

The ribbon sensor on the ribbon supply side and the ribbon sensor on the ribbon rewind side detect the ribbon end error. The ribbon end error occurs when one of them detects the ribbon end.

1) Detection by the ribbon sensor on the supply side.

While feeding the media, when the ribbon on the ribbon supply side has not rotated for 32 mm (1.26") or more, the ribbon sensor will detect the ribbon end error.

2) Detection by the ribbon sensor on the rewind side.

While feeding the media, when the ribbon on the ribbon rewind side has not rotated for 80 mm (3.15") or more, the ribbon sensor will detect the ribbon end error.

Following are the behaviors when detecting the ribbon end according to the remaining print job.

- When the remaining printing is 12 mm or more, the printer generates a ribbon error immediately after detection.
- When the remaining printing is less than 12 mm, the printer generates a ribbon error after printing is completed.

Ribbon near end detection

The ribbon near end is detected by the ribbon sensor on the supply side. This occurs when the remaining ribbon length becomes less than approximately 15 m, 49.2 ft. (ribbon diameter is approximately 36 mm, 1.4").

Note that the remaining ribbon length (15 m, 49.2 ft.) is a calculated value from the revolution speed of the ribbon on the supply side. The timing of the ribbon end varies according to the reading condition of the ribbon sensor and the ribbon thickness.

7.9 Print Speed and Media Size

The minimum media pitch size varies by the print speed setting.

Print speed (inches/sec)	Minimum media pitch size (mm)
2	9
3	9
4	9
5	11
6	13
7	15
8	17
9	20
10	23
11	27
12	31
13	35
14	40
15	44
16	50

Notes

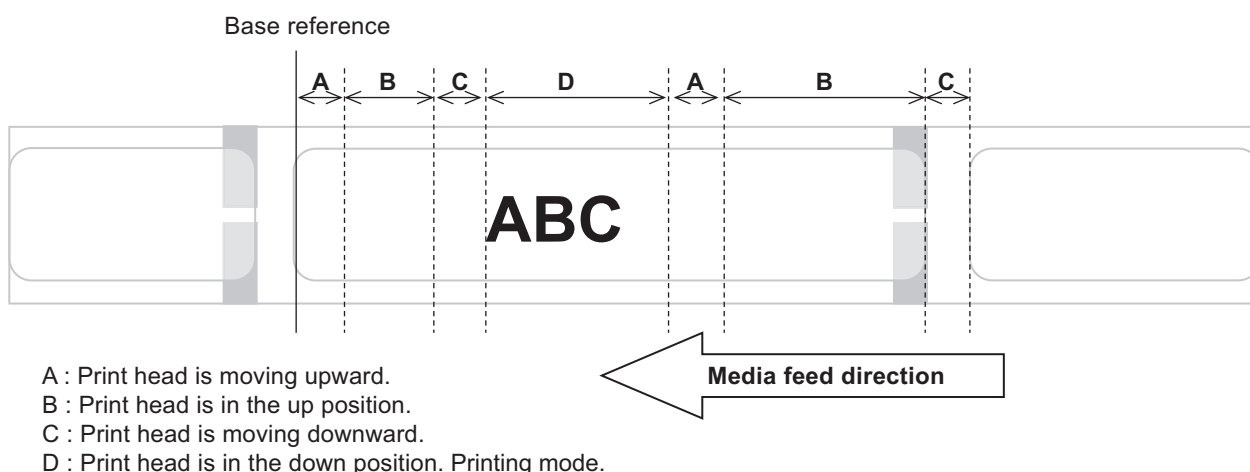
- The minimum media pitch size of continuous mode is different from dispenser mode. The values indicated above are for continuous mode. The minimum media pitch size for dispenser mode is 18 mm.
- If using media smaller than the minimum size, the media will not stop at the right position, causing a print misalignment.
- Do not send the print data with media size that is smaller than the minimum media pitch size, even when the sensor is disabled.

7.10 Optional Ribbon Saver

Ribbon saver is a function to save on ribbon consumption by moving the print head up and down. This optional function is only available for the S84-ex thermal transfer printer when the ribbon saver kit is installed.

7.10.1 Ribbon Saver Operation

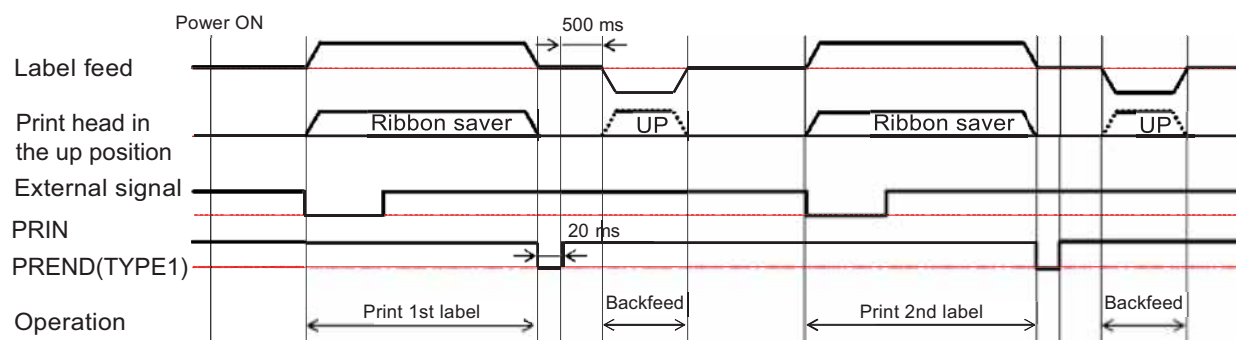
The figure below shows the print head position when printing with the ribbon saver function activated.



- Ribbon saver function works when:
 - you have selected TRANSFER in the ADVANCED MODE>**PRINT METHOD** setting screen.
 - you have selected ENABLE in the ADVANCED MODE>**RIBBON SAVER** setting screen.
- Be sure to use dispenser mode when using the ribbon saver function. The label is not fed normally when the dispenser is not used.
- The print head is not lifted up during label feeding operation (Forward feed).
- The print head will be in the down position every time the printer is printing.
(Start printing immediately to avoid decreasing the processing power and preventing the label from moving during pause.)
- The print head will be in the down position when a printing error occurs.
- The accuracy of printing is ± 1.5 mm when the ribbon saver function is enabled.
- Power off the printer when an error occurs on the ribbon saver to avoid abnormal printing.
- Scuffing may occur depending on the combination of the ribbon and label used. Verify the combination before use and select an appropriate ribbon.
- When requiring two labels for one print data, the ribbon saver function will not work on the second label.
- When the printer is powered on, the print head will move to the reference position (down position).
- Saver error message is shown on the screen when the print head cannot move to the reference position.

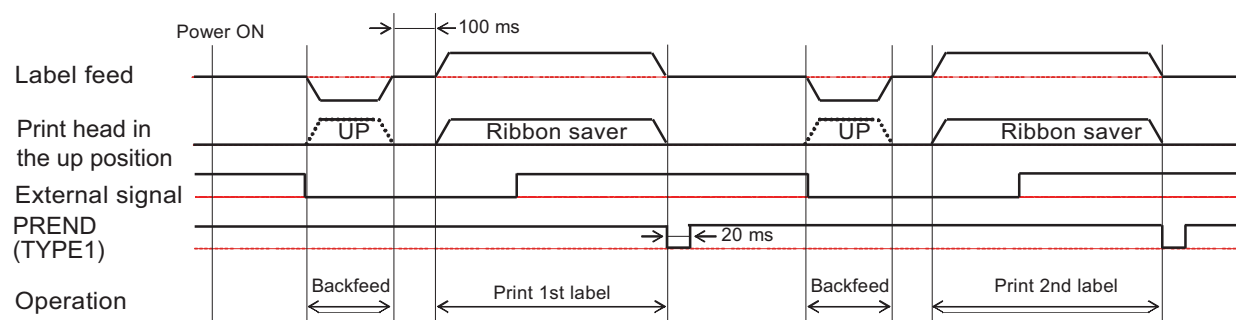
7.10.2 Ribbon Saver Timing Charts

Dispenser mode, backfeed after print and pulse input



- Normally the print head is in the down position during backfeed. However, the print head will be lifted up when the ribbon print position is not identified.

Dispenser mode, backfeed before print and pulse input

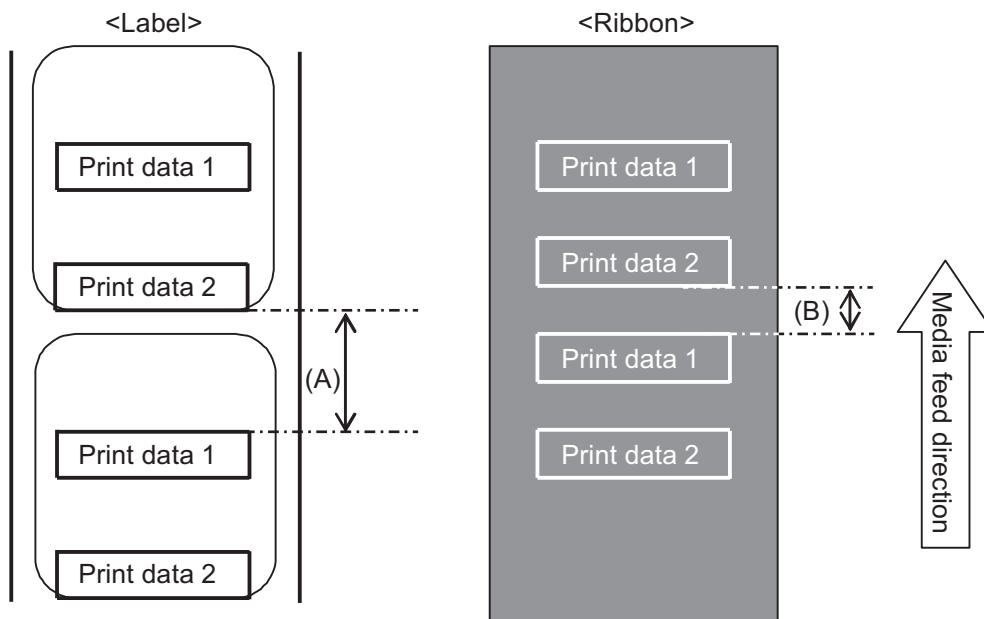


- Normally the print head is in the down position during backfeed. However, the print head will be lifted up when the ribbon print position is not identified.

7.10.3 Ribbon Saver Operation and Ribbon Consumption

When a gap exists in front of the label

The figure and table below show the minimum distance (A) from the top of the label to the print start position for each print speed required for the ribbon saver function. It also shows the consumption of the ribbon (B) when the ribbon saver is operating.



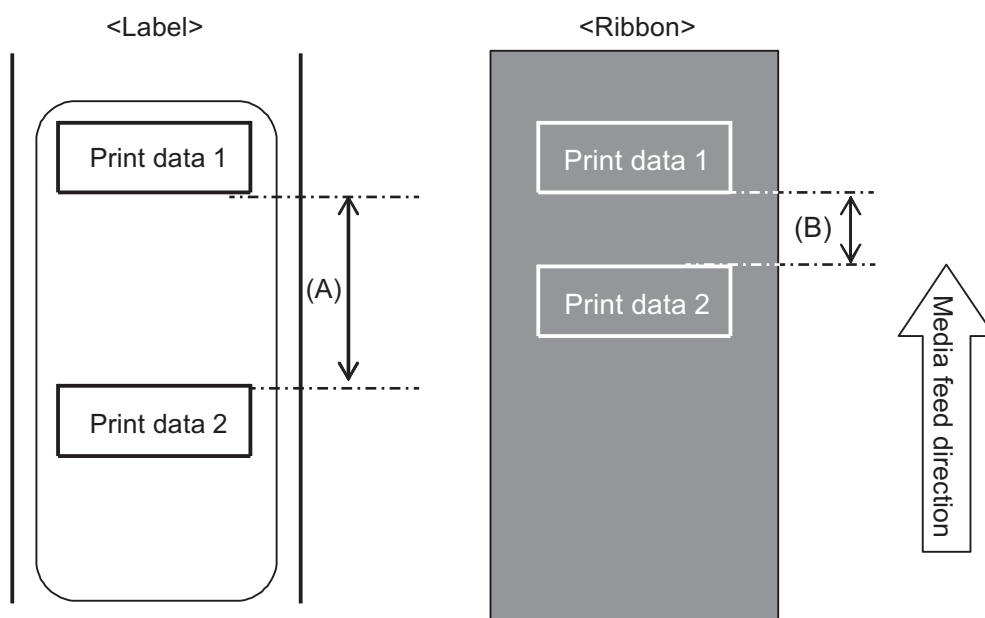
(unit: mm)

Print speed (inches/sec)	Distance (A)	Ribbon consumption (B)
2	11.0	6.5
3	12.0	7.5
4	13.0	8.8
5	14.0	9.9
6	16.0	10.5
7	16.0	11.0
8	18.0	11.5
9	19.0	12.0
10	21.0	12.5
11	22.0	13.0
12	24.0	13.5
13	26.0	14.5
14	27.0	15.0
15	29.0	16.0
16	31.0	16.5

The ribbon consumption might be different from the value in the above table depending on the ribbon condition.

When a gap exists in the print data

The figure and table below show the minimum distance (A) required from the end of printing to the next print start position. It also shows the consumption of the ribbon (B) when the ribbon saver is operating.



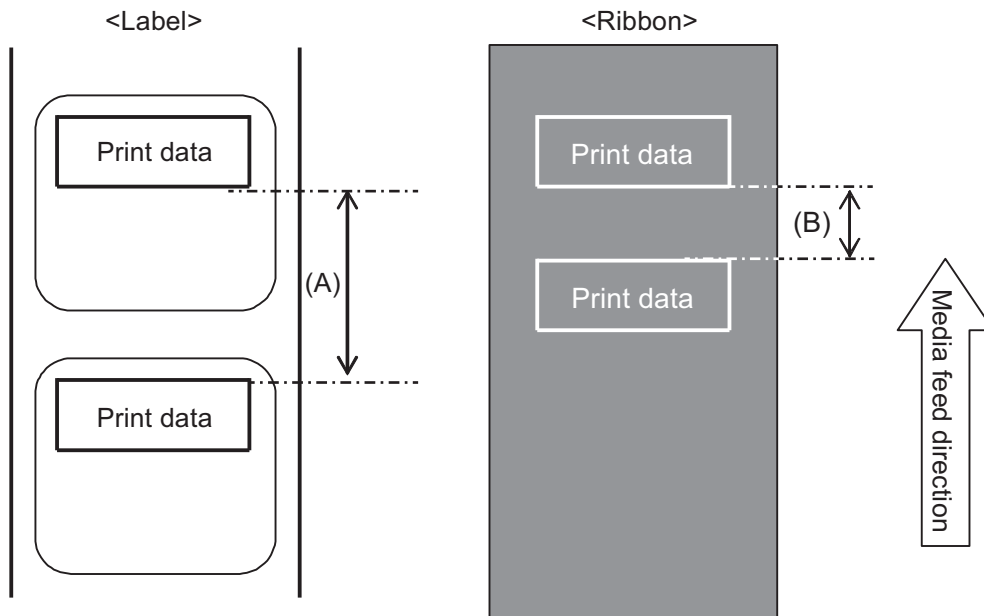
(unit: mm)

Print speed (inches/sec)	Distance (A)	Ribbon consumption (B)
2	11.0	9.5
3	12.0	10.0
4	13.0	10.5
5	14.0	11.0
6	16.0	12.0
7	16.0	13.5
8	18.0	15.0
9	19.0	15.0
10	21.0	15.5
11	22.0	16.0
12	24.0	17.5
13	26.0	19.0
14	27.0	20.0
15	29.0	22.0
16	31.0	26.0

The ribbon consumption might be different from the value in the above table depending on the ribbon condition.

When a gap exists in the back of the label

The figure and table below show the distance (A) from the end of printing to the next print start position with backfeed for printing. It also shows the consumption of the ribbon (B) when the ribbon saver is operating.



Condition

- (1) Print operation Backfeed
- (2) Setting Dispense distance 14 mm (0.55")
PITCH and OFFSET of OFFSET VOLUME should be set to 0.00,
PITCH OFFSET should be set to 0
- (3) Print position Vertical print position is V001

(unit: mm)

Print speed (inches/sec)	Distance (A)	Ribbon consumption (B)
2	4.0	2.5
3	4.0	2.5
4	4.0	2.5
5	4.0	2.5
6	4.0	2.5
7	4.0	2.5
8	4.0	2.5
9	4.0	3.0
10	4.0	3.0
11	4.0	3.5
12	6.0	3.5
13	8.0	5.5
14	9.0	7.5
15	11.0	9.0
16	13.0	11.0

The ribbon consumption might be different from the value in the above table depending on the ribbon condition.

7.10.4 Ribbon Specification for the Ribbon Saver

Ribbon width	39.5 mm or more
--------------	-----------------

Ribbon length	Guaranteed operation speed of ribbon saver
Up to 300 m roll (Under 69 mm in diameter)	2 to 12 inches (more than 15 mm of printing)
Up to 500 m roll (Under 82 mm in diameter)	2 to 12 inches (more than 20 mm of printing)
Up to 600 m roll (Under 108 mm in diameter)	2 to 6 inches (more than 30 mm of printing)

- Be sure to remove the used ribbon at the rewinder side and replace the paper core with a new one when using up one roll of ribbon.
- Be sure to perform the preliminary operation check because the lengths of ribbon mentioned above are calculated from mechanical structure and have a limitation according to the type of ribbon, operating environment and usage.

7.10.5 Label Specification for the Ribbon Saver

Label width		30 mm or more
Label pitch	Backfeed	25 mm or more
	No backfeed	60 mm or more

7.11 Printer Specifications

Specifications are subject to change without notice.

7.11.1 Hardware

Dimensions and Weight	
Width	245 mm (9.65")
Height	300 mm (11.81")
Depth	S84-ex: 408 mm (16.06") S86-ex: 463 mm (18.23")
Weight	S84-ex: Approximately 13.7 kg (30.2 lbs.) S86-ex: Approximately 15.1 kg (33.3 lbs.)
Power Supply	
Input Voltage	AC 100 V - 240 V \pm 10%
Frequency	50-60 Hz
Power Consumption	At peak: 180 VA / 180 W (Print ratio 30%) Standby: 30 VA / 25 W Input voltage condition: AC 115 V / 50 Hz
Processing	
CPU	32 Bit RISC-CPU 500 MHz
Flash ROM	48 MB (User area: 8 MB)
SDRAM	64 MB
Receive Buffer	Maximum: 2.95 MB Near full: 2 MB
External memory	SD card: Maximum 2 GB SDHC card: Minimum 4 GB - Maximum 32 GB USB flash memory: Maximum 32 GB
Operation	
LCD	Graphic LCD (Horizontal 128 dots X Vertical 64 dots) with backlight (white/orange switchable)
LED	STATUS: Blue/Red
Environmental Conditions (Without Media and Ribbon)	
Operating Temperature	-5 to 40 °C (23 to 104 °F)
Storage Temperature	-20 to 60 °C (-4 to 140 °F)
Operating Humidity	15 to 85% RH (Non-condensing)
Storage Humidity	15 to 90% RH (Non-condensing)

Print	
Print Method	Direct thermal and thermal transfer
Print Speed	S84-ex 203 dpi: 4 to 16 inches/sec (101.6 to 406.4 mm/sec) 305 dpi: 4 to 14 inches/sec (101.6 to 335.6 mm/sec) 609 dpi: 2 to 6 inches/sec (50.8 to 152.4 mm/sec) S86-ex 203 dpi: 4 to 14 inches/sec (101.6 to 335.6 mm/sec) 305 dpi: 4 to 12 inches/sec (101.6 to 304.8 mm/sec)
Resolution	S84-ex: 203 dpi (8 dots/mm) 305 dpi (12 dots/mm) 609 dpi (24 dots/mm) S86-ex: 203 dpi (8 dots/mm) 305 dpi (12 dots/mm)
Non-printable Area	Pitch direction (Excludes liner) Top: 1.5 mm (0.06"), Bottom: 1.5 mm (0.06") Width direction (Excludes liner) Left: 1.5 mm (0.06"), Right: 1.5 mm (0.06")
Printable Area	S84-ex 203 dpi: Length 2500 mm (98.42") x Width 104 mm (4.09") 305 dpi: Length 1500 mm (59.05") x Width 104 mm (4.09") 609 dpi: Length 400 mm (15.75") x Width 104 mm (4.09") S86-ex 203 dpi: Length 1249 mm (49.17") x Width 167.5 mm (6.59") 305 dpi: Length 1249 mm (49.17") x Width 167.5 mm (6.59")
Print Darkness	Darkness level: 1 to 10
Sensors	
I-mark (Reflective Type)	Sensitivity: Adjustable
Gap (Transmissive Type)	Position and sensitivity: Adjustable
Head Open	Fixed
Top Cover Open	Fixed
Media Sensor Assembly Open	Fixed
Label End Sensor	Detect with I-mark sensor
Ribbon End Sensor	Fixed
Ribbon Supply Sensor	Fixed

7.11.2 Ribbon and Media

Ribbon (Use genuine ribbon made by SATO.)		
Size	S84-ex	Width: 25 mm to 128 mm (0.98" to 5.04") Length: 450 m (1476.4 ft.) when width is less than 39.5 mm (1.55") 600 m (1968.5 ft.) when width is equal or more than 39.5 mm (1.55")
	S86-ex	Width: 59 mm to 177 mm (2.32" to 6.97") Length: 600 m (1968.5 ft.)
Wind Direction	Face-out/Face-in	
Roll Diameter	108 mm (4.25")	
Core Diameter	25.6 mm (1.01")	

Media (Use genuine media made by SATO.)			
Type		Media roll (Face-in wound/face-out wound), Fan-fold media	
Size			
Continuous Mode			
Pitch	S84-ex	203 dpi: 6 to 1249 mm (0.24" to 49.17") 305 dpi: 6 to 1500 mm (0.24" to 59.06") 609 dpi: 6 to 400 mm (0.24" to 15.75")	
	S86-ex	203 dpi: 6 to 1249 mm (0.24" to 49.17") 305 dpi: 6 to 1249 mm (0.24" to 49.17")	
(With Liner)	S84-ex	203 dpi: 9 to 1252 mm (0.35" to 49.29") 305 dpi: 9 to 1503 mm (0.35" to 59.17") 609 dpi: 9 to 403 mm (0.35" to 15.87")	
* There is a restriction with the speed for the small pitch label.	S86-ex	203 dpi: 9 to 1252 mm (0.35" to 49.29") 305 dpi: 9 to 1252 mm (0.35" to 49.29")	
Width	S84-ex	10 to 128 mm (0.39" to 5.04")	
	S86-ex	51 to 177 mm (2.01" to 6.97")	
(With Liner)	S84-ex	13 to 131 mm (0.51" to 5.16")	
	S86-ex	54 to 180 mm (2.13" to 7.09")	
Dispense Mode			
Pitch	Thermal transfer model: 10 to 356 mm (0.39" to 14.02") Direct thermal model: 15 to 356 mm (0.59" to 14.02")		
(With Liner)	Thermal transfer model: 13 to 359 mm (0.51" to 14.13") Direct thermal model: 18 to 359 mm (0.71" to 14.13")		
Width	S84-ex	10 to 128 mm (0.39" to 5.04")	
	S86-ex	51 to 177 mm (2.01" to 6.97")	
(With Liner)	S84-ex	13 to 131 mm (0.51" to 5.16")	
	S86-ex	54 to 180 mm (2.13" to 7.09")	

Media (Use genuine media made by SATO.)	
Thickness (Label and liner)	0.05 to 0.31 mm (0.002" to 0.012")

7.11.3 Interface

Interface	
Standard	USB Interface (Type B) LAN Interface RS-232C Interface IEEE1284 Interface External Signal Interface (EXT) SD card slot USB Interface (Type A)
Optional	Bluetooth Interface Wireless LAN Interface

7.11.4 Built-in Functions

Functions	
Built-in Functions	Status return Graphic Sequential number Form overlay External font registration Character modification Black/white inversion Ruled line Dump list (Hex dump mode) Format registration Outline font Outline modification Zero slash switching Unicode (UTF-8/UTF-16) switching Simple standalone Work shift setting mode XML print WEB browser printer setting (When wireless LAN is installed)

Functions	
Self-diagnosis Functions	Broken head element check Head open detection Paper end detection Ribbon end detection Ribbon near-end detection Test print Kanji data check Cover open detection Calendar check setting Sensor cover open detection Label near end signal receive and input from the applicator, and report output of label near end status through EXT
Adjustment Functions	Print Darkness Print Position Media Stop Position Buzzer Volume LCD Brightness
Protective Functions	Head overheating protection function Power supply temperature monitor function

7.11.5 Printer Languages

Printer Languages	
	SBPL SZPL SDPL

7.11.6 Fonts/Symbols/Barcodes

Fonts	
Bitmap Fonts	
U	9 dots H x 5 dots W
S	15 dots H x 8 dots W
M	20 dots H x 13 dots W
WB	30 dots H x 18 dots W
WL	52 dots H x 28 dots W
XU	9 dots H x 5 dots W
XS	17 dots H x 17 dots W
XM	24 dots H x 24 dots W
XB	48 dots H x 48 dots W
XL	48 dots H x 48 dots W
OCR-A	S84-ex/S86-ex 203 dpi: 22 dots H x 15 dots W S84-ex/S86-ex 305 dpi: 33 dots H x 22 dots W S84-ex 609 dpi: 66 dots H x 44 dots W
OCR-B	S84-ex/S86-ex 203 dpi: 24 dots H x 20 dots W S84-ex/S86-ex 305 dpi: 36 dots H x 30 dots W S84-ex 609 dpi: 72 dots H x 60 dots W
Simplified Chinese Characters (GB18030)	Mincho 16 dots H x 16 dots W 24 dots H x 24 dots W Gothic 24 dots H x 24 dots W
Traditional Chinese Characters (BIG5)	Mincho 24 dots H x 24 dots W
Korea Fonts (KSX1001)	Mincho 16 dots H x 16 dots W 24 dots H x 24 dots W
Scalable Fonts	
Rasterized Font	CG Times CG Triumvirate *Support Codepage 858, Bold/Italic
	SATO Gamma SATO Vica * Support WGL4
	Thai (CP874) Arabic
Outline Fonts	Alphanumeric, Symbols
Extended Fonts	Font downloaded data (Support 1 byte, 2 bytes character)

Barcodes	
1D Barcodes	UPC-A/UPC-E JAN/EAN-13/8 CODE39, CODE93, CODE128 GS1-128(UCC/EAN128) CODABAR(NW-7) ITF Industrial 2 of 5 Matrix 2 of 5 MSI POSTNET BOOKLAND Intelligent Mail Barcode (IMB) GS1 DataBar Omnidirectional GS1 DataBar Truncated GS1 DataBar Stacked GS1 DataBar Stacked Omnidirectional GS1 DataBar Limited GS1 DataBar Expanded GS1 DataBar Expanded Stacked
2D Codes	QR Code Micro QR Code Security QR Code PDF417 Micro PDF Maxi Code GS1 Data Matrix Data Matrix (ECC200)
Composite Symbols	EAN-13 Composite (CC-A/CC-B) EAN-8 Composite (CC-A/CC-B) UPC-A Composite (CC-A/CC-B) UPC-E Composite (CC-A/CC-B) GS1 DataBar Composite (CC-A/CC-B) GS1 DataBar Truncated Composite (CC-A/CC-B) GS1 DataBar Stacked Composite (CC-A/CC-B) GS1 DataBar Expanded Stacked Composite (CC-A/CC-B) GS1 DataBar Expanded Composite (CC-A/CC-B) GS1 DataBar Stacked Omnidirectional Composite (CC-A/CC-B) GS1 DataBar Limited Composite (CC-A/CC-B) GS1-128 Composite (CC-A/CC-B/CC-C)

Controls	
Rotation	Characters: 0°, 90°, 180°, 270° Barcode: Parallel 1 (0°), Parallel 2 (180°), Serial 1 (90°), Serial 2 (270°)
Barcode Ratio	1:2, 1:3, 2:5, Any ratio is available
Magnification	Bitmap font: Vertical 1 to 36, Horizontal 1 to 36 Barcode: 1 to 36

7.11.7 Options

Options	
	1) Wireless LAN interface kit 2) Bluetooth kit 3) Linerless (Only for S84-ex) 4) RFID (UHF) kit (Only for S84-ex) 5) Ribbon saver (Only for S84-ex)

7.11.8 Accessories

Accessories	
	1) AC power cord 2) Documentations (Quick Guide, Global Warranty Program leaflet, etc.) 3) 14pin conversion cable 4) Ribbon core

7.11.9 Standards

Standards	
Safety Standards	UL60950-1, CSA22.2 No.60950-1, EN60950-1, GB4943.1, K60950-1
EMC Standards	FCC15B Class A, ICES-003 Class A EN55022, EN55024, KN22, KN24 GB9254, GB17625.1 AS/NZS CISPR 22 EN 300 328
Environmental Standard RoHS	RoHS directive (six hazardous) restricts the use of six hazardous materials listed below. Hexavalent chromiumMax. 0.1% Lead and lead compoundsMax. 0.1% Mercury and mercury compoundsMax. 0.1% Cadmium and cadmium compoundsMax. 0.01% Polybrominated biphenyls (PBB)Max. 0.1% Polybrominated diphenyl ethers (PBDE)Max. 0.1%
Wireless LAN (2.45 GHz)	FCC 15B, FCC 15C R&TTE (EN300 328 V1.4:2003-04) (EN301 489 V1.4.1:2002-08) SRRC MIC RCM

7.12 Interface Specifications

For data communication with the host, this printer supports the following interfaces:
You can set various interface settings of the printer through the **Interface Mode** menu.

- USB (USB type B)
- LAN Ethernet
- RS-232C (DB 9 pins, female)
- IEEE1284 (Amphenol 36 pins)
- External signal (EXT) (DB 25 pins, female)
- Optional Bluetooth
- Optional Wireless LAN



CAUTION

Do not connect or disconnect the interface cables (or use a switch box) with power supplied to either the printer or the host. This may cause damage to the interface circuitry in the printer or host and is not covered by warranty.

Notes

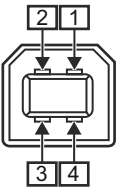
- Bluetooth and Wireless LAN are optional interfaces.
 - You cannot use the Wireless LAN interface and the USB interface at a time.
-

7.12.1 USB Interface

This interface complies with the USB2.0 standard.
Install the USB driver to the computer before use.

Basic Specifications	
Connector	USB Type B connector
Protocol	Status4, Status5
Power Supply	BUS Power through cable
Power Consumption	+5 V at 80 mA

Pin Assignments	
Pin No.	Description
1	VBus
2	-Data
3	+Data
4	GND

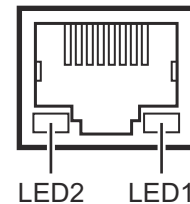


Cable Specifications	
Cable Connector	USB Type B connector
Cable Length	5 m (16.4 feet) or less

7.12.2 LAN Ethernet Interface

Basic Specifications	
Connector	RJ-45 Receptacle
Power Supply	Powered from the printer
Protocol	Status3 Status4 (Cyclic response mode) Status4 (ENQ response mode) Status5
IP Address	0.0.0.0 - 255.255.255.255 Initial: 192.168.1.1
Subnet Mask	0.0.0.0 - 255.255.255.255 Initial: 255.255.255.0
Gateway Address	0.0.0.0 - 255.255.255.255 Initial: 0.0.0.0

Link/Status LED		
LED	Color	Description
LED1	Green	LED lights up for 10 ms when packets are received. LED lights up when the printer established the LINK with Ethernet device.
LED2	Orange	LED lights off when the printer detected the connection to 10BASE-T.
		LED lights up when the printer detected the connection to 100BASE-TX.
		LED lights up when a cable is not connected.



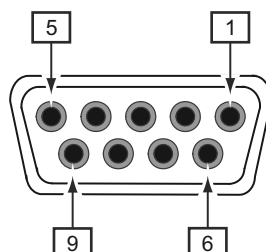
Cable Specifications	
Cable	10BASE-T/100BASE-TX Category 5
Cable Length	100 m (328 feet) or less

Software Specifications	
Supported Protocol	TCP/IP
Network Layer	ARP, IP, ICMP
Session Layer	TCP, UDP
Application Layer	LPD, FTP, TELNET, BOOTP, DHCP, HTTP, SNMP, SNTP

7.12.3 RS-232C Interface

This interface complies with the RS-232C standard.

Basic Specifications	
Asynchronous ASCII	Half-duplex communication Bi-directional communication
Data Transmission Rate	2400, 4800, 9600, 19200 (default), 38400, 57600, 115200 bps
Transmission Form	Start, b1, b2, b3, b4, b5, b6, b7, b8, Stop "b8" will be omitted if using 7 bit oriented.
Data Length	7 or 8 bit (default)
Stop Bit	1 (default) or 2 bit
Parity Bit	ODD, EVEN, NONE (default)
Codes Used	ASCII Character Codes: 7 bits, Graphics: 8 bits
Control Codes	STX (02H), ETX (03H), ACK (06H), NAK (15H)
Connector	DB-9 Female or equivalent
Signal Levels	High = +5 to +12 V, Low = -5 to -12 V
Protocol	Ready/Busy, XON/XOFF, Status3, Status4, Status5 (default) When compatible mode is ON: Status2



Connector Pin Specifications		
Pin No.	I/O	Description
1	-	Data Carrier Detect
2	Input	Receive Data
3	Output	Transmit Data
4	Output	Data Terminal Ready
5	Reference	Signal Ground
6	Input	Data Set Ready
7	Output	Request To Send
8	Input	Clear To Send
9	-	Not connected

Cable Specifications	
Cable Connector	DB-9 Male or equivalent
Cable Length	5 m (16.4 feet) or less

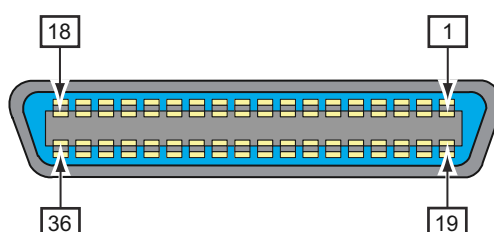
Notes

- When using the READY/BUSY control, make sure that the printer is in power on mode before you send the data from the host.
 - With communication protocols such as XON/XOFF, STATUS3, STATUS4 or STATUS5, a receive buffer full error will occur when the received data is more than the receive buffer size (2.95 MB). Send data that is less than 2.95 MB while monitoring the status of the printer.
 - A parity error will be detected if this error occurs after the reception of ESC+A.
-

7.12.4 IEEE1284 Interface

This interface complies with the IEEE1284 standard.

Basic Specifications	
Connector	Amphenol 36 pins, female
Signal Levels	High-level: +2.4 to +5.0 V Low-level: +0.0 to +0.4 V
Receive Mode	Single-item buffer, Multi-item buffer
Protocol	Status4, Status5



Connector Pin Specifications		
Pin No.	I/O	Description
1	Input	STROBE
2-9	Input	DATA 1 - DATA 8 DATA1: LSB DATA8: MSB
10	Output	ACK
11	Output	BUSY
12	Output	PAPER EMPTY/PAPER ERROR
13	Output	SELECT
14	Input	AUTO FEED
15	-	Not in use
16	-	LOGIC Ground
17	-	Frame Ground
18		+5 V
19	-	STROBE RETURN
20-27	-	DATA 1 - DATA 8 RETURN
28	-	ACK RETURN
29	-	BUSY RETURN
30	-	PAPER EMPTY RETURN

Connector Pin Specifications		
Pin No.	I/O	Description
31	Input	INITIALIZE
32	Output	FAULT
33-35	-	Not in use
36	Input	SELECT INPUT

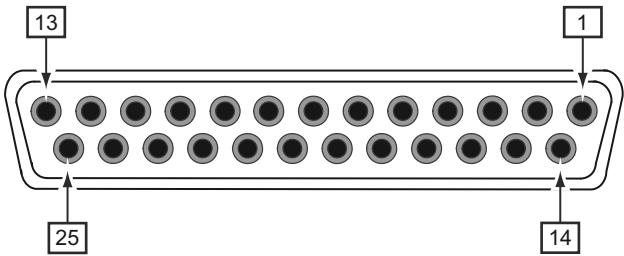
Cable Specifications	
Cable Connector	Amphenol 36 pins, male
Cable Length	1.5 m (5 feet) or less

7.12.5 External Signal Interface (EXT)

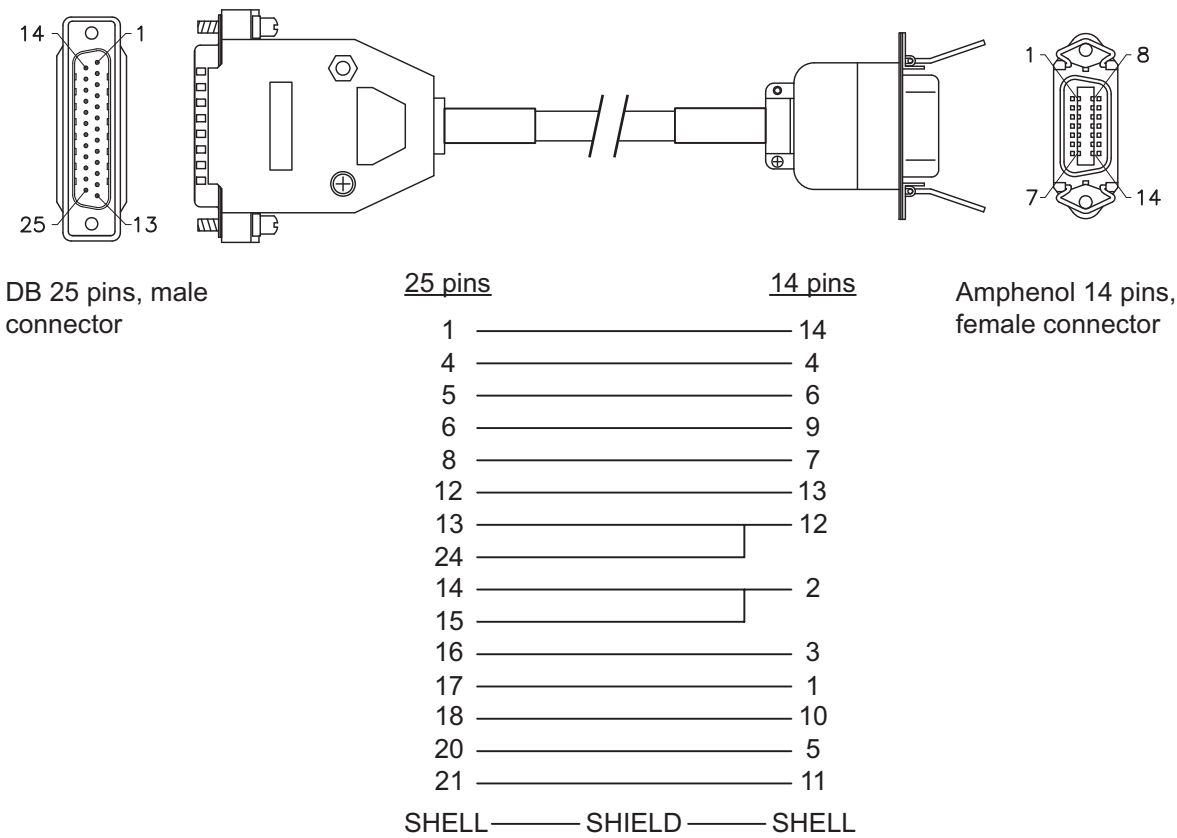
This interface is designed to connect the printer with other peripherals.

Basic Specifications	
Connector	DB 25 pins, female Supplied with 14 pins conversion cable (Amphenol 14 pins, female)
Signal Levels	High-level: +4.2 to +5.0 V Low-level: +0.0 to +0.7 V

DB 25 pins, female connector (printer)



Wiring chart of the 14 pins conversion cable



Connector Pin Specifications			
Pin No.		I/O	Description
(25 pins)	(14 pins)		
1	14	-	Frame Ground
2	-	-	Vcc +5 V
3	-	-	-
4	4	Output	Machine Error: Outputs a low signal when an error such as the head open error is detected.
5	6	Output	Print end signal (PREND): Outputs a signal when the media print is completed.
6	9	Output	Online*3: Outputs a low signal when the printer is in offline mode.
7	-	Input*2	Label Near End: Printer received a label near end signal when a low signal is detected.
8	7	Input*2	Reprint signal (PRIN2): Prints the same media again when a low signal is detected.
9	-	-	-
10	-	-	-
11	-	-	OUT_COM: Ground of peripherals
12	13	-	Vcc +5 V
13	12	-	+24 V \pm 10%
14	2	-	GND: Reference Signal Ground
15	2	-	OUT_COM: Ground of peripherals
16	3	Output	Ribbon End: Outputs a low signal when the ribbon end is detected.
17	1	Output	Paper End: Outputs a low signal when the paper end is detected.
18	10	Output	Ribbon Near End: Outputs a high signal when the ribbon near end is detected.
19	-	-	-
20	5	Input*2	Print start signal (PRIN): Prints one media when a low signal is detected.
21	11	Input*2	Label Feed: Feeds one media when a low signal is detected.
22	-	-	-
23	-	-	-
24	13	Input	IN_COM*1: Power supply from peripherals
25	-	-	GND: Reference Signal Ground

Notes

- You can set the external signal type (TYPE1 to TYPE4) for PREND output signal of No. 5 pin. Refer to the **EXTERNAL SIGNAL** screen of the **Advanced Mode** menu for details.
- You can set the pin number for input and output through the **INPUT SIGNAL/OUTPUT SIGNAL** screen of the **Advanced Mode** menu.

^{*1}When using the 14 pins conversion cable, do not connect the power pin to [IN_COM] pin. The [IN COM] pin is connected to 5V in cable.

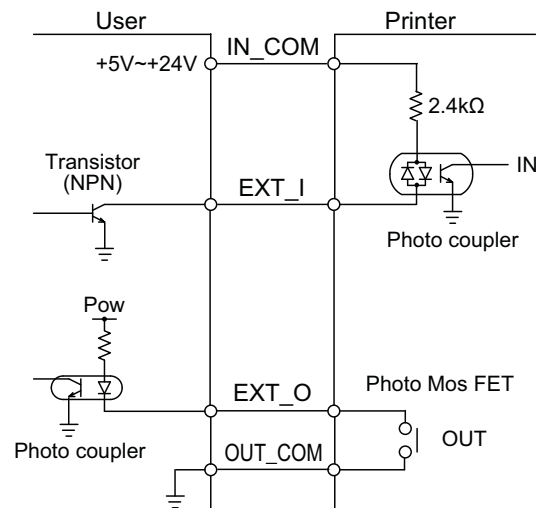
^{*2}These input signal terminals can be connected to the open collector input devices.

^{*3}This is online output signal when MODE2 is selected in the EXT 9PIN SELECT screen of the service mode. The signal outputs the status of the remaining print existing when MODE1 is selected.

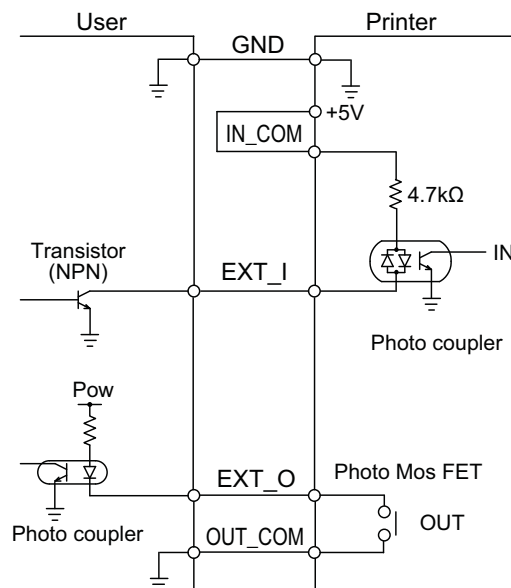
Input/Output circuit diagram of 25 pins external signal interface (DB 25 pins, female terminal)

When the output from the user is NPN transistor output

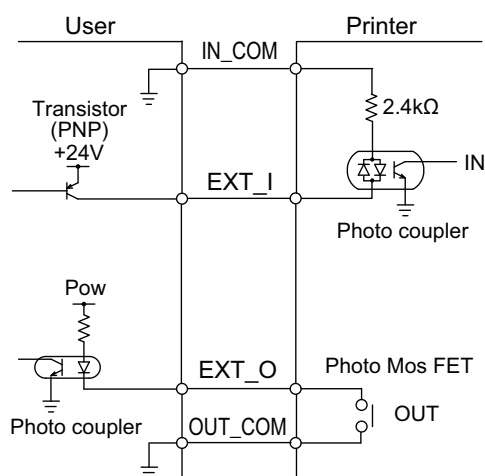
[Power is supplied from the user]



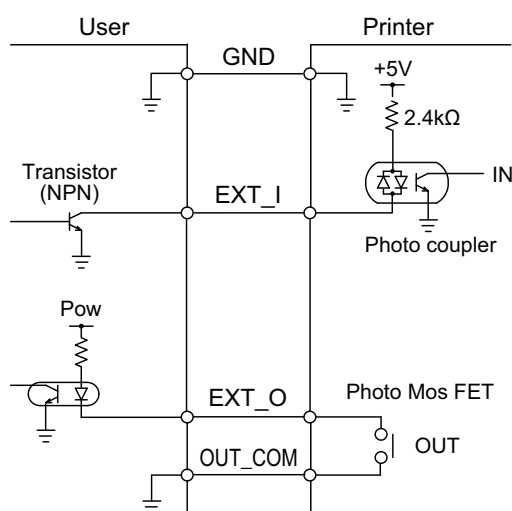
[Power is supplied from the printer]



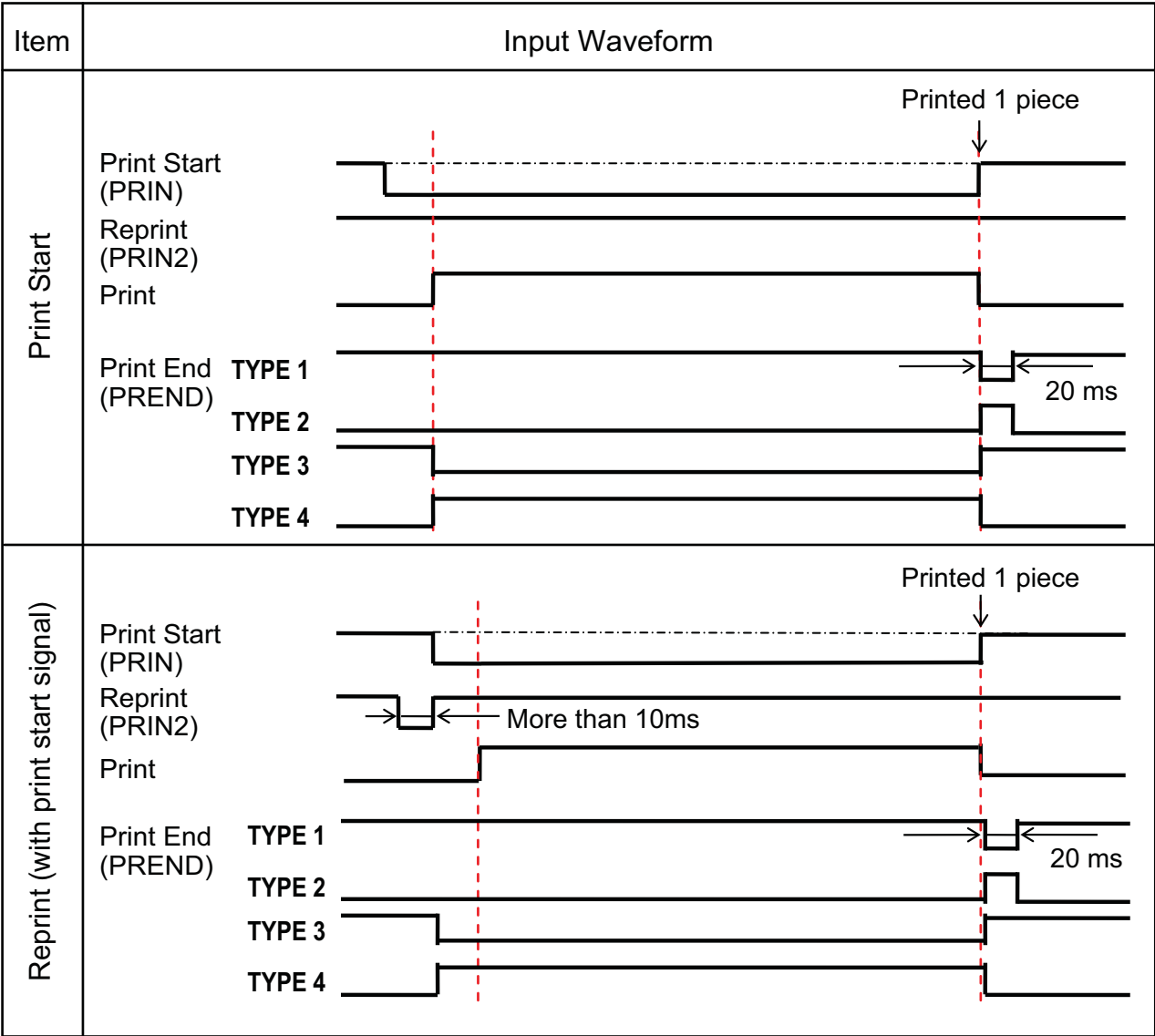
When the output from the user is PNP transistor output



Input/Output circuit diagram of 14 pins external signal interface (Amphenol 14 pins, female connector)



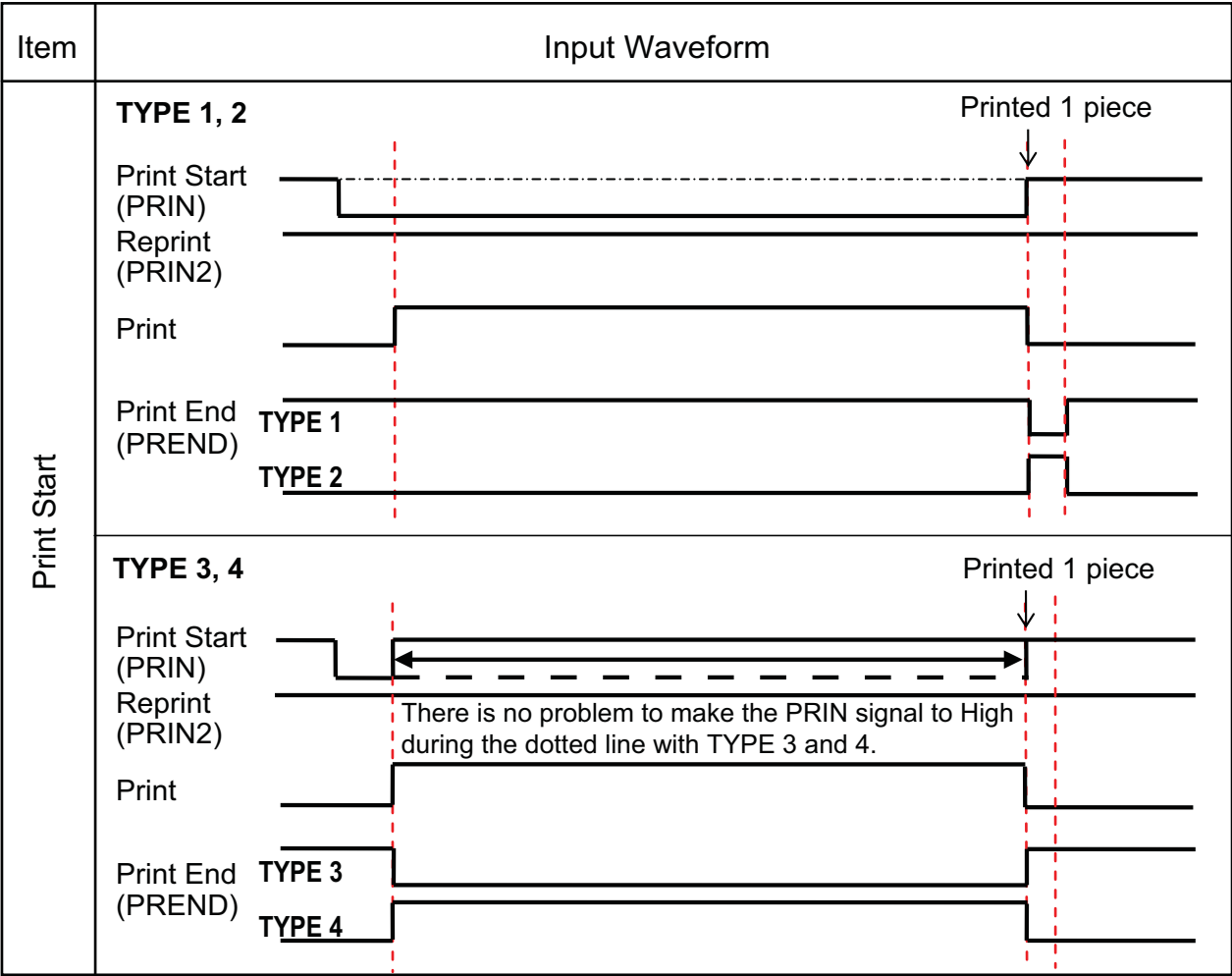
Timing Chart of the EXT Input Signal

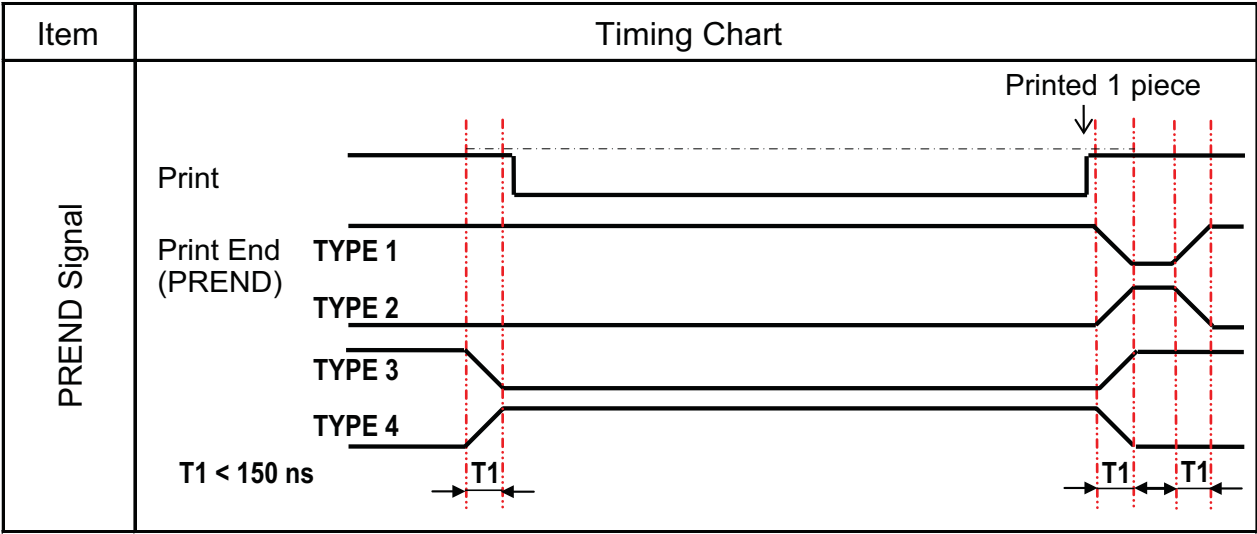


Supplementary explanation

- Keep the print start signal (PRIN) to “Low” until print end signal (PREND) is output. Refer to the below [Maintaining the Print Start Signal \(PRIN\)](#) timing chart.
- Keep the output reprint signal (PRIN2) for more than 10 ms. When signal is output for shorter than 10 ms, and reprint signal is not acknowledged, the printer does not perform reprinting.

Maintaining the Print Start Signal (PRIN)

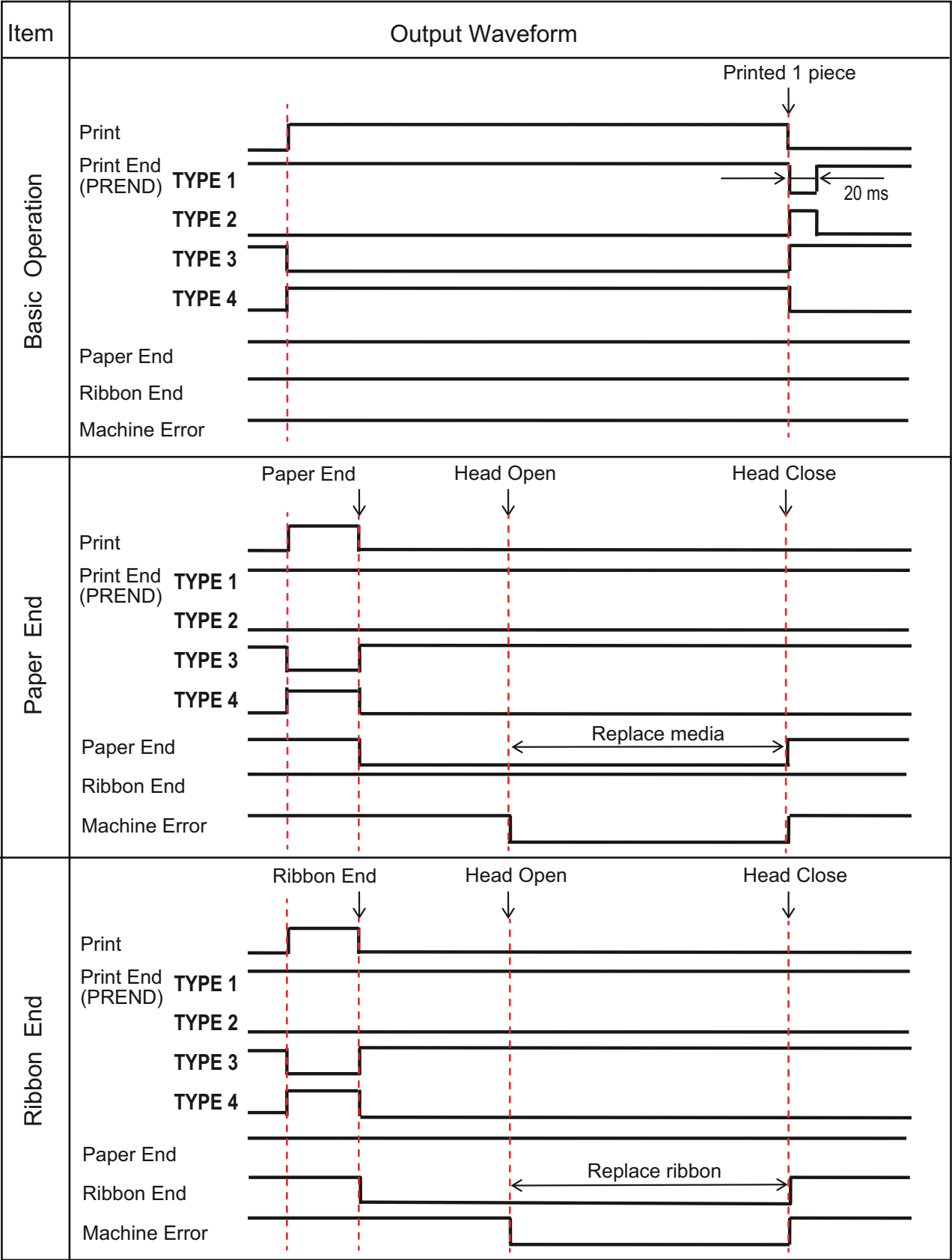


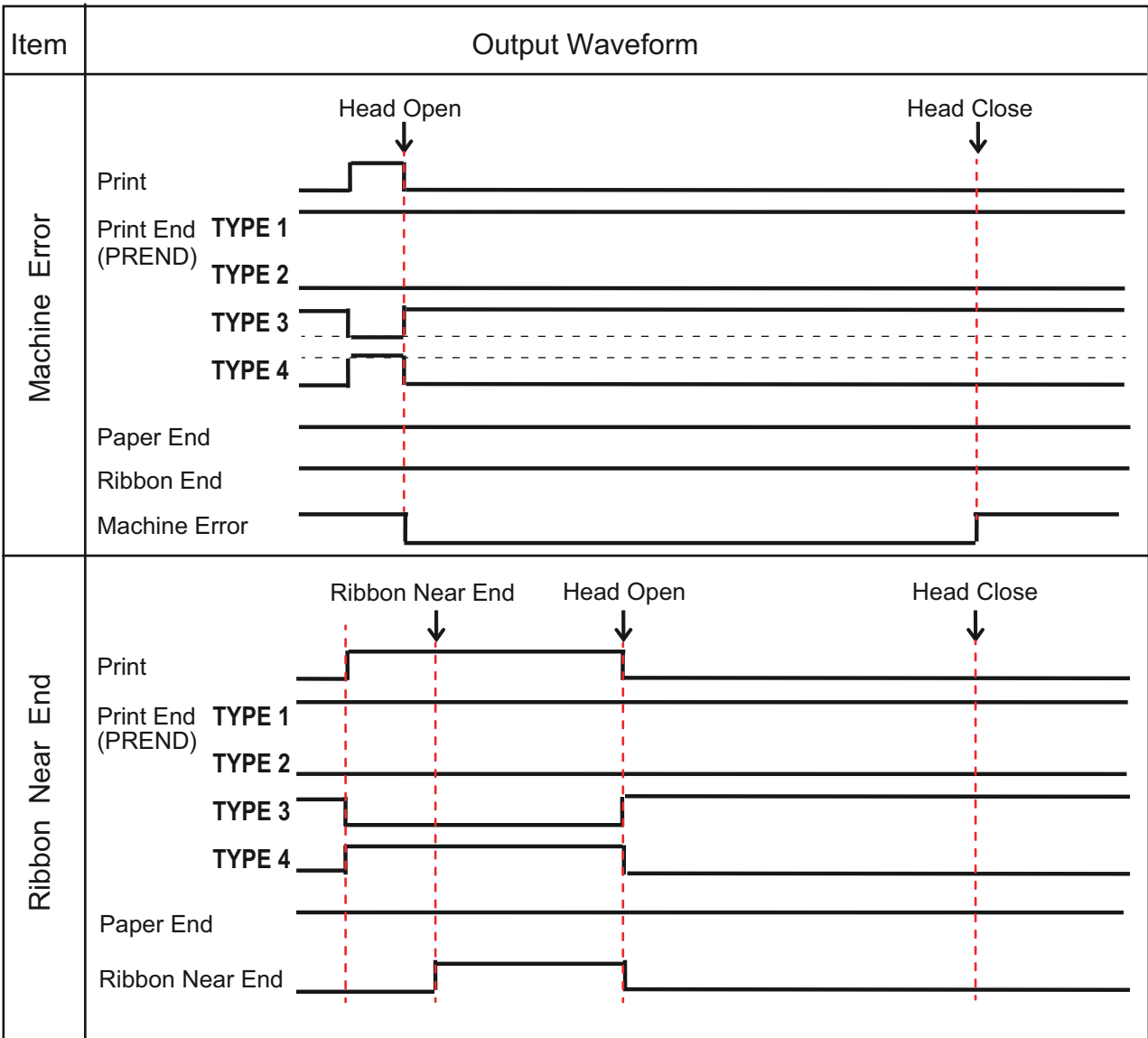


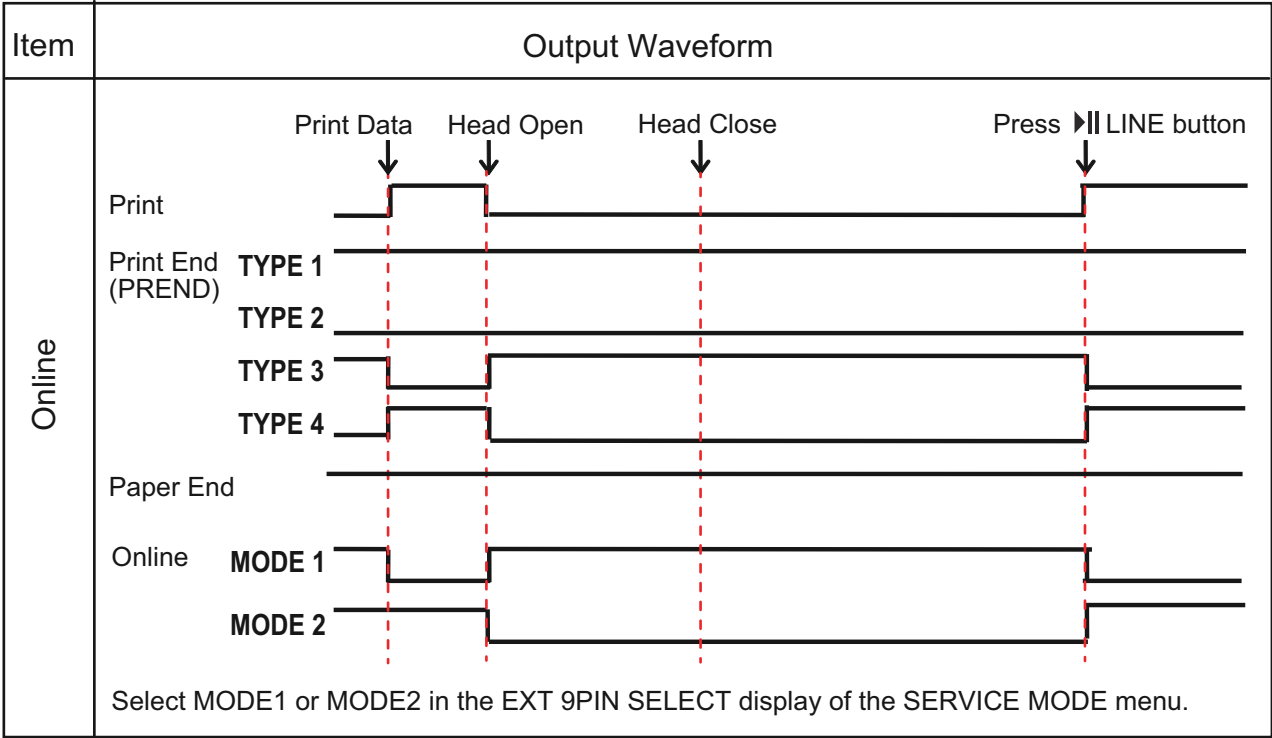
Rise or fall time (T1) of PREND signal is less than 150 ns. You have to consider the time when output the signal from the connected devices.

- When the print start signal and reprint signal are output simultaneously, the print start signal is enabled and the printer does not perform reprinting.
- The reprint signal is valid only from the time of the print operation end (QTY=0) until the next print data reception. Other than that, the printer does not perform reprinting.

Timing Chart of the EXT Output Signal







7.12.6 Bluetooth Interface

This interface complies with the Bluetooth Ver. 2.0+EDR standard.

Basic Specifications	
Signal Level	Class 2
Communication Distance	5 m (16.4 feet)
Profile	Serial Port Profile
Security Level	Level 1 No authentication (default) Level 2-1 PIN code authentication, service level Level 2-2 PIN code authentication, service level Level 3 PIN code authentication, link level
PIN Code	1 to 16 characters consisting of ASCII code (20H, 21H, 23H to 7EH)
Disconnect Timeout (LMP layer)	60 seconds

7.12.7 Wireless LAN Interface

This interface complies with the IEEE802.11b/g/n standard.



CAUTION

Before using wireless LAN near medical devices and facilities, consult your system administrator.

Basic Specifications	
Protocol	Status3, Status4, Status5
IP version	IPv4
IP Address	IPv4: 0.0.0.0 - 255.255.255.255 Initial: 192.168.1.1
Subnet Mask	IPv4: 0.0.0.0 - 255.255.255.255 Initial: 255.255.255.0
Gateway Address	IPv4: 0.0.0.0 - 255.255.255.255 Initial: 192.168.1.2
Data Transfer Method	<div> 802.11n: max 135 Mbps 802.11b: max 11 Mbps 802.11g: max 54 Mbps </div> <hr/> Note These are the logical values based on the wireless LAN specifications and are not the actual data transfer speeds.
Communication Distance	Indoor: max 100 m Outdoor: max 240 m Communication distance depends on environment.
Frequency Band	2.4 GHz (2.412 to 2.485 GHz)
Communication Channel	The number of channels you can set varies depending on the region where you use the printer.
SSID	Any alphanumeric character (maximum 32) Default: SATO_PRINTER
Authentication	Open System Shared Key WPA/WPA2 Perform the RADIUS server authentication using 802.1x (EAP-TLS, LEAP, EAP-TTLS, EAP-PEAP, EAP-FAST protocol)
Encryption	None WEP (64 bits/128 bits) TKIP (WPA-PSK/WPA2-PSK, WPA-802.1x/WPA2-802.1x authentication) AES (WPA-PSK/WPA2-PSK, WPA-802.1x/WPA2-802.1x authentication)

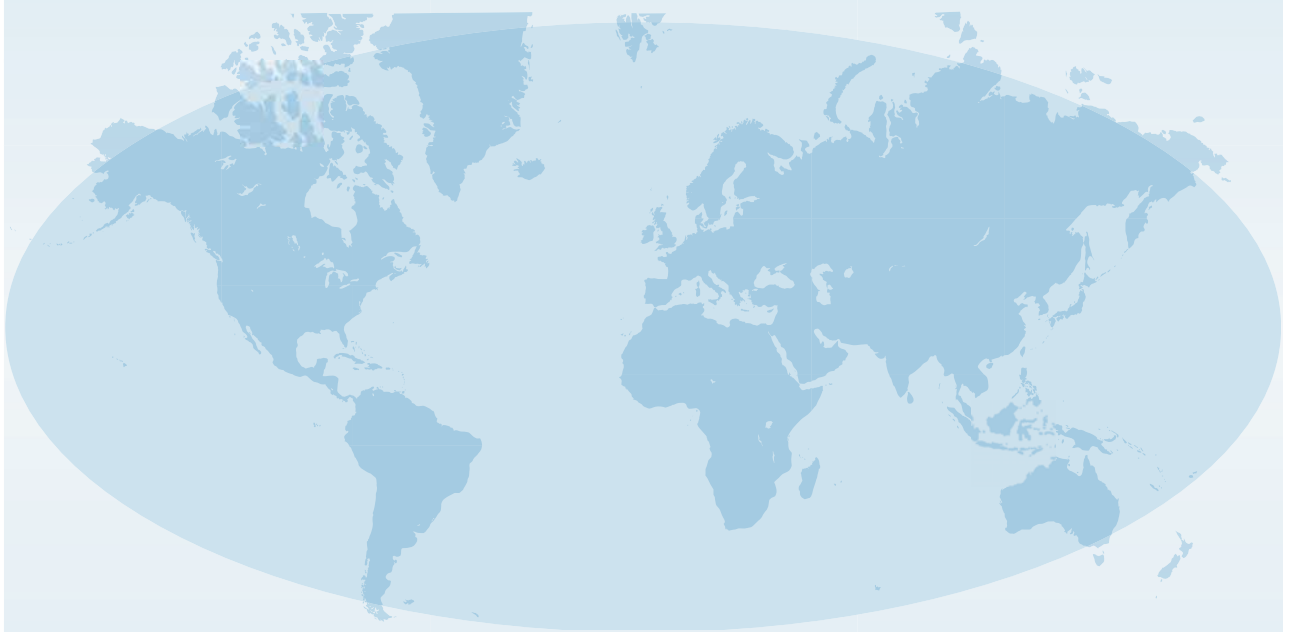
Basic Specifications

Communication Mode	Infrastructure Ad Hoc *In IEEE802.11n, only Infrastructure mode is available.
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Software Specifications

Supported Protocol	TCP/IP
Network Layer	ARP, IP, ICMP
Session Layer	TCP, UDP
Application Layer	LPD, FTP, BOOTP, DHCP, HTTP

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Extensive contact information for worldwide SATO operations can be found on the Internet at **www.satoworldwide.com**

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