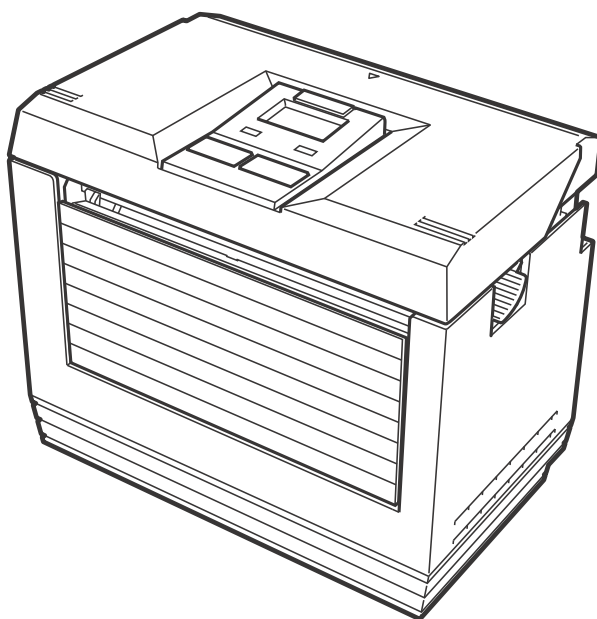# SATO

Operator Manual

For printer model:

CW408

Read this Operator Manual before using this product.
Keep this document available for future reference.

NOTE:

The printer complies with the requirements in Part 15 of FCC Rules for a Class B Computing Device. Operating the printer in a residential area may cause unacceptable interference to radio and TV reception. If the interference is unacceptable, you can reposition the equipment, which may improve reception.

Be sure to ask your SATO representatives about our maintenance contracts to ensure peace of mind during your usage of SATO products.

Please visit our SATO home page at www.satoworldwide.com for extensive contact information about our local office nearest you.

Safety Precautions

Please read the following information carefully before installing and using the printer.

Pictographic Symbols

This operator manual and the printer labels use a variety of pictographic symbols to facilitate safe and correct use of the printer and to prevent injury to others and property damage. The symbols and meanings for them are given below. Be sure to understand these symbols well before reading the main text.

⚠ Warning	Ignoring the instructions marked by this symbol and erroneously operating the printer could result in death or serious injury.
⚠ Caution	Ignoring the instructions marked by this symbol and erroneously operating the printer could result in injury or property damage.

Example Pictographs

The △ pictograph means "Caution is required." A specific warning symbol is contained inside this pictograph (The symbol at left is for electric shock).

The ⊘ pictograph means "Should not be done." What is specifically prohibited is contained in or near the pictograph (The symbol at left means "Disassembly prohibited").

The ● pictograph means "Must be done." What is specifically to be done is contained in the pictograph (The symbol at left means "Unplug the power cord from the outlet").

⚠ Warning

Do not set on an unstable area

- Do not set on an unstable area, such as a wobbly table or slanted area or an area subject to strong vibration. If the printer falls off or topples over, it could injure someone.

Do not place containers full of water or other liquid on the printer

- Do not place flower vases, cups, or other containers holding liquids, such as water or chemicals, or small metal objects near the printer. If they are spilled and get inside the printer, immediately turn off the power switch, unplug the power cord from the outlet, and contact your SATO reseller or technical support center. Using the printer in this condition could cause a fire or electric shock.

Do not put objects inside the printer

- Do not insert or drop in metal or burnable objects inside the printer's openings (cable outlets, etc.). If foreign objects do get inside the printer, immediately turn off the power switch, unplug the power cord from the outlet, and contact your SATO reseller or technical support center. Using the printer in this condition could cause a fire or electric shock.

Do not use other than the specified voltage

- Do not use other than the specified voltage. Doing so could result in fire or electric shock.

Handling of the power cord

- Do not damage, break, or modify the power cord. Also, do not place heavy objects on the power cord, heat it, or pull it because doing so could damage 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 modify, excessively bend, twist, or pull the power cord. Using the power cord in such a condition could cause a fire or electric shock.

When the printer has been dropped or broken

- If the printer is dropped or broken, immediately turn off the power switch, unplug the power cord from the outlet, and 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 abnormal about it

- Continuing to use the printer in the event something is abnormal about it, such as smoke or unusual smells coming from it, could result in fire or electric shock. Immediately turn off the power switch, unplug the power cord from the outlet, and contact your SATO reseller or technical support center for repairs. It is dangerous for the customer to try to repair it, so absolutely do not attempt repairs on your own.

Do not disassemble the printer

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

Safety Precautions

⚠ Warning		
Regarding the cutter • Do not touch the cutter with your hands or do not put something into the cutter. Doing so could result in an injury.	**Using the head cleaning fluid** • Use of flame or heat around the head cleaning fluid is prohibited. Absolutely do not heat it or subject it to flames. • Keep the fluid out of reach of children to prevent them from accidentally drinking it. If the fluid is drunk, immediately consult with a physician.	

⚠ Caution		
Do not place in areas with high humidity • Do not place the printer in areas with high humidity or where condensation forms. If condensation forms, immediately turn off the power switch and do not use the printer until it dries. Using the printer while condensation is on it could result in electric shock. **Carrying the Printer** • When moving the printer, always unplug the power cord from the outlet and check to make sure all external wires are disconnected before moving it. Moving the printer with the wires still connected could damage the cords or connecting wires and result in a fire or electrical shock. **Power supply** • Do not operate the power switch or plug in/ unplug the power cord with wet hands. Doing so could result in electric shock.	**Power cord** • Keep the power cord away from hot devices. Getting the power cord close to hot devices could cause the cord's covering to melt and cause a fire or electrical shock. • When unplugging the power cord from the outlet, be sure to hold it by the plug. Pulling it by the cord could expose or break the core wires and cause a fire or electric shock. • The power cord set that comes with the printer is especially made 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 the top cover does not slip off and drop.	**Print head** • The print head is hot after printing. Be careful not to get burned when replacing media or cleaning immediately after printing. • Touching the edge of the print head immediately after printing could result in injury. Use caution when replacing the media or cleaning the print head. • You should not replace the print head without having received the proper training. **Loading media** • When loading 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, unplug the power cord from the outlet to maintain safety. **During maintenance and cleaning** • When maintaining and cleaning the printer, unplug 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 CW408 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 result in poor print quality. This may also cause malfunction and shorten 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 malfunction and shorten the life span of the printer.

Keep the printer out of high temperature and humidity.

Avoid locations subject to extreme or rapid 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 poor 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.

Provide a stable source of electricity to the printer.

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

TABLE OF CONTENTS

Table of Contents

1

INTRODUCTION

Thank you for your investment in this SATO printer product.

This operators manual contains the basic information about the installation, setup, configuration, operation and maintenance of the printer.
A total of eight topics are covered herein, and they are organized as follows:

Section 1: Introduction
Section 2: Installation
Section 3: Operation and Configuration
Section 4: Cleaning and Maintenance
Section 5: Troubleshooting
Section 6: Basic Specifications
Section 7: Interface Specifications
Section 8: Appendix

It is recommended that you read carefully and become familiar with each section before installing and maintaining the printer. Refer to the **Table of Contents** at the front of this manual to search for the relevant information needed. All page numbers in this manual consist of a section number followed by the page number within the stated section.

This section assists you in unpacking the printer from the shipping container. You will also be guided through a familiarization tour of the main parts and controls.
The following information is provided herein:

• Features of the Printer
• Unpacking
• Parts Identification

1.1 FEATURES OF THE PRINTER

SATO CW408 is a 4 inch, direct thermal, compact desktop printer. It has a maximum print speed of 6 inches/second and a 32-bit RISC CPU with 8 MB flash memory.
The CW408 printer is specifically designed for ticketing applications.
The key features of the CW408 printer are:

- Compact body that can be easily installed in small spaces.

- Bright and clear OLED display.

- Easy media loading with auto feed function to prevent wasting the first piece of media.

- Top cover designed for easy maintenance.

- Tool-less changing of print head and platen roller for easier maintenance.

- Cutter and dispenser printer options available.

- Standard USB and LAN interfaces.

1.2 UNPACKING

When unpacking the printer, take note of the following:

1. The box should stay right-side up.
   Lift the printer out of the box carefully.

2. Remove all the packaging from the printer.

3. Remove the accessory items from their packaging.

4. Set the printer on a solid, flat surface. Inspect the shipping container and printer for any signs of damage that may have occurred during shipping. Please note that SATO is not liable for any damage sustained during the shipping process.

Notes
- If the printer has been stored in the cold, allow it to reach room temperature before setting the power to on.
- Do not discard the original packaging box and cushioning material after installing the printer. They may be needed in future, if the printer needs to be shipped for repairs.

1.2.1 Included Accessories

After unpacking the printer, verify that you have the following materials:

Quick Guide   Global Warranty   AC power cord*
Program leaflet
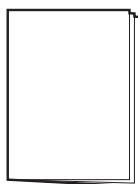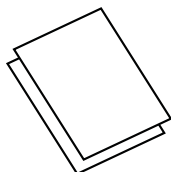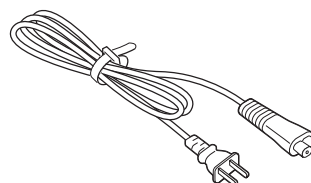
* The shape of the power plug may vary, depending on the location where it was purchased.

1.3 PARTS IDENTIFICATION

Front View
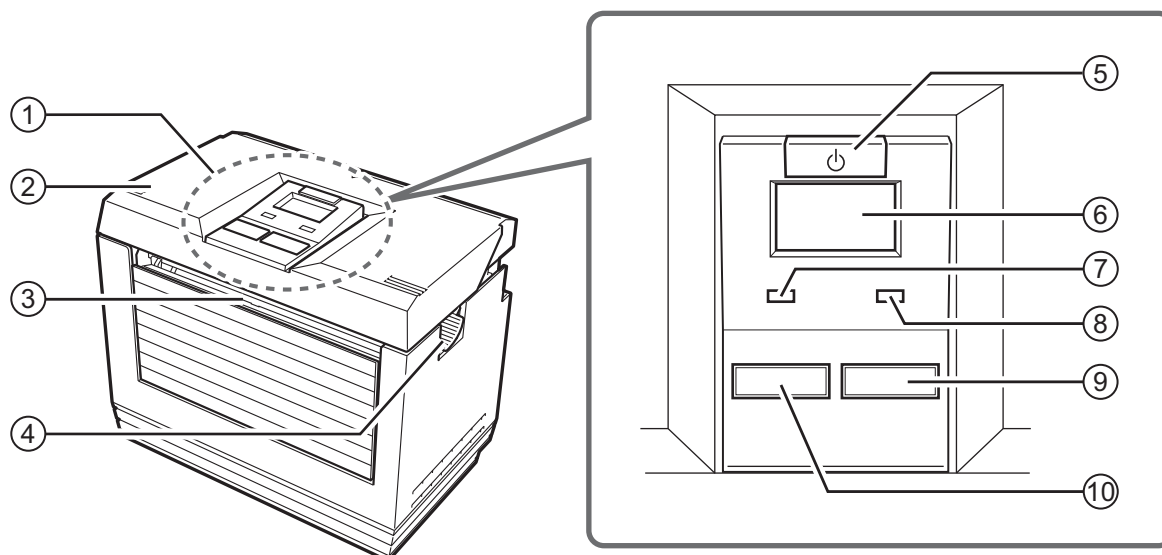
① **Operator panel**

It consists of three contact buttons, two LED indicators (green and red) and an OLED display.

② **Top cover**

Open this cover to access the media path of printer.

③ **Media discharge outlet**

Opening for media output.

④ **Cover open latch**

Press this latch on the right side of the printer to open the Top cover of the printer.

⑤ ⏻ **Power button**

Press this button to set the power to on or off.

⑥ **Display panel**

The OLED display indicates the current status of the printer.

⑦ **ONLINE indicator**

The LED lights green when the printer is online and blinks green when the printer is offline.

⑧ **ERROR indicator**

The LED lights or blinks red when an error is detected by the printer.

⑨ **FEED button**

Press this button in offline mode to feed a piece of media.

When printer is in various mode settings:

Press this button to confirm the selected item or value.

⑩ **LINE button**

Press this button to select the printer status (online/ offline) or to start/ pause a print job.

When printer is in various mode settings:

Press this button to select the item or change the value.

1.3 PARTS IDENTIFICATION (cont'd)

Back View
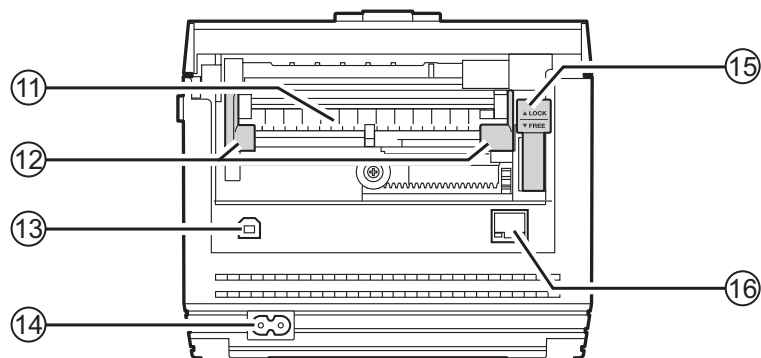
⑪ **Media feed inlet**

An opening to feed fan-fold media or media roll to the printer.

⑫ **Media guide**

A guide for the media to feed properly. Set to meet the size of the media used.

⑬ **USB connector**

To connect printer to the host computer using the USB interface.

⑭ **AC input terminal**

Supplies power to the printer through the inserted power cord.

⑮ **Media guide lever**

Pull out the lever to unlock the media guide for adjustment. Push back the lever to lock the media guide in desired position.

⑯ **LAN connector**

To connect printer to the host computer using LAN interface.

1.2 PARTS IDENTIFICATION (cont'd)

Internal View with Top Cover Open
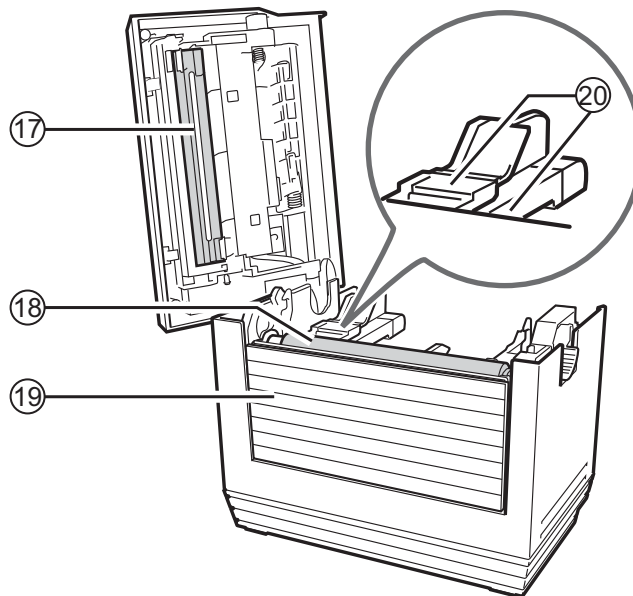
⑰ **Print head**

This component is used to print on the media. Perform maintenance at regular intervals.

⑱ **Platen roller**

This roller feeds the media. Perform maintenance at regular intervals.

⑲ **Optional device compartment**

Used to install optional cutter or dispenser unit.

⑳ **Media guide and I-mark/ Gap sensor**

A guide for the media to feed properly.

Detects the I-mark of the media or gap between labels.

1.2 PARTS IDENTIFICATION (cont'd)

Printers with Options Installed

Dispenser unit
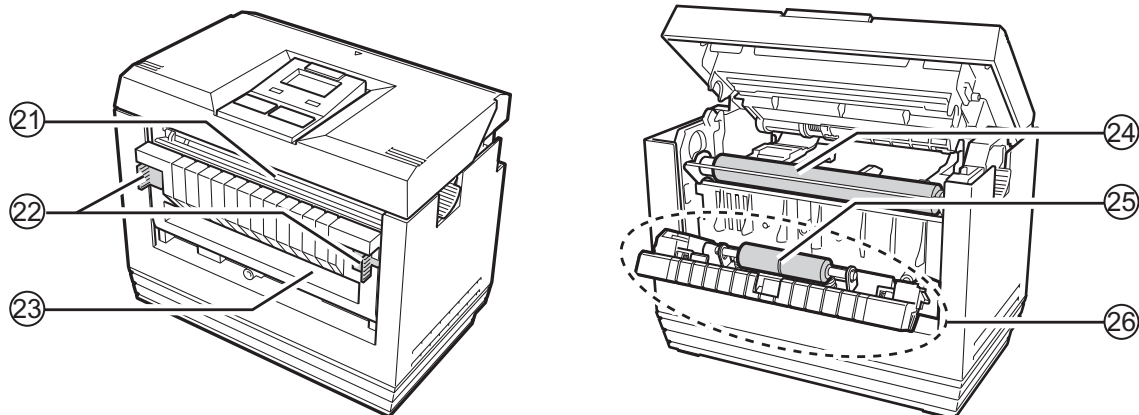
Cutter unit

Media roll holder

㉑ **Media discharge outlet**

Opening for media output.

㉒ **Dispenser unit open latches**

Push the latches on two sides inwards to open the dispenser bracket.

㉓ **Liner discharge outlet**

Opening for label liner output.

㉔ **Platen roller**

This roller feeds the media. Perform maintenance at regular intervals.

㉕ **Dispenser roller**

This roller feeds the label liner out of the printer.

㉖ **Dispenser unit**

㉗ **Cutter unit**

㉘ **Media roll holder**

2

INSTALLATION

This section assists you in connecting the printer and installing the consumable media in the printer.

The following information is provided:

- 2.1 Site Location
- 2.2 Connections
- 2.3 Media Selection
- 2.4 How to Load the Media

2.1 SITE LOCATION

Consider the following when setting up the printer:
- Put the printer on a solid flat surface with sufficient space.

- Make sure that there is sufficient space above the printer for you to open the top cover.

Dimensions of printer with top cover open

290 mm
(11.4")

112 mm
(4.4")

178 mm
(7.0")
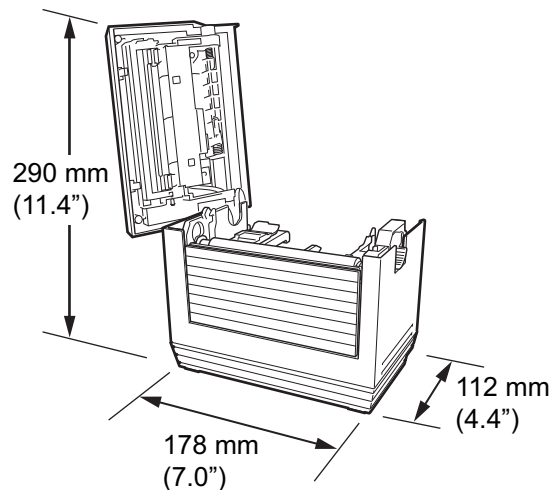
Spacing required to install
fan-fold media
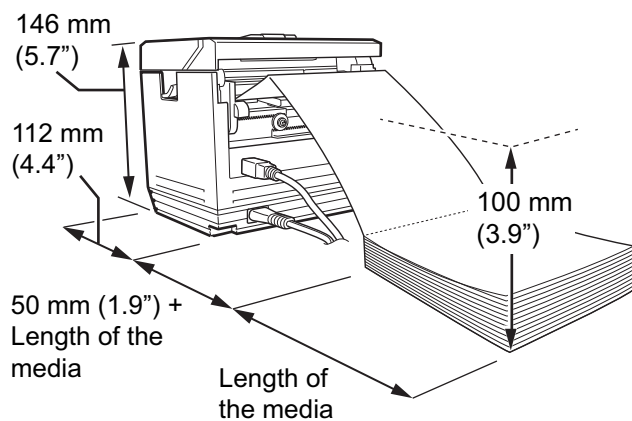
Spacing required to install optional
media roll holder
(roll with the maximum diameter)

146 mm
(5.7")

112 mm
(4.4")

100 mm
(3.9")

50 mm (1.9") +
Length of the
media

Length of
the media

112 mm
(4.4")

182 mm (7.2")

148 mm
(5.8")
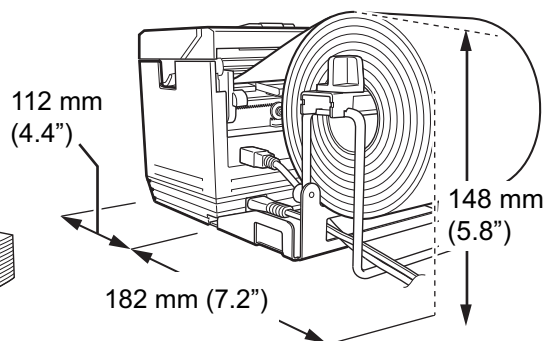
- Put the printer away from hazardous materials or dusty environments.

- Put the printer within operational distance of the host computer, within the interface cable specifications.

2.2 CONNECTIONS

This section explains the power cord and interface cable connection procedures.

⚠ **Caution**

Do not connect or disconnect the interface cables (or use a switch box) with power of the host or printer is set to on. This can cause damage to the interface circuitry in the printer/ host. The warranty does not cover this damage.

2.2.1 Standard Interface Connection

CW408 printer has two types of interfaces to perform data communication with the host.

1) USB interface

2) LAN interface

Connect **only one type** of interface cable from the printer to the host computer. Use the cable that is compatible with the standard of the interface board as stated in **Section 7: Interface Specifications**. Make sure the cable is correctly oriented.
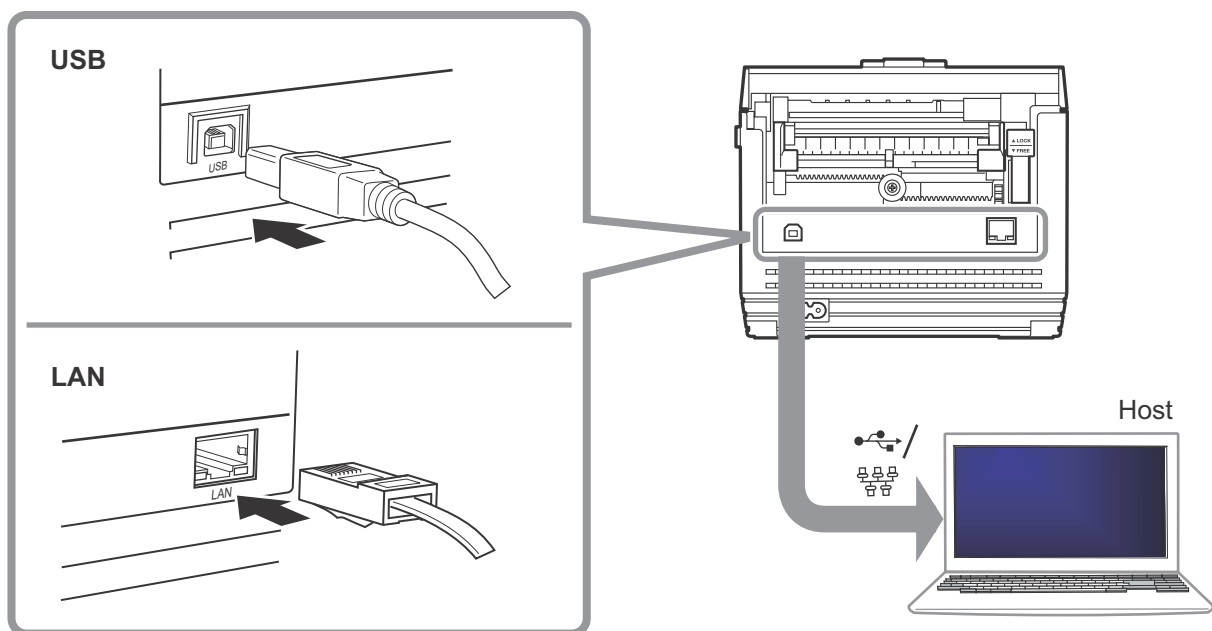
2.2.2 To Configure the Connected Interface

After connection, you need to set the configuration of the connected interface in the I/F SETTINGS menu of the printer. Refer to **Section 3.10 Interface Setting Mode** for details on setting Interface mode.

When connecting to LAN interface, you can use **SATO All-In-One** Application to set up the network. Contact your SATO reseller or technical support center for more details. Or you can download the software directly from our official website, www.satoworldwide.com.

2.2 CONNECTIONS (cont'd)

2.2.3 To Connect the Power Cord

> ⚠ **Warning**
> Do not press the power button or insert/ remove the power cord while your hands are wet. Doing so may cause an electric shock.

> ⚠ **Caution**
> The supplied power cord is for use with this printer only.
> Do not use this power cord with other electrical devices.

1. Connect the AC power cord to the AC input terminal on the back of the printer.
Make sure that the connector is correctly oriented.
Secure the printer with one hand, and insert the cable firmly.
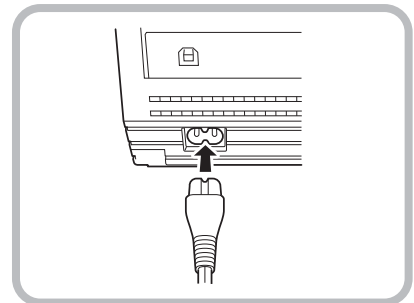
2. Insert the AC power plug into a AC power outlet.
Make sure that the AC voltage of your region is within the range of AC 100 to 240 V, 50/60 Hz.

* The shape of the power plug varies depending on the region in which it was purchased.
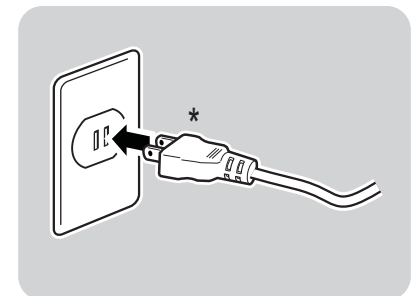
2.2 CONNECTIONS (cont'd)

2.2.4 To Set the Power to On

> ⚠ **Warning**
> Do not press the power button or insert/ remove the power cord while your hands are wet. Doing so may cause an electric shock.

Press and hold the ⏻ power button on the operator panel of the printer for about a second.
The printer takes a few seconds to start up. The **ONLINE** indicator displays green and the screen displays **ONLINE**.

Note:
If you have just connected the AC power cord, wait for

about ten seconds before you press the ⏻ power button.
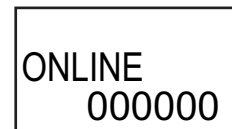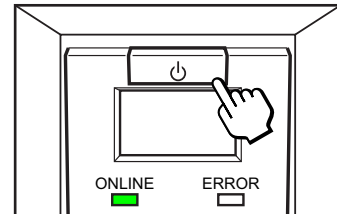
2.2.5 To Set the Power to Off

When you have completed the printing job, set the printer to off.

1. Be sure to confirm that the printer is in the **OFFLINE** mode. If not, press the **LINE** button to enter **OFFLINE** mode.

   Note:
   If there is any printed media remaining in the printer, press the **FEED** button to discharge the media.

2. Press and hold the ⏻ power button until the display turns off.
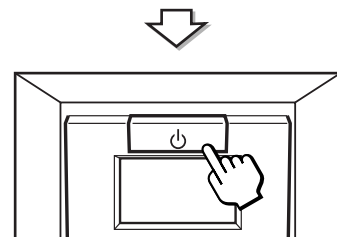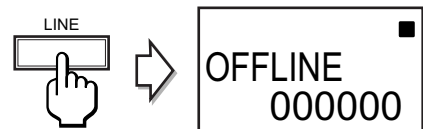
2.3 MEDIA SELECTION

The size and type of media to be printed should have been taken into consideration before printer purchase. Ideally, the media width will be equal to, or just narrower than, the print head. Using media that does not cover the print head will allow the platen roller to tread on it and wear it out. The media edge will also wear a groove in the platen roller, which can affect print quality.

> **Note:**
> For optimal print performance and durability, **use only SATO-certified media supplies with this printer.** Using supplies not tested and approved by SATO can result in unnecessary wear and damage to vital parts of the printer, and may void the warranty.

This printer can print on single piece media or fan-fold media. It can also be printed on media roll if the optional media roll holder is installed. The printer uses sensors to detect I-marks or gap on the media in order to precisely position the print content.
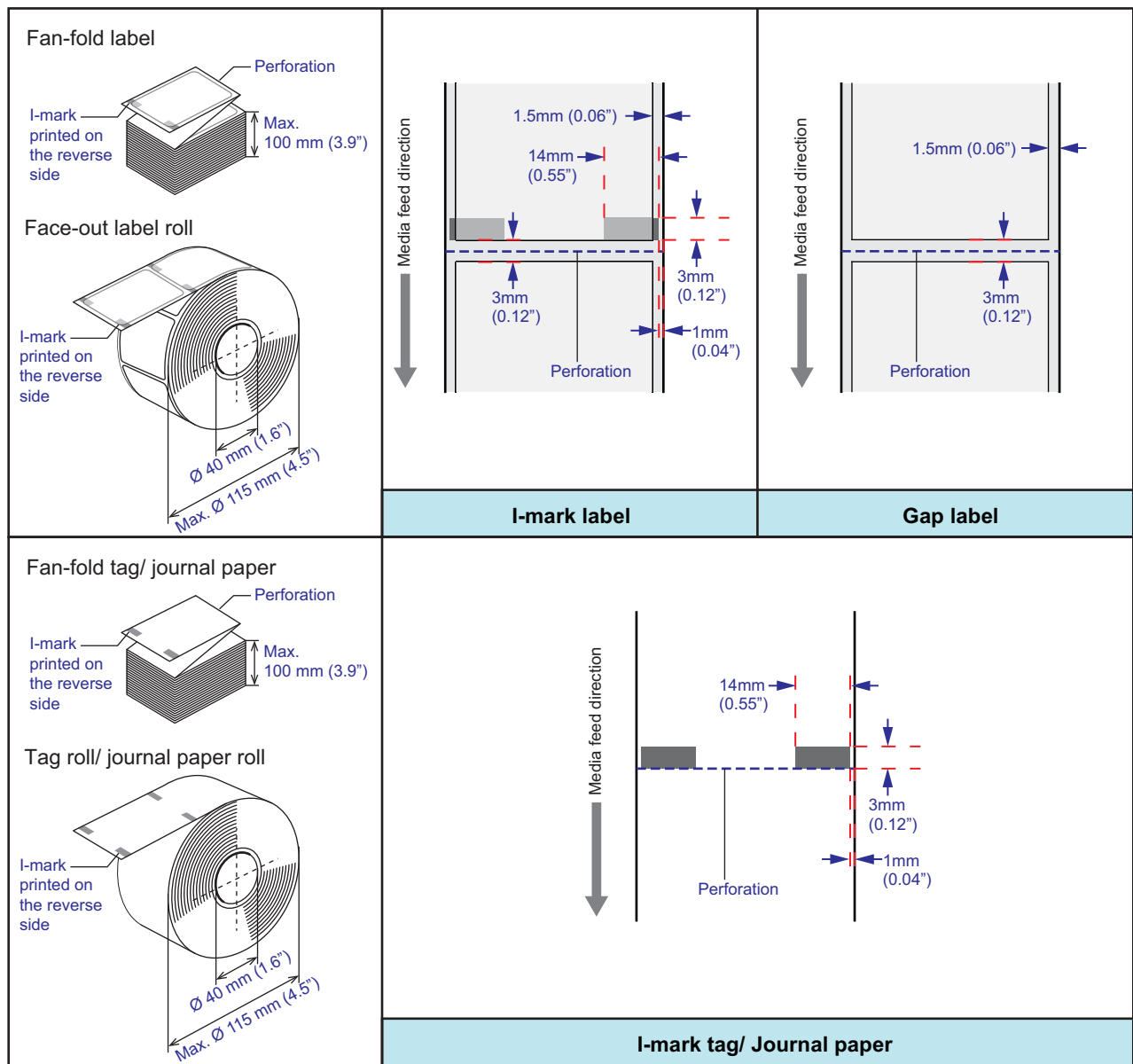
2.4 HOW TO LOAD THE MEDIA

2.4.1 Automatic Media Feed Function

This printer has an Automatic media feed function that lets the media load easily into the printer. The printer will sense the incoming media from the rear and move the media to the print ready position. The first piece of media is not wasted.

Make sure that the AUTO LABEL FEED is set to ENABLE in Service mode. Refer to **Section 3.16.2 Overview of Machine Setting Menu** for setting the Automatic media feed function.

1. Press and hold the ⏻ power button for about a second to set the power on.
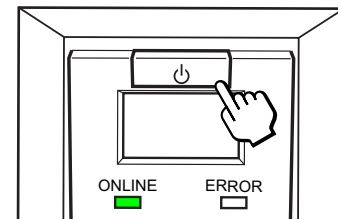
2. Pull down the **media guide lever** ① to release the **media guide**. Adjust the width of the **media guide** ② to match the media size.

After adjustment, push the **media guide lever** ① back to lock position.
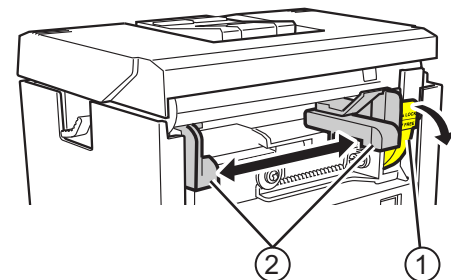
3. Position stack of fan-fold media to the rear of the printer.
- Make sure that the distance from the printer to the media stack is more than the length of the media plus 50 mm (1.9"). The maximum height of the media stack should be no more than 100 mm (3.9").
- Make sure that the AC power cord and the interface cable do not block the media.

4. Insert the leading edge of the media in the **media feed inlet** at the top rear of the printer. The printer will automatically load the media.
Notes:
- Make sure that the printed side of the media is facing upwards.
- Make sure that the length of the media is at least 130 mm (5.1") long for proper media detection.
- When the automatic media feed function is enabled in tear-off or cutter mode, the position of the first media is not correctly set. Press the **FEED** button in offline mode to adjust the position.

Printed side
should face upwards
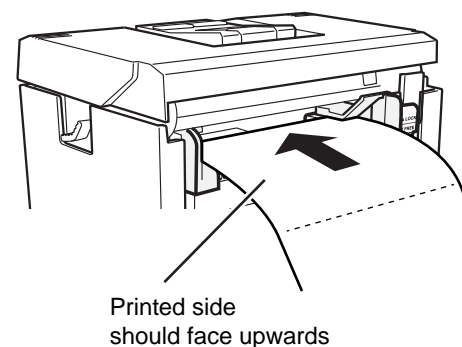
When cutter is installed on the printer
It is necessary to adjust the Cut position in the Adjustment screen. Refer to **Section 3.4 Adjustment Mode** and **Section 8.4.2 Adjustment of the Stop Position** for details.

2.4 HOW TO LOAD THE MEDIA (cont'd)

2.4.2 How to Remove Media from the Printer

1. Press the **cover open latch** ① on the right side of the printer to open the **top cover** of the printer. The **top cover** ② will open upwards.
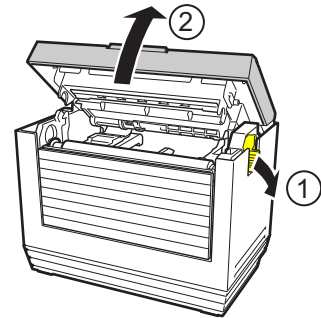
2. Then, flip the **top cover** ③ to the left until it is fully open.
Note:
Make sure that the cover rests firmly so that it will not fall and injure your hands.
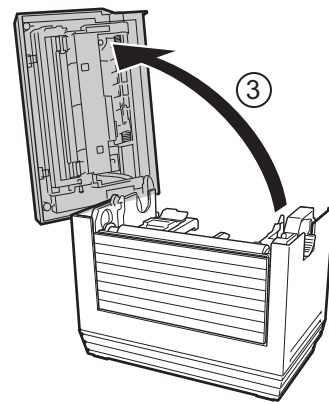
⚠ **Caution**
- After printing, the print head and its surrounding area are hot. Keep your fingers away from these areas to prevent injury.
- Avoid touching even the edge of the print head with your bare hands.

3. Remove the media from the media path of printer.

4. Close the **top cover** and press the two front corners of the **top cover** until a click sound is heard. Make sure that the **top cover** is locked.
Note:
Be careful not to get your fingers pinched while closing the top cover.
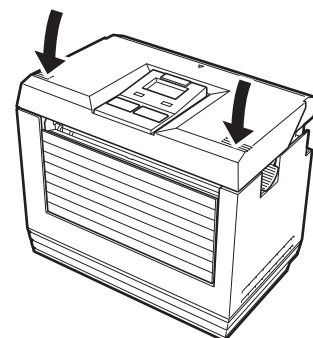
2.4 HOW TO LOAD THE MEDIA (cont'd)

2.4.3 How to Load the Media Roll (Option)

The media roll can only be used with the optional media roll holder.
Attach the optional media roll holder and load the media roll to the printer.

1. Attach the optional **media roll holder** ① to the printer.
Set the printer with the two holes at the rear bottom to
the protrusion post of the **media roll holder**.
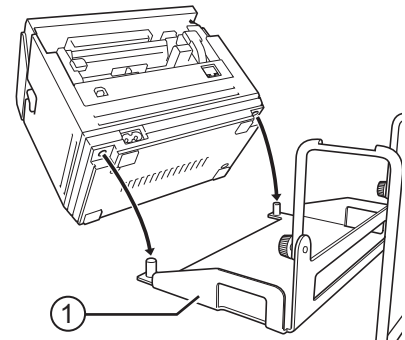
2. Pass the power cord and the interface cable through the
holes at the rear or side of the **media roll holder** and
connect to the printer.
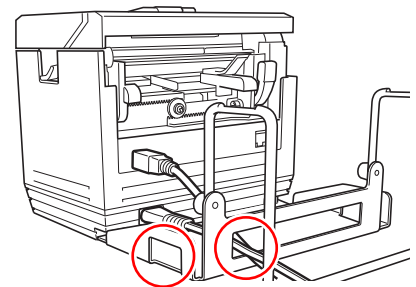
3. Adjust the width of the **media guide** ② on the **shaft** ③
to match the media size. Put the **shaft** into the **core** of
the media roll and set the **core** in between the **media
guide**.
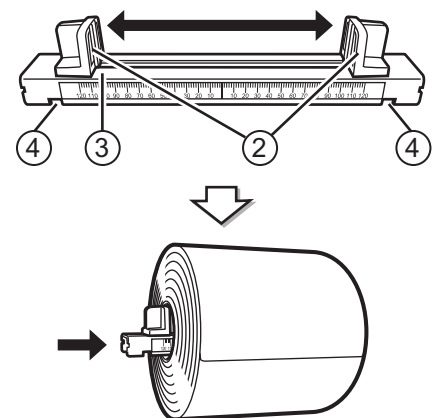
4. Put the **shaft** onto the **top horizontal frame** of the
media roll holder.
Make sure that the **groove** ④ on both sides of the shaft
are attached to the **frame** ⑤.
Make sure that the printed side of the media roll is facing
upward.
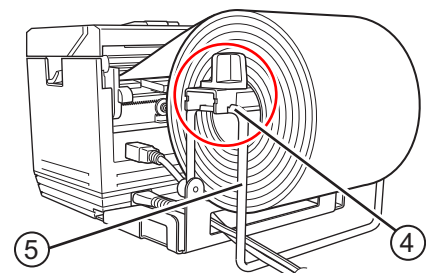
2.4 HOW TO LOAD THE MEDIA (cont'd)

5. Pull down the **media guide lever** of the printer to release the **media guide**. Adjust the **media guide** to the media size.
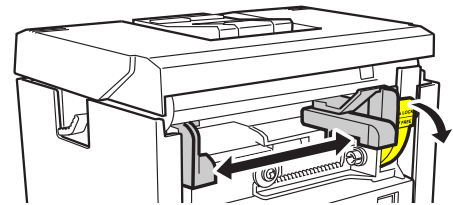
6. Set the printer power to on and insert the leading edge of the media into the **media feed inlet** of the printer. The printer will activate the Automatic media feed function. Refer to **Section 2.4.1 Automatic Media Feed Function** for more details.

Notes:

- Make sure that the printed side of the media is facing upwards.
- Make sure that the length of the media is at least 130 mm (5.1") long for proper media detection.
- When the automatic media feed function is enabled in tear-off or cutter mode, the position of the first media is not correctly set. Press the **FEED** button in offline mode to adjust the position.

Printed side
should face upwards
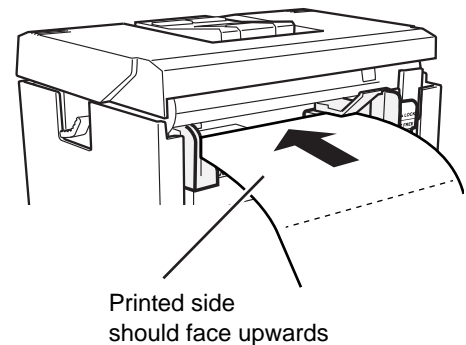
2.4 HOW TO LOAD THE MEDIA (cont'd)

2.4.4 How to Load Label to the Optional Dispenser

Use only roll label with the optional dispenser. It is not advisable to use labels with perforation when using the optional dispenser. Fan-fold media always has perforation.

Note:
Automatic media feed function is disabled when the dispenser unit is installed.

1. Install the optional **media roll holder** to the printer.
   Follow step **1** to **4** of **Section 2.4.3 How to Load the Media Roll (Option)**.

2. Press the **cover open latch** ① on the right side of the printer to open the **top cover** of the printer. The **top cover** ② will open upwards.
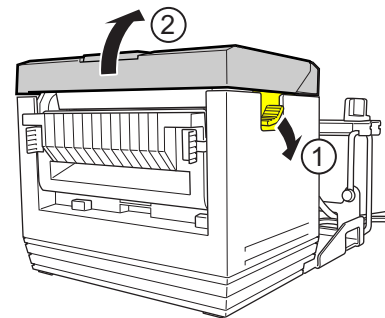
3. Push the two **dispenser unit open latches** ③ inwards to open the **dispenser bracket** ④.
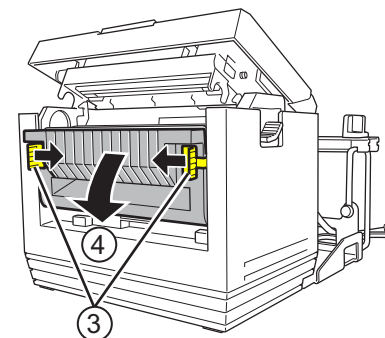
4. Pull down the **media guide lever** of the **printer** to release the **media guide** of the printer. Adjust the **media guide** to the media size.
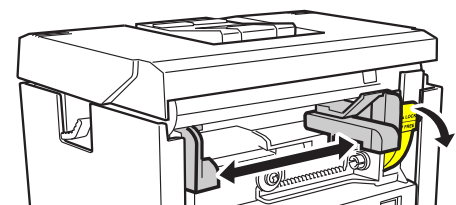
5. From the leading edge of the label, peel off the first few labels until the liner is about 100 mm (3.9") long.

6. Insert the leading edge of the liner into the **media feed inlet** of the printer and pass through the **media guide**.

2.4 HOW TO LOAD THE MEDIA (cont'd)

7. Pull out the leading liner from the front side of the printer, then pass the liner over the **dispenser bar** and under the **pressure bracket** as shown.
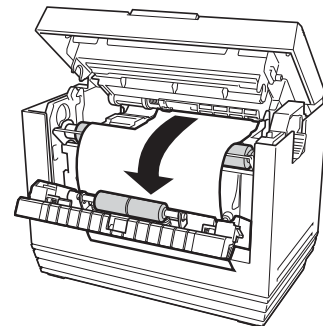
8. Close the **pressure bracket** firmly until a click sound is heard.
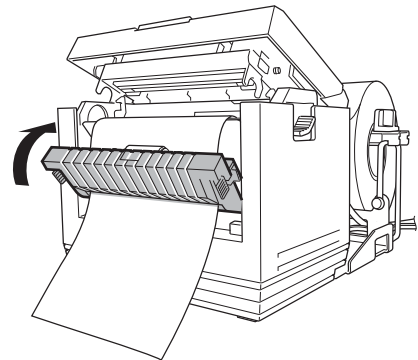
9. Close the **top cover** and press the two front corners of the **top cover** until a click sound is heard. Make sure that the **top cover** is locked.

Note:
Be careful not to get your fingers pinched while closing the top cover.
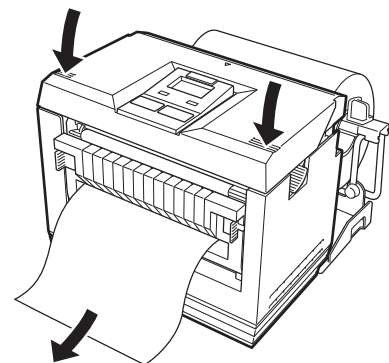
When dispenser is installed on the printer
It is necessary to adjust the Offset position in the Adjustment screen. Refer to **Section 3.4 Adjustment Mode** and **Section 8.4.2 Adjustment of the Stop Position** for details.

3

OPERATION AND CONFIGURATION

Before using the printer, it is best to read this manual thoroughly first. Otherwise, you may disturb default settings around which the instructional procedures in this manual are based upon.

The printer may be manually configured via the **LINE** and **FEED** buttons with the OLED display on the operator panel of printer. All of the printer's buttons are used either singularly, or in conjunction, to perform configuration activities.

Many of these settings can also be controlled via software commands and in case of conflict between software and control panel settings, the printer will always use the last valid setting. If you load a print job that includes software settings and then enter a new setting via the OLED display, the manually set values will be used by the printer. If you set the values manually and then download a job with software settings, the software settings will be used.

3.1 OPERATOR PANEL

The operator panel located on the top consists of two LED indicators, three momentary contact buttons and one OLED display.
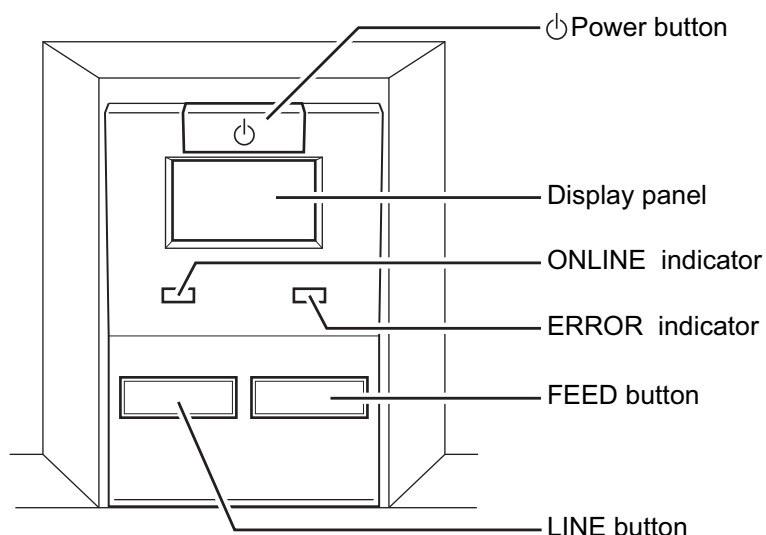
- **LED indicators**
  When the printer is in normal mode, these two indicators notify the user of various status conditions:

LED Indicator	Color	Functions
ONLINE	Green	Illuminates when printer is ready to receive data or is in printing mode (online).
ERROR	Red	Illuminates or blinking in red when detecting a printer error.

- ⏻ Power button
  Press this button for more than one second to set the printer to on.
  When the AC power cord is just connected, wait for about ten seconds before pressing this button.

- **LINE** button
  Press this button to toggle the printer between the online and offline mode. When the printer is online, it is ready to receive data from host. Press the **LINE** button to pause or resume the printing.
  This button is also used to select the item or change the value in various printer setting display menus.

- **FEED** button
  Press this button in offline mode to feed a piece of media.
  This button is also used to confirm the selected item or save the value set in various printer setting display menus.

3.1 OPERATOR PANEL (Cont'd)

•   **Display panel**

   Display configurations for <Normal mode>
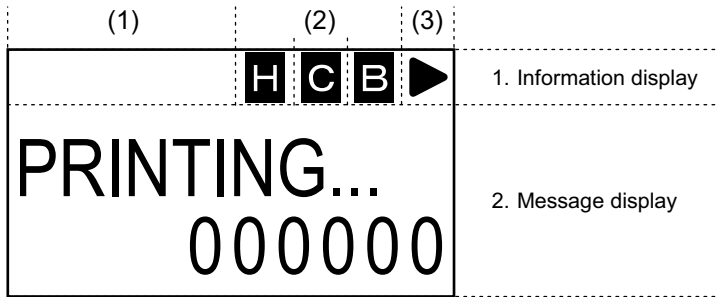
1. Information display (Color of display: Yellow)
   Displays information of the printer.

   (1)   Ancillary information display
         Displays the error number, state of HEX dump print and so on.

   (2)   Warning icon
         Displays warning icons. Refer to **Section 5.1.4 Warning Messages** for details.
         Warning icon displays from the left in order of occurrence.

   (3)   Print status icon
         Displays icons according to the printing state. Details are as follows.
         [Mode display]

Icon	Description
▶	Displayed in printing mode.
❚❚	Displayed when printing is paused. (Remaining item exists)
■	Displayed when printing is stopped. (Remaining item does not exist)

2. Message display (Color of display: Blue)
   Displays messages up to 2 rows.

3.1 OPERATOR PANEL (Cont'd)

Display panel (Cont'd)

Display configurations for <Setting modes>

```
┌─────────────────────────┐
│ PRINT SETTINGS          │  ........  1. Information display
│                         │
│ PRINT OFFSET            │  ........  2. Setting item display
│                         │
│  V:█0000  H:+000        │  ........  3. Setting contents display
└─────────────────────────┘
```

1. Setting mode display (Color of display: Yellow)
Displays information of the printer.

2. Setting item display (Color of display: Blue)
Displays name of the setting items.

3. Setting contents display (Color of display: Blue)
Displays current setting contents.
Display varies depending on the settings.

3.2 OPERATING MODES

The operating status of this printer can be set within one of the following modes:

1. Normal mode (including Online/Offline modes)

2. Pause mode

3. Adjustment mode

4. Cancel print job mode

5. Printer setting mode:
   - Online mode
   - Basic setting mode
   - Interface mode
   - Advance mode
   - Hex dump mode
   - Default mode

6. Test print mode

7. Maintenance mode

8. Service mode

9. Download mode

The various modes are accessed by pressing the **LINE** button and/ or **FEED** button while the printer is Off, On or with certain printer settings enabled.

3.2 OPERATING MODES (Cont'd)

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

3.2 OPERATING MODES (Cont'd)

3.3 ONLINE AND OFFLINE MODES

The general and basic operation of the CW408 printer is via the Normal mode, which consists of the Online and Offline modes.

3.3.1 Online Mode

Pressing the **LINE** button causes the printer to go ONLINE or OFFLINE alternately.

When the printer is in ONLINE mode, the following activities will be possible:
- The printer is ready to receive print data from the computer or other con-nected devices
- The printer is ready to start printing

The number displayed on the bottom line of display panel shows the media quantity status. As soon as a print job is received, the display on the bottom will indicate the number of media to be printed. When the print job begins to print, this display will indicate the remaining number (countdown) of media to be printed.

When printer is in ONLINE mode

```
ONLINE
      000000
```

When printer is printing (Online mode)
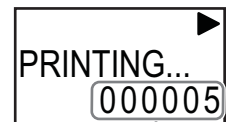
```
                  ▶
PRINTING...
     000005
```
remaining number (countdown) of media to be printed

3.3.2 Offline Mode

When the printer is in ONLINE mode, press the **LINE** button once to cause the printer to go OFFLINE.
If the printer is in printing process, press the **LINE** button once to cause any print job to be PAUSE and stop printing.
When the printer is in OFFLINE mode, the activities for ONLINE mode are no longer available, but the following activities are possible:

- The printer can feed a media when you press the **FEED** button.
- The printer goes to Adjustment mode when you press and hold the **LINE** button for more than three seconds.
- The printer can be switched to CANCEL PRINT JOB mode when you press the **LINE** and **FEED** button simultaneously.
- In OFFLINE mode (without print data), press and hold the **LINE** and **FEED** button for more than three seconds to access the Printer setting menu. Using the **LINE** button, you can access the ONLINE, BASIC SETTINGS, I/F SETTINGS, ADVANCE SETTINGS, HEX DUMP and DEFAULT mode from here. These modes will be discussed in subsequent sections.

When printer is switched to OFFLINE mode

```
                  ■
OFFLINE
      000000
```
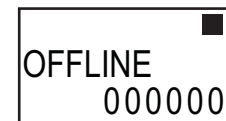
When printer pauses and stop printing (Offline mode)

```
                  ▌▌
PAUSE
      000005
```
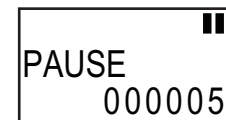
3.4 ADJUSTMENT MODE

The printer has a quick access to the Adjustment mode for setting the print position, stop position, the print darkness, buzzer setting and display brightness. These adjustments are in conjunction with the configuration adjustments done in the Service mode menu and the Basic settings mode menu.
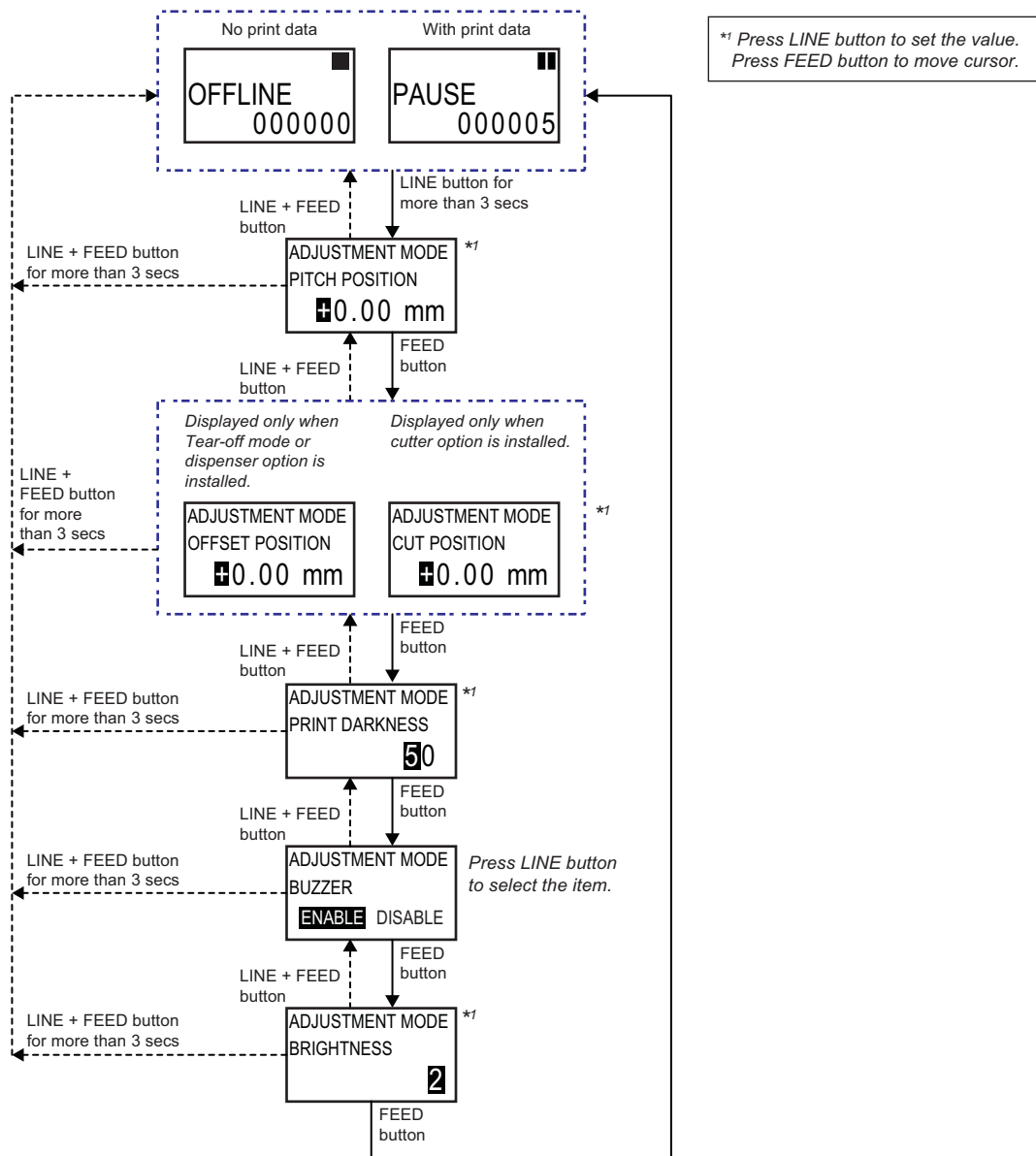
1. When the printer is in OFFLINE mode or PAUSE mode, press and hold the **LINE** button for more than three seconds to set the printer to Adjustment mode. The PITCH POSITION screen is displayed first.

2. Press the **LINE** button to set the desired value and press **FEED** button to shift the cursor to the next digit. Press the **FEED** button again to save the setting and move to the next adjustment screen.

3. After adjustment, the display returns to OFFLINE or PAUSE mode.
    Press the **LINE** and **FEED** buttons simultaneously to shift the cursor back to previous unit or previous adjustment screen.
    Press and hold the **LINE** and **FEED** buttons simultaneously for more than three seconds to return to OFFLINE or PAUSE mode.

3.4 ADJUSTMENT MODE (Cont'd)

Menu	Description
ADJUSTMENT MODE PITCH POSITION **+**0.00 mm	Adjusts the print position or reference point where the printings begins vertically, relative to the leading edge of each media. Setting value is adjustable by 0.25 mm (0.01"). Setting range is ±3.75 mm (±0.15"). The initial value is +0.00 mm (+0.00"). Press the **LINE** button to set the value and press the **FEED** button to shift the cursor to the next unit.
ADJUSTMENT MODE OFFSET POSITION **+**0.00 mm ADJUSTMENT MODE CUT POSITION **+**0.00 mm	Adjust the offset (stop/ cut) position of each media after printing. When the Operation mode is set as Continuous, Tear-off or Dispenser, OFFSET POSITION is displayed in this screen. When the Operation mode is set as Cutter, CUT POSITION is displayed in this screen. Setting value is adjustable by 0.25 mm (0.01"). Setting range is ±3.75 mm (±0.15"). The initial value is +0.00 mm (+0.00"). Press the **LINE** button to set the value and press the **FEED** button to shift the cursor to the next unit.
ADJUSTMENT MODE PRINT DARKNESS **5**0	Adjust the print darkness of the printout. Setting range is between 00 to 99. The initial value is 50. Press the **LINE** button to set the value and press the **FEED** button to shift the cursor to the next unit. **Note**: It is not advisable to set the print darkness to the higher position as a darker printout requires the print head to operate at higher temperatures. Operating at high temperatures may reduce the serviceable lifetime of the print head.
ADJUSTMENT MODE BUZZER **ENABLE** DISABLE	Enable or disable the buzzer. **ENABLE**: The buzzer will sound when an error occurs. **DISABLE**: The buzzer will not sound. The initial setting is ENABLE. Press the **LINE** button to select and press the **FEED** button to save the setting and proceed to the next adjustment screen.
ADJUSTMENT MODE BRIGHTNESS **2**	Adjust the brightness of the display. Setting range is 1 (dark) to 3 (bright). The initial value is 2. Press the **LINE** button to set the value and press the **FEED** button to shift the cursor to the next unit.

3.5 CANCEL PRINT JOB MODE
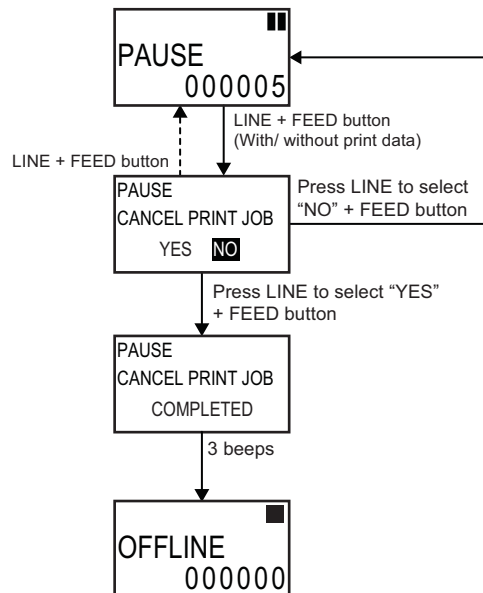
```
        ┌─────────────────┐
        │ PAUSE        ▐▐ │◄─────────────┐
        │      000005     │              │
        └─────────────────┘              │
               ▲    │                    │
  LINE + FEED   ¦    │ LINE + FEED button │
  button        ¦    │ (With/ without print data)
               ¦    ▼                    │
        ┌─────────────────┐   Press LINE to select
        │ PAUSE           │   "NO" + FEED button
        │ CANCEL PRINT JOB │
        │   YES   NO       │
        └─────────────────┘
                 │
                 │ Press LINE to select "YES"
                 │ + FEED button
                 ▼
        ┌─────────────────┐
        │ PAUSE           │
        │ CANCEL PRINT JOB │
        │    COMPLETED     │
        └─────────────────┘
                 │ 3 beeps
                 ▼
        ┌─────────────────┐
        │ OFFLINE       ■ │
        │      000000     │
        └─────────────────┘
```

1. When the printer is in OFFLINE mode or PAUSE mode, press the **LINE** and **FEED** buttons simultaneously to set the printer to CANCEL PRINT JOB mode. The menu for canceling the print job then appears.

2. Press the **LINE** button to select YES or NO. The highlight on display indicates the selected option. The default setting is NO.
   If the printer has a print job in memory, selecting YES will cause the job to be cleared.
   Notes:
   • Be sure you want to cancel the print job before selecting YES as the job cannot be recovered and will have to be re-transmitted to the printer.
   • Press the **LINE** and **FEED** buttons simultaneously again to exit the CANCEL PRINT JOB mode without clearing the print data.

3. Press the **FEED** button to activate the selection.
   If you have selected YES, the printer cleared all the print jobs from the memory. The display shows the message, CANCEL PRINT JOB COMPLETED. The printer beeps three times, and then returns to OFFLINE mode.

3.6 BASIC SETTINGS MODE

The following settings are available in the Basic settings mode.
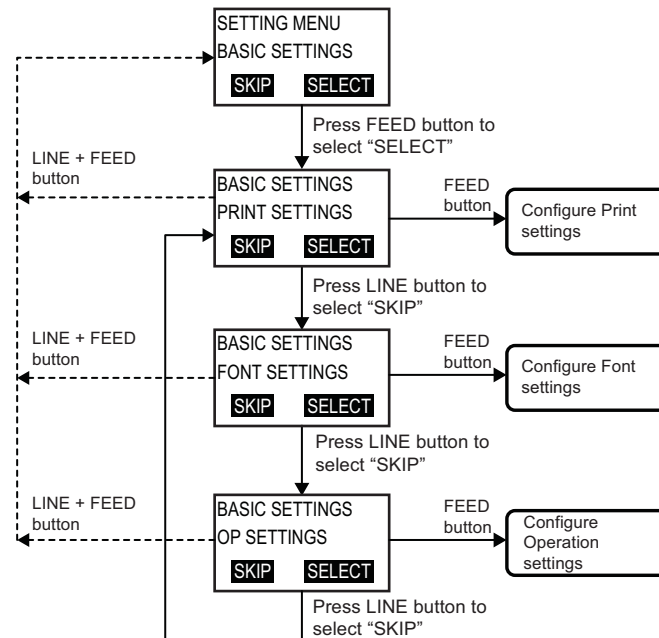
```
                          ┌──────────────────────┐
                          │ SETTING MENU         │
  ┌ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─▶│ BASIC SETTINGS       │
  ┊                        │  [SKIP]   [SELECT]   │
  ┊                        └──────────────────────┘
  ┊  LINE + FEED                     │  Press FEED button to
  ┊  button                          │  select "SELECT"
  ┊                        ┌──────────────────────┐   FEED     ┌──────────────┐
  ┊ ◀─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─│ BASIC SETTINGS       │   button   │ Configure Print│
  ┊                        │ PRINT SETTINGS       │─────────▶  │ settings       │
  ┊                      ┌▶│  [SKIP]   [SELECT]   │            └──────────────┘
  ┊                      │ └──────────────────────┘
  ┊                      │           │  Press LINE button to
  ┊  LINE + FEED         │           │  select "SKIP"
  ┊  button              │ ┌──────────────────────┐   FEED     ┌──────────────┐
  ┊ ◀─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ┤ │ BASIC SETTINGS       │   button   │ Configure Font │
  ┊                      │ │ FONT SETTINGS        │─────────▶  │ settings       │
  ┊                      │ │  [SKIP]   [SELECT]   │            └──────────────┘
  ┊                      │ └──────────────────────┘
  ┊                      │           │  Press LINE button to
  ┊  LINE + FEED         │           │  select "SKIP"
  ┊  button              │ ┌──────────────────────┐   FEED     ┌──────────────┐
  └ ◀─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ┤ │ BASIC SETTINGS       │   button   │ Configure      │
                         │ │ OP SETTINGS          │─────────▶  │ Operation      │
                         │ │  [SKIP]   [SELECT]   │            │ settings       │
                         │ └──────────────────────┘            └──────────────┘
                         │           │  Press LINE button to
                         └───────────┘  select "SKIP"
```

1. When the printer is in OFFLINE mode, press and hold the **LINE** and **FEED** buttons simultaneously for more than three seconds. The printer switches to SETTING MENU mode. Then press the **LINE** button once to show the BASIC SETTINGS menu and press the **FEED** button to enter the menu.

2. The BASIC SETTINGS menu has three sub menus, PRINT SETTINGS, FONT SETTINGS, and OP SETTINGS. Press the **LINE** button to switch between these menus and then press the **FEED** button to enter to the menu.

3.7 PRINT SETTINGS MODE
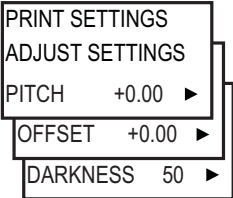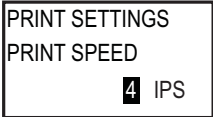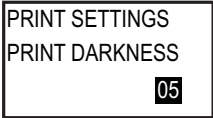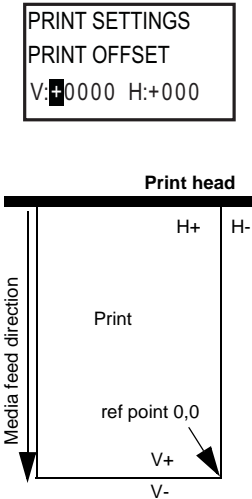
The following settings are available in the Print settings mode.
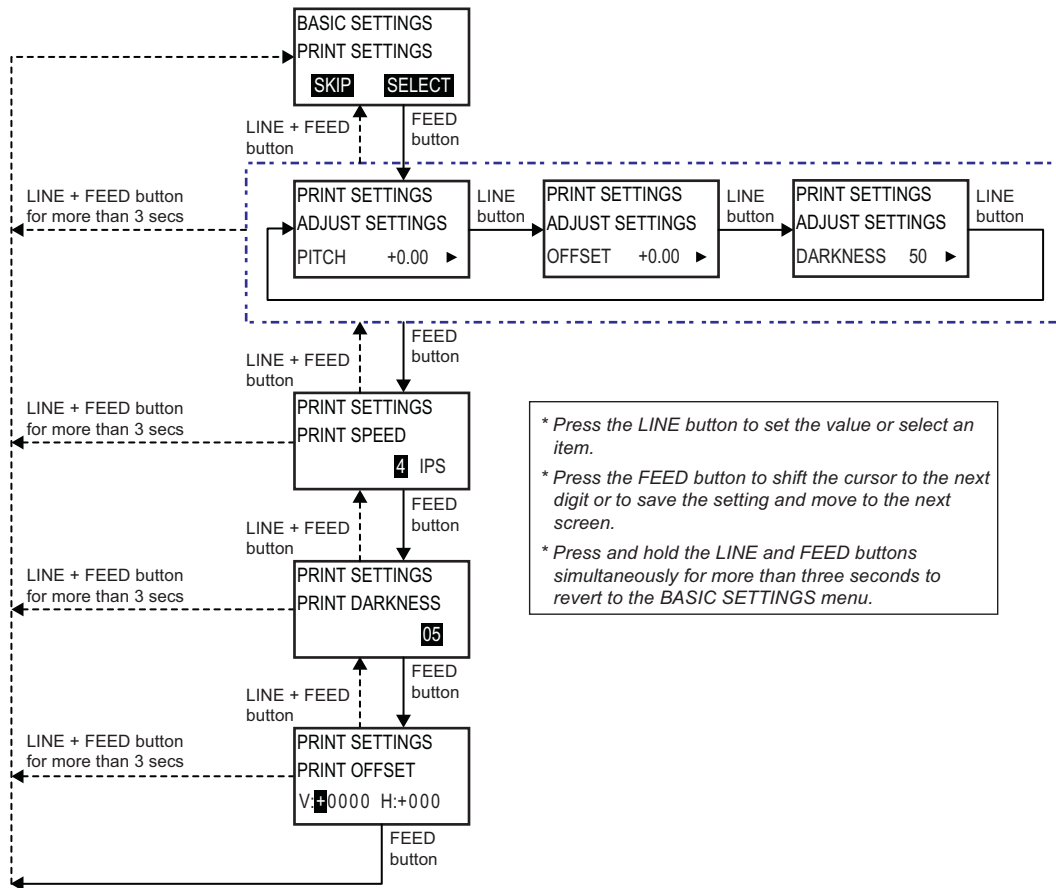
1. In BASIC SETTINGS menu, press the **LINE** button to display PRINT SETTINGS on the screen. Press the **FEED** button to confirm the selection.

2. The value set for PITCH in the Adjustment mode is first displayed. Press the **LINE** button to display the next items as shown above.

3. Press the **FEED** button to switch to the next setting options as shown above. To return to the previous setting option, press the **LINE** and **FEED** buttons simultaneously. To return to the BASIC SETTINGS screen, press and hold the **LINE** and **FEED** buttons simultaneously for more than three seconds.

4. When the desired setting option is displayed, press the **LINE** button to set the value or select an item. Then press the **FEED** button to shift the cursor to the next digit or to save the setting and move to the next screen.

Do a test print after completing the adjustments to make sure that the settings are correct. Refer to **Section 3.14 Test Print Mode** for details.

3.7 PRINT SETTINGS MODE (Cont'd)

PRINT SETTINGS MODE	
Menu	**Description**
PRINT SETTINGS ADJUST SETTINGS PITCH +0.00 ▶ OFFSET +0.00 ▶ DARKNESS 50 ▶	Displaying the values of items set at the Adjustment mode. PITCH: Shows the value of print offset position. OFFSET: Shows the value of offset position. DARKNESS: Shows the value of darkness setting.
PRINT SETTINGS PRINT SPEED 4 IPS	Adjusts the print speed that does not compromise print quality. The setting range is from 2 to 6 IPS (inches per second). When the optional dispenser is installed, the setting range is from 2 to 4 IPS. Press the **LINE** button to change the value with a increment of 1 IPS cyclically. Press the **FEED** button to save the setting and proceed to the next screen. The initial value is 4 IPS. **Note:** This screen displays only when "A" is set for DARKNESS RANGE of ADVANCE SETTINGS.
PRINT SETTINGS PRINT DARKNESS 05	This setting adjusts the print darkness of the printout with reference to the setting of the DARKNESS in Adjustment mode. Setting value can be set from 1 (lightest) to 10 (darkest). The initial value is 05.
PRINT SETTINGS PRINT OFFSET V:+0000 H:+000 **Print head** H+ H- Media feed direction Print ref point 0,0 V+ V-	Print Position Offset—which refers to the vertical and horizontal shifting of the entire print area, relative to the start position of printing (V=0, H=0), defined by default from the bottom right hand corner of the media. The V setting is for the Vertical print offset. A positive (+) offset means the printing is shifted towards the print head; a negative (-) offset means shifting away from the print head. If the PITCH POSITION setting has been used to offset the vertical start position, then all Vertical offset adjustments are made relative to that start position. The H setting is for the Horizontal print offset. The + or - prefix determines whether the offset is to the left or to the right of the reference point. Setting range is as follows: V:±0 to 3200 dots H:±0 to 832 dots The initial values are V:+0000, H:+000. Press the **LINE** button to set the value and press the **FEED** button to shift the cursor to the next unit.

3.8 FONT SETTINGS MODE

The following settings are available in the Font settings mode.

1. In BASIC SETTINGS menu, press the **LINE** button repeatedly to display FONT SETTINGS on the screen. Press the **FEED** button to confirm the selection.

2. The FONT SETTINGS menu is displayed. Press the **FEED** button to switch to the next setting options as shown above. To return to the previous setting option, press the **LINE** and **FEED** buttons simultaneously. To return to the BASIC SETTINGS screen, press and hold the **LINE** and **FEED** buttons simultaneously for more than three seconds.

3. When the desired setting option is displayed, press the **LINE** button to select an item. Then press the **FEED** button to save the setting and move to the next screen.

Do a test print after completing the adjustments to make sure that the settings are correct. Refer to **Section 3.14 Test Print Mode** for details.

FONT SETTINGS	
Menu	**Description**
FONT SETTINGS ZERO SLASH ENABLE DISABLE	Determine whether zeroes are printed with a slash across them or not. The zero slash can be set to either 0 or Ø. **ENABLE**: [0] will be accompanied by a slash. **DISABLE**: No slash will appear. The initial setting is ENABLE. * Zero slash (zero has a slash through it) is available in the following fonts: XU, XS, XM, XB, XL, Outline font
FONT SETTINGS CHARACTER PITCH ENABLE DISABLE	Determine whether the space surrounding each text character is of a fixed width, or whether that space is to be varied to be visually more pleasant and proportional. **ENABLE**: Data will be printed with proportional pitch font. **DISABLE**: Data will be printed with fixed pitch character fonts. The initial setting is ENABLE. Available fonts: XU, XS, XM, XB, XL

3.9 OPERATION SETTINGS MODE

The following settings are available in the Operation settings mode.
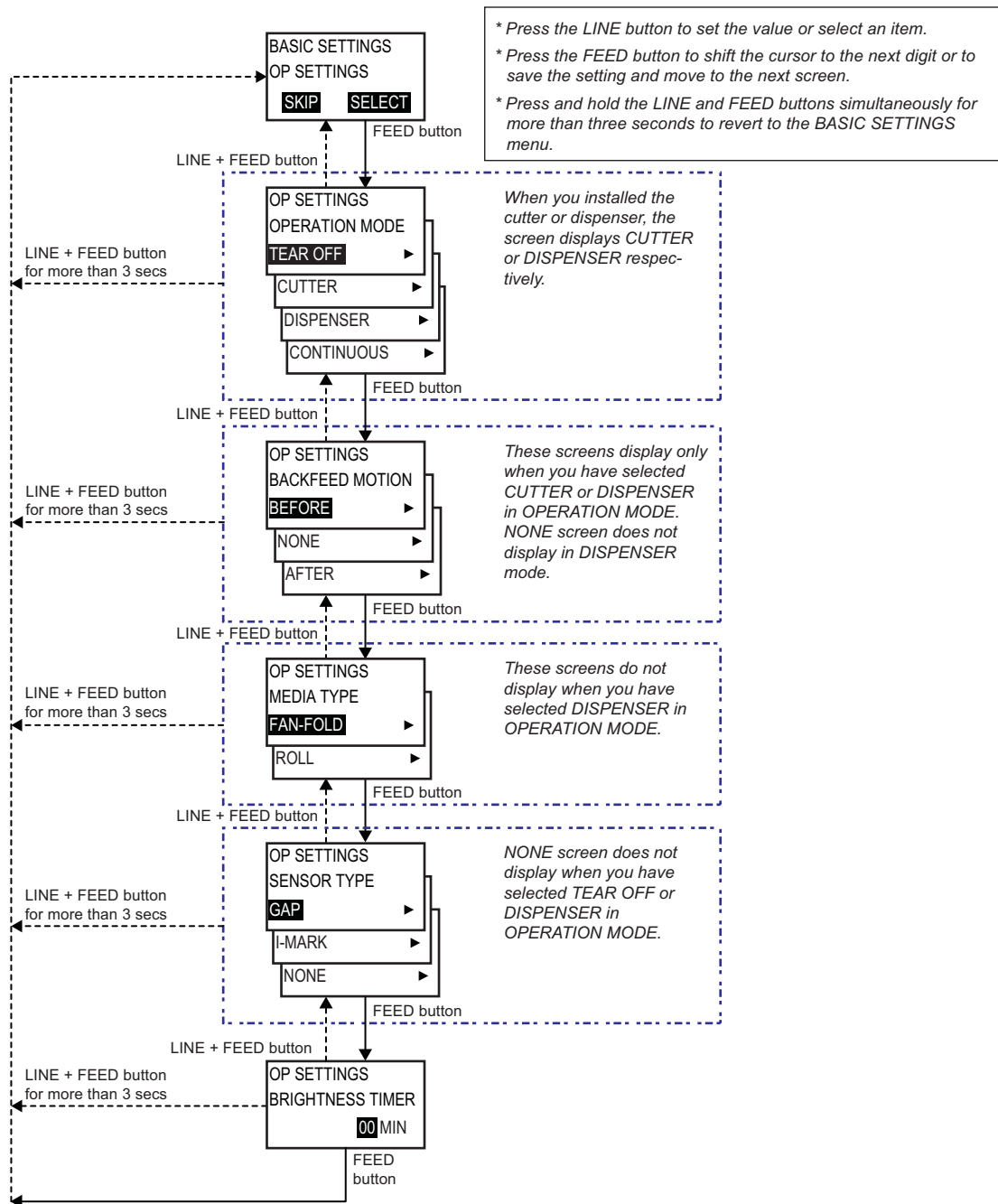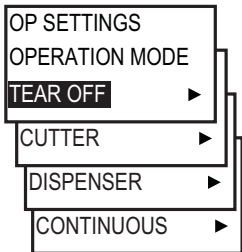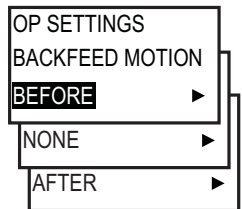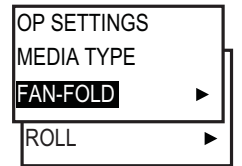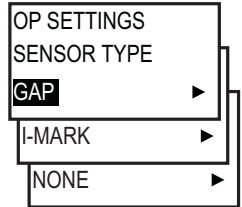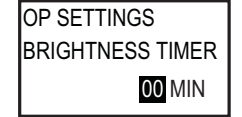
1. In BASIC SETTINGS menu, press the **LINE** button repeatedly to display OP SETTINGS on the screen. Press the **FEED** button to confirm the selection.

2. The OP SETTINGS menu is displayed. Press the **FEED** button to switch to the next setting options as shown above. To return to the previous setting option, press the **LINE** and **FEED** buttons simultaneously. To return to the BASIC SETTINGS screen, press and hold the **LINE** and **FEED** buttons simultaneously for more than three seconds.

3.9 OPERATION SETTINGS MODE (Cont'd)

3. When the desired setting option is displayed, press the **LINE** button to set the value or select an item. Then press the **FEED** button to shift the cursor to the next digit or to save the setting and move to the next screen.

Do a test print after completing the adjustments to make sure that the settings are correct. Refer to **Section 3.14 Test Print Mode** for details.

OP SETTINGS	
Menu	**Description**

OP SETTINGS
OPERATION MODE
TEAR OFF ▶
CUTTER ▶
DISPENSER ▶
CONTINUOUS ▶
	To set the Operation mode.
	Allows the choice of continuous feed or tear-off operation. If cutter or dispenser has been correctly installed, the respective option will be displayed.
	When TEAR OFF or CONTINOUS is selected, the printer will proceed directly to MEDIA TYPE screen.
	When CUTTER or DISPENSER is selected, the printer will proceed to BACK-FEED MOTION screen.
	The initial setting is:
	    TEAR OFF (When option is not installed)
	    CUTTER (When cutter is installed)
	    DISPENSER (When dispenser is installed)

OP SETTINGS BACKFEED MOTION BEFORE ▶ NONE ▶ AFTER ▶	Determines whether or not a backfeed motion will be applied. If so, the selection of before or after the printing is available. These screens are displayed only when CUTTER or DISPENSER is selected for OPERATION MODE. **AFTER**: Perform backfeed motion after printing (Motion 1). **BEFORE**: Perform backfeed motion before printing (Motion 2). **NONE**: No backfeed motion. NONE screen does not display in DISPENSER mode. The initial setting is BEFORE.
OP SETTINGS MEDIA TYPE FAN-FOLD ▶ ROLL ▶	To set the media type use for the printer. These screens are displayed only when a selection other than DISPENSER is chosen in the operation mode. **FAN**-**FOLD**: Select when using fan-fold media. **ROLL**: Select when using media roll. The initial setting is FAN-FOLD.
OP SETTINGS SENSOR TYPE GAP ▶ I-MARK ▶ NONE ▶	Set the pitch sensor to be selected relative to the media type to be used. **GAP**: Detects media pitch by the transmissive sensor. **I-MARK**: Detects media pitch by the reflective sensor. **NONE**: No sensor is used. The initial setting is GAP. **Note:** You cannot select NONE when TEAR OFF or DISPENSER is selected in the operation mode.
OP SETTINGS BRIGHTNESS TIMER 00 MIN	The display brightness will dim to save power when the printer is not operated for a specified period of time. Set the time between 00 to 15 MIN. This power saving function is disabled when it is 00 MIN, and the brightness of the display will be lit constantly. The initial value is 00 MIN.
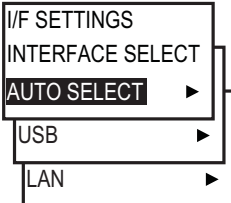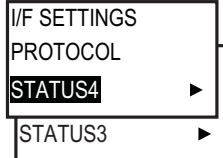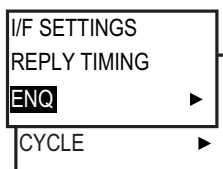
3.10 INTERFACE SETTING MODE

In this mode, you can set various parameters governing the use of different interfaces.
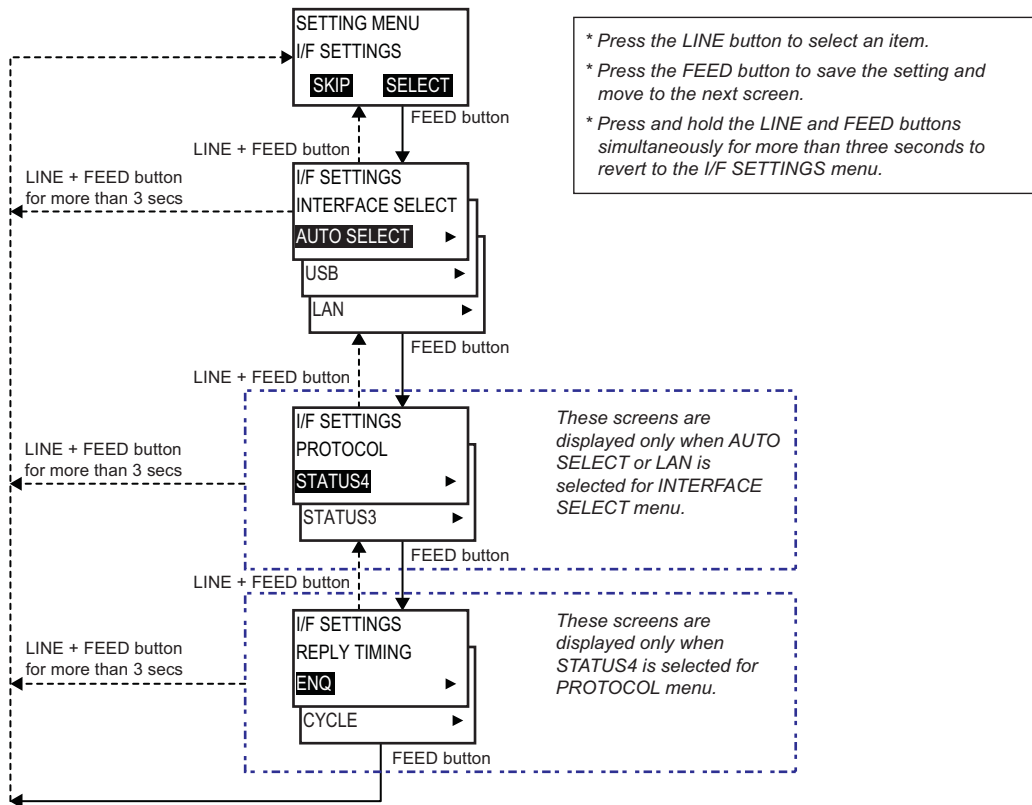
1. When the printer is in OFFLINE mode, press and hold the **LINE** and **FEED** buttons simultaneously for more than three seconds. The printer switches to SETTING MENU mode. Then press the **LINE** button twice to display I/F SETTINGS menu and press the **FEED** button to enter the menu.

2. INTERFACE SELECT is displayed first. Press the **FEED** button to switch to the next setting options as shown above. To return to the previous setting option, press the **LINE** and **FEED** buttons simultaneously. To return to the I/F SETTINGS screen, press and hold the **LINE** and **FEED** buttons simultaneously for more than three seconds.

3. When the desired setting option is displayed, press the **LINE** button to select the item. Then press the **FEED** button to save the setting and move to the next screen.

3.10 INTERFACE SETTING MODE (Cont'd)

I/F SETTINGS MODE	
Menu	**Description**
I/F SETTINGS INTERFACE SELECT AUTO SELECT ▶ USB ▶ LAN ▶	Select the connected interface. AUTO SELECT, USB or LAN can be selected. **AUTO SELECT**: The interface connected to the host becomes effective at power on. When both LAN and USB are connected, USB becomes effective. **USB**: Connects to only USB. **LAN**: Connects to only LAN. The initial setting is AUTO SELECT.
I/F SETTINGS PROTOCOL STATUS4 ▶ STATUS3 ▶	Select the communication protocol. These screens are displayed only when using LAN. STATUS3 and STATUS4 are available for selection. The initial setting is STATUS4.
I/F SETTINGS REPLY TIMING ENQ ▶ CYCLE ▶	Set the timing for the host status reply. These screens are displayed only when PROTOCOL is set to STATUS4. **ENQ**: Returns status after receiving Status Request (ENQ), which is sent from the host. **CYCLE**: Returns status from the printer to the host at 900 ms intervals. The initial setting is ENQ.

3.11 ADVANCE SETTINGS MODE

Advanced mode lets you configure the more advanced features of the printer hardware.

```
┌─────────────────────┐        ┌────────────────────────────────────────┐
│ BASIC SETTINGS      │        │ * Press the LINE button to set the value │
│ ADVANCE SETTINGS    │        │   or select an item.                     │
│ [SKIP]   [SELECT]   │        │ * Press the FEED button to shift the     │
└─────────────────────┘        │   cursor to the next digit or to save    │
                               │   the setting and move to the next       │
                               │   screen.                                │
                               │ * Press and hold the LINE and FEED       │
                               │   buttons simultaneously for more than   │
                               │   three seconds to revert to the ADVANCE │
                               │   SETTINGS menu.                         │
                               └────────────────────────────────────────┘
```
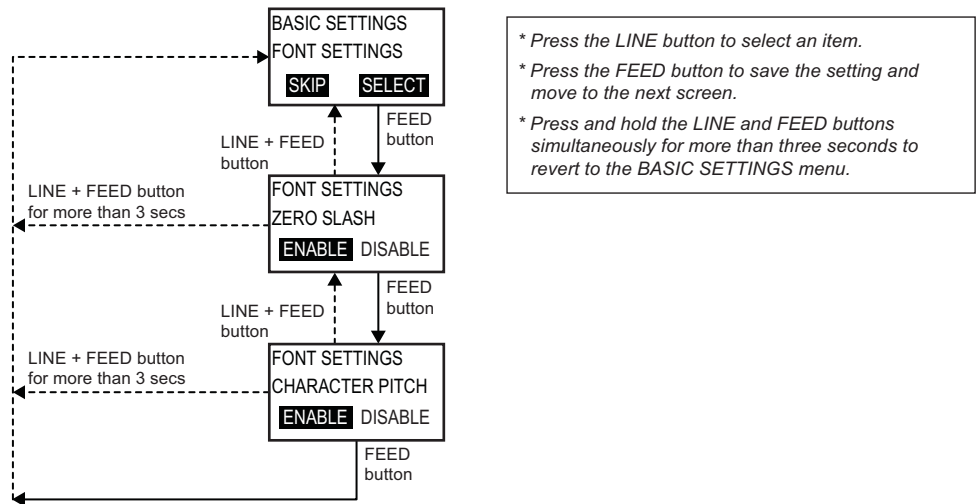
BASIC SETTINGS
ADVANCE SETTINGS
SKIP   SELECT

FEED button

LINE + FEED button

LINE + FEED button for more than 3 secs

ADVANCE SETTINGS
DARKNESS RANGE
A   B

FEED button

LINE + FEED button

LINE + FEED button for more than 3 secs

ADVANCE SETTINGS
BEEP ON ERROR
ENABLE   DISABLE

FEED button

LINE + FEED button

LINE + FEED button for more than 3 secs

ADVANCE SETTINGS
DISPLAY ERROR
ENABLE   DISABLE

FEED button

LINE + FEED button

LINE + FEED button for more than 3 secs

ADVANCE SETTINGS
HEAD CHECK
ENABLE   DISABLE

"ENABLE" + FEED button

ADVANCE SETTINGS
HEAD CHECK
STANDARD   ►
BARCODE   ►

LINE + FEED button

FEED button

LINE + FEED button

ADVANCE SETTINGS
HEAD CHECK MODE
ALL   ►
CHECK LABELS   ►
START-END   ►

FEED button

LINE + FEED button

Displayed only when HEAD CHECK MODE is set to "CHECK LABELS".

ADVANCE SETTINGS
CHECK LABELS
000001

FEED button

"DISABLE" + FEED button

LINE + FEED button

ADVANCE SETTINGS
AUTO ONLINE
ENABLE   DISABLE

FEED button

LINE + FEED button

LINE + FEED button for more than 3 secs

ADVANCE SETTINGS
CONTROL CODE
STANDARD   ►
ALT. PROTOCOL   ►

FEED button

LINE + FEED button

LINE + FEED button for more than 3 secs

Continue to PRIORITY SETTING screen on the next page.

3.11 ADVANCE SETTINGS MODE (Cont'd)

```
BASIC SETTINGS
ADVANCE SETTINGS
 SKIP   SELECT
```

Continue from CONTROL CODE
screen on the previous page.

FEED button

LINE + FEED button

LINE + FEED button
for more than 3 secs

```
ADVANCE SETTINGS
PRIORITY SETTING
COMMAND        ►
INTERNAL       ►
```

FEED button

LINE + FEED button

LINE + FEED button
for more than 3 secs

```
ADVANCE SETTINGS
LANGUAGE
ENGLISH        ►
CHINESE        ►
```

FEED
button

* Press the LINE button to select an item.

* Press the FEED button to save the setting and move to the next screen.

* Press and hold the LINE and FEED buttons simultaneously for more than three seconds to revert to the ADVANCE SETTINGS menu.

1. When the printer is in OFFLINE mode, press and hold the **LINE** and **FEED** buttons simultaneously for more than three seconds. The printer switches to SETTING MENU mode. Then press the **LINE** button three times to display ADVANCE SETTINGS menu and press the **FEED** button to enter the menu.

2. DARKNESS RANGE is displayed first. Press the **FEED** button to switch to the next setting options as shown above. To return to the previous setting option, press the **LINE** and **FEED** buttons simultaneously. To return to the ADVANCE SETTINGS screen, press and hold the **LINE** and **FEED** buttons simultaneously for more than three seconds.

3. When the desired setting option is displayed, press the **LINE** button to set the value or to select the item. Then press the **FEED** button to shift the cursor to the next digit or to save the setting and move to the next screen.

ADVANCE SETTINGS MODE	
Menu	**Description**
ADVANCE SETTINGS DARKNESS RANGE A B	Setting print darkness range. Available options displayed on the screen are A and B. Select only A for general media usage. The initial setting is at A.
ADVANCE SETTINGS BEEP ON ERROR ENABLE DISABLE	Set to enable or disable the buzzer to beep on command error. **ENABLE**: Beep sound is heard when error occurs. **DISABLE**: No beep sound when error occurs. The initial setting is ENABLE.
ADVANCE SETTINGS DISPLAY ERROR ENABLE DISABLE	Set to enable or disable the display of command error. **ENABLE**: Executes the command error display when error is occurred. **DISABLE**: Do not execute the command error display and do not display command error warnings. The initial setting is DISABLE.

3.11 ADVANCE SETTINGS MODE (Cont'd)

<table>
<tr><th colspan="2">ADVANCE SETTINGS MODE</th></tr>
<tr><th>Menu</th><th>Description</th></tr>
<tr>
<td>

ADVANCE SETTINGS
HEAD CHECK
 ENABLE DISABLE

</td>
<td>

The printer can be set to perform a check of the print head during printing operation.
ENABLE: Head check function is on.
Select ENABLE and press the **FEED** button to proceed to HEAD CHECK menu.
DISABLE: Head check function is off.
Select DISABLE and press the **FEED** button to proceed directly to AUTO ONLINE menu.
The initial setting is DISABLE.

</td>
</tr>
<tr>
<td>

ADVANCE SETTINGS
HEAD CHECK
STANDARD   ▶

BARCODE   ▶

</td>
<td>

If Head Check is set to ENABLE, you can specify the print head check range to be performed unconditionally, or only when barcodes are being printed.
These screens are displayed only when HEAD CHECK is set to ENABLE.
STANDARD: Head check is performed on the entire print head.
BARCODE: Head check is performed only on position where barcodes are being printed.
The initial setting is STANDARD.

</td>
</tr>
<tr>
<td>

ADVANCE SETTINGS
HEAD CHECK MODE
ALL   ▶

CHECK LABELS   ▶

START-END   ▶

</td>
<td>

Setting head check mode.
These screens are displayed only when HEAD CHECK is set to ENABLE.
ALL: Perform head check on each item.
CHECK LABELS: Perform head check according to the specified quantity of head check.
START-END: Perform head check before starting print job and while pausing print job.
The initial setting is ALL.
Note:
Motion 1 (Backfeed after printing): Perform head check before starting print job and after backfeed.
Motion 2 (Backfeed before printing): Perform head check before and after backfeed.

</td>
</tr>
<tr>
<td>

ADVANCE SETTINGS
CHECK LABELS
        000001

</td>
<td>

Setting the frequency of head check. Head check is performed every time you print out the specified number of media.
This screen is displayed only when HEAD CHECK MODE is set to CHECK LABELS.
Press the **LINE** button to change the setting value and press the **FEED** button to move the cursor to the next digit.
Setting range is between 000001 to 999999.
The initial value is 000001.

</td>
</tr>
<tr>
<td>

ADVANCE SETTINGS
AUTO ONLINE
 ENABLE DISABLE

</td>
<td>

Setting the auto online function during printer start up.
This function sets the printer status at the time of power on.
ENABLE: Starting up the printer in online mode.
DISABLE: Starting up the printer in offline mode.
The initial setting is ENABLE.

</td>
</tr>
</table>

3.11 ADVANCE SETTINGS MODE (Cont'd)

ADVANCED MODE	
Menu	**Description**
ADVANCE SETTINGS CONTROL CODE STANDARD ▶ ALT. PROTOCOL ▶	To set the control code. The ESC sequence in SBPL commands can be defined as standard (using non-printable code 1BH) or alternative protocol (some other user code). **STANDARD** [Control code of Sato standard] 　　STX: <02H>　　　　ETX: <03H> 　　ESC: <1BH>　　　　ENQ: <05H> 　　CAN: <18H>　　　　NULL: <7EH> **ALT.PROTOCOL** [Control code of alternative protocol] 　　STX: <7BH>　　　　ETX: <7DH> 　　ESC: <5EH>　　　　ENQ: <40H> 　　CAN: <21H>　　　　NULL: <00H> To set the control code of alternative protocol, send the user download command <LD> in normal mode. For more details on the <LD> command, refer to the Command Specifications. The initial setting is STANDARD.
ADVANCE SETTINGS PRIORITY SETTING COMMAND ▶ INTERNAL ▶	This screen appears when selecting priority setting. PRIORITY SETTING specifies which one is prioritized between SBPL data or the internal setting of the printer for following system setting command. PRINT DARKNESS <#F>, PRINT SPEED <CS>, PRINT OFFSET<A3>, OPERATION MODE <PM>, PRINT METHOD<PH>, SENSOR TYPE<IG> **COMMAND**: Prioritizes SBPL data from the host. **INTERNAL**: Prioritizes the internal setting of the printer. The initial setting is COMMAND.
ADVANCE SETTINGS LANGUAGE ENGLISH ▶ CHINESE ▶	To set the display language. **ENGLISH** or **CHINESE** can be selected. The initial setting is either ENGLISH or CHINESE, depending on the region in which it was purchased. **Note:** The language options shown on the display depends on the font downloaded into the printer memory.

3.12 HEX DUMP MODE

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.
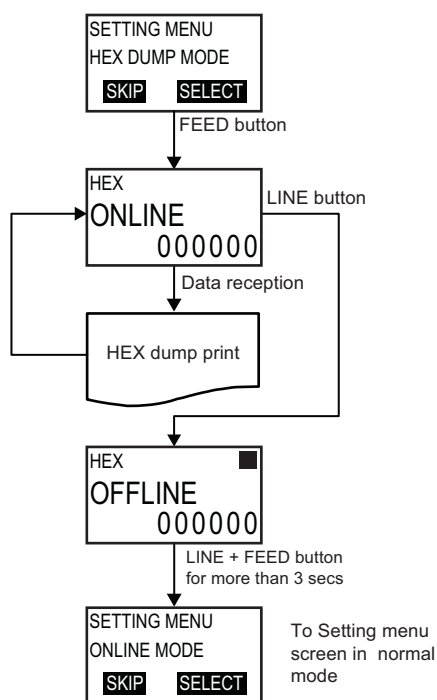
```
┌──────────────────┐
│SETTING MENU      │
│HEX DUMP MODE     │
│ SKIP    SELECT   │
└──────────────────┘
        │ FEED button
        ▼
┌──────────────────┐
│HEX               │──── LINE button
│ONLINE            │
│      000000      │
└──────────────────┘
        │ Data reception
        ▼
┌──────────────────┐
│  HEX dump print  │
└──────────────────┘
        │
        ▼
┌──────────────────┐
│HEX          ■    │
│OFFLINE           │
│      000000      │
└──────────────────┘
        │ LINE + FEED button
        │ for more than 3 secs
        ▼
┌──────────────────┐
│SETTING MENU      │    To Setting menu
│ONLINE MODE       │    screen in  normal
│ SKIP    SELECT   │    mode
└──────────────────┘
```
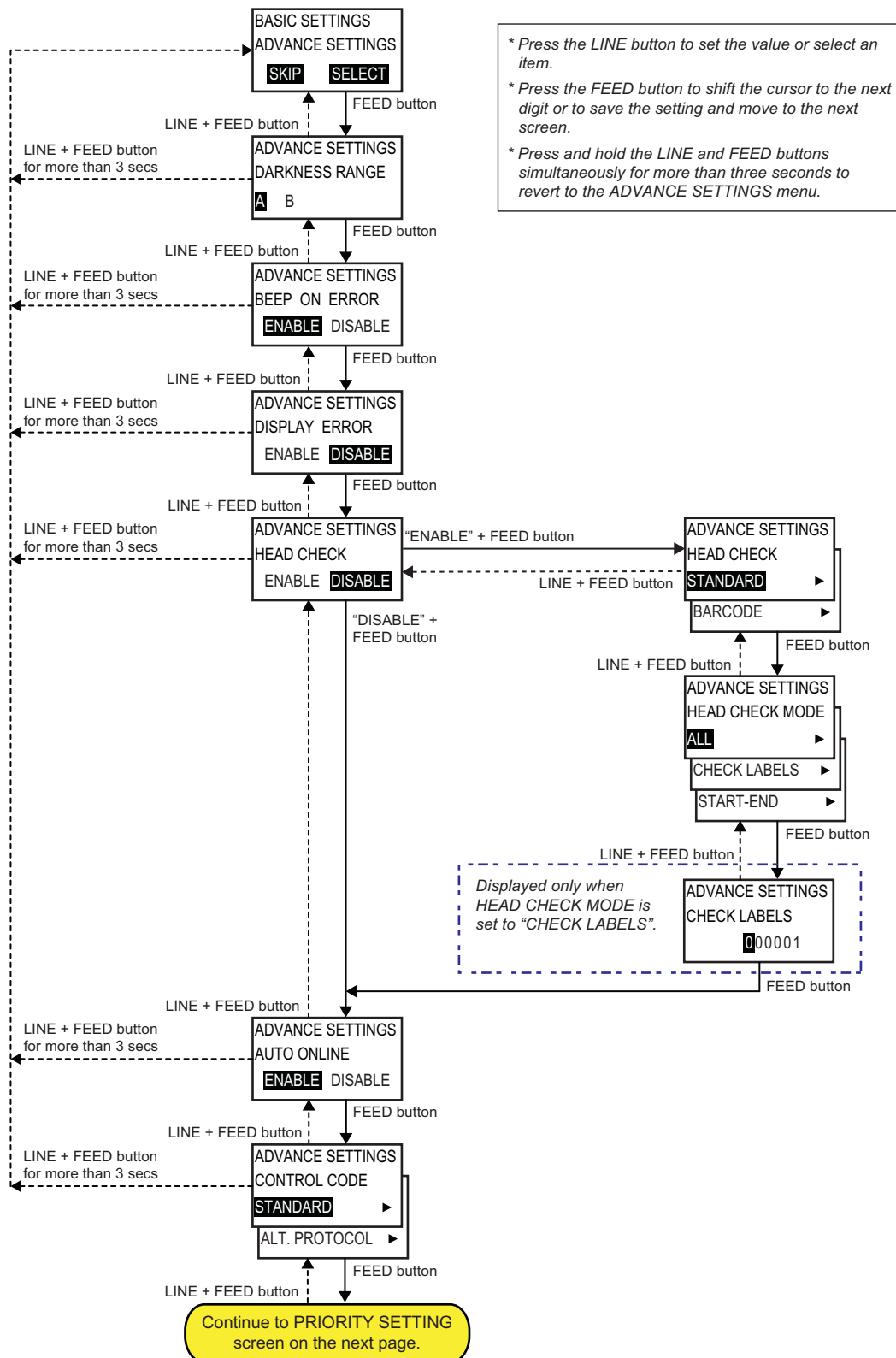
1. When the printer is in OFFLINE mode, press and hold the **LINE** and **FEED** buttons simultaneously for more than three seconds. The printer switches to SETTING MENU mode. Then press the **LINE** button repeatedly to display HEX DUMP MODE menu.

2. When HEX DUMP MODE is displayed, press the **FEED** button to enter to HEX dump mode.

HEX DUMP MODE	
Menu	**Description**
HEX ▶ PRINTING... 000000 HEX ONLINE 000000 HEX AUTO FEEDING... 000000	These screens are displayed when the printer is online in HEX dump mode. Pressing the **LINE** button in online pauses printing and goes offline. **PRINTING...**: This message appears when the printer is printing media. **ONLINE**: This message appears when the media is installed to the printer and the printer is waiting to receive data in online mode. **AUTO FEEDING...**: This message appears when the printer is auto-feeding the media while waiting to receive data in online mode.

3.12 HEX DUMP MODE (Cont'd)

HEX DUMP MODE	
Menu	**Description**
HEX ■ OFFLINE 000000 HEX ⏸ PAUSE 000005 HEX AUTO FEEDING... 000000	These screens displayed when the printer is offline in HEX dump mode. **OFFLINE**: This message appears when the printer is waiting to receive data in offline mode. **PAUSE**: This message appears when the print job pauses. **AUTO FEEDING...**: This message appears when the printer is auto-feeding the media while waiting to receive data in online.

3.13 DEFAULT MODE

The printer can be reset to the default setting as in the factory preset.
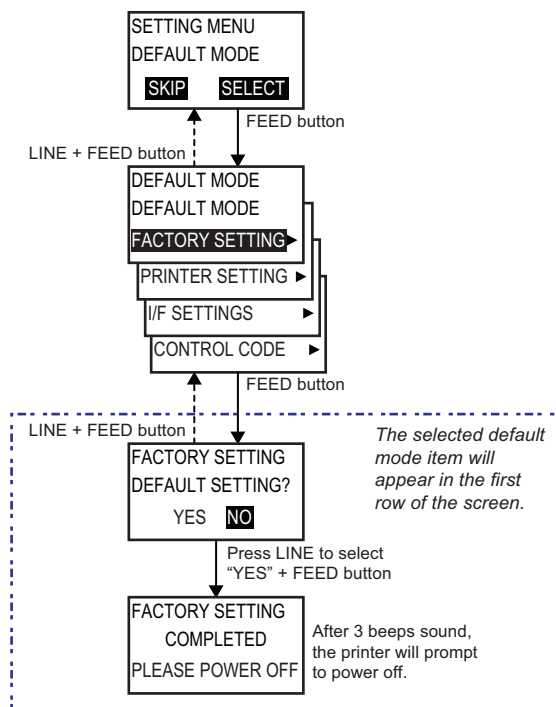
```
                      ┌─────────────────┐
                      │ SETTING MENU    │
                      │ DEFAULT MODE    │
                      │ [SKIP]  [SELECT]│
                      └─────────────────┘
         LINE + FEED button ↑    │ FEED button
                              ┆   ↓
                      ┌─────────────────┐
                      │ DEFAULT MODE    │
                      │ DEFAULT MODE    │
                      │ [FACTORY SETTING]▶│
                      │  ┌──────────────────┐
                      │  │ PRINTER SETTING ▶│
                      │  │ I/F SETTINGS    ▶│
                      │  │ CONTROL CODE    ▶│
                      │  └──────────────────┘
                                   │ FEED button
         LINE + FEED button        ↓
  ┌ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ┐
  │          ↑                                      │
  │   ┌─────────────────┐   The selected default   │
  │   │ FACTORY SETTING │   mode item will          │
  │   │ DEFAULT SETTING?│   appear in the first     │
  │   │                 │   row of the screen.      │
  │   │  YES   [NO]     │                           │
  │   └─────────────────┘                           │
  │          │   Press LINE to select               │
  │          │   "YES" + FEED button                │
  │          ↓                                       │
  │   ┌─────────────────┐                           │
  │   │ FACTORY SETTING │   After 3 beeps sound,     │
  │   │ COMPLETED       │   the printer will prompt  │
  │   │ PLEASE POWER OFF│   to power off.            │
  │   └─────────────────┘                           │
  └ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ┘
```

1. When the printer is in OFFLINE mode, press and hold the **LINE** and **FEED** buttons simultaneously for more than three seconds. The printer switches to SETTING MENU mode. Then press the **LINE** button repeatedly to display DEFAULT MODE on the screen. Press the **FEED** button to enter to Default mode.

2. When DEFAULT MODE menu is displayed, press the **LINE** button to select an item and then press the **FEED** button to save the setting and proceed to the next screen.

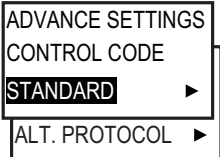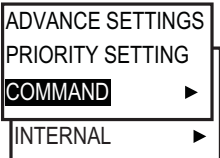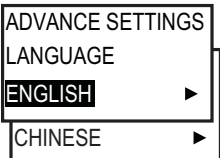| DEFAULT MODE	
Menu	**Description**
DEFAULT MODE DEFAULT MODE FACTORY SETTING ▶ PRINTER SETTING ▶ I/F SETTINGS ▶ CONTROL CODE ▶	Select the item to be initialized. **FACTORY SETTING**: Initialize the settings to factory default. **PRINTER SETTING**: Initialize the basic setting to default. **I/F SETTINGS**: Initialize the interface settings to default. **CONTROL CODE**: Initialize the communication protocol code to default. The initial setting is FACTORY SETTING.
FACTORY SETTING DEFAULT SETTING? YES NO	DEFAULT SETTING confirmation menu. Default mode item that was selected in previous display appears in the first row of the screen. Selecting YES and pressing the **FEED** button will initialize the printer setting. The initial setting is NO. If NO, it returns to DEFAULT MODE without initializing the printer setting.

3.13 DEFAULT SETTING MODE (Cont'd)

DEFAULT MODE	
Menu	**Description**
FACTORY SETTING COMPLETED PLEASE POWER OFF	This screen shows the completion of initialization and the printer beeps three times. After this message is shown, set the power to off.

3.13.1 Table of Default Settings

The symbol "O" indicates affected items that will be reset to default values in DEFAULT MODE.

Items	Default Mode				Default Value
	Factory Setting	Printer Setting	I/F Settings	Control Code	CW408
ADJUSTMENT MODE					
PITCH POSITION	O	—	—	—	+0.00 mm
OFFSET POSITION (CUTTER POSITION)	O	—	—	—	+0.00 mm
PRINT DARKNESS	O	—	—	—	50
BUZZER	O	—	—	—	ENABLE
BRIGHTNESS	—	—	—	—	2
CANCEL PRINT JOB	—	—	—	—	NO
BASIC SETTINGS					
PRINT SETTINGS					
ADJUSTMENT MODE	—	—	—	—	PITCH
PRINT SPEED	O	O	—	—	4 IPS
PRINT DARKNESS	O	O	—	—	05
PRINT OFFSET	O	O	—	—	V:+0000 H:+000
FONT SETTINGS					
ZERO SLASH	O	O	—	—	ENABLE
CHARACTER PITCH	O	O	—	—	ENABLE
CODE PAGE	O	O	—	—	CP-858
OPERATION SETTINGS					
OPERATION MODE	O	O	—	—	TEAR OFF (without option) /CUTTER (when cutter is installed) /DISPENSER (when dispenser is installed)
MEDIA TYPE	O	O	—	—	FAN-FOLD (CONTINUOUS, TEAR OFF, CUTTER) /ROLL (DISPENSER)
BACKFEED MOTION	O	O	—	—	BEFORE
SENSOR	O	O	—	—	GAP
BRIGHTNESS TIMER	O	O	—	—	00
I/F SETTINGS					
INTERFACE SETTING	O	—	O	—	AUTO SELECT
LAN					
DHCP SETTING	—	—	—	—	DISABLE
RARP SETTING	—	—	—	—	DISABLE
IP ADDRESS	—	—	—	—	192.168.001.001
SUBNET MASK	—	—	—	—	255.255.255.000
GATEWAY ADDRESS	—	—	—	—	0.0.0.0
PORT NUMBER 1	—	—	—	—	1024
PORT NUMBER 2	—	—	—	—	1025
PORT NUMBER 3	—	—	—	—	9100
PROTOCOL	O	—	O	—	STATUS4
REPLY TIMING	O	—	O	—	ENQ

3.13 DEFAULT SETTING MODE (Cont'd)

3.13.1 Table of Default Settings (Cont'd)

Items	Default Mode				Default Value
	Factory Setting	**Printer Setting**	**I/F Settings**	**Control Code**	**CW408**
ADVANCE SETTINGS					
DARKNESS RANGE	O	—	—	—	A
BEEP ON ERROR	O	—	—	—	ENABLE
DISPLAY ERROR	O	—	—	—	DISABLE
HEAD CHECK	O	—	—	—	DISABLE
HEAD CHECK	O	—	—	—	STANDARD
HEAD CHECK MODE	O	—	—	—	ALL
CHECK LABELS	O	—	—	—	000001
AUTO ONLINE	O	—	—	—	ENABLE
CONTROL CODE	O	—	—	—	STANDARD
PRIORITY SETTING	—	—	—	—	COMMAND
LANGUAGE	O	—	—	—	ENGLISH
DEFAULT MODE					
DEFAULT MODE	—	—	—	—	FACTORY SETTING
DEFAULT SETTING?	—	—	—	—	NO
TEST PRINT					
MODE SELECT	—	—	—	—	USER TEST
SIZE SELECT	—	—	—	—	LARGE
MAINTENANCE MODE					
MODE SELECT	—	—	—	—	SERVICE MODE
SERVICE MODE					
SENSOR ADJUST					
MODE SELECT	—	—	—	—	AUTOMATIC
SENSOR SELECT	—	—	—	—	ALL
I-MARK ADJUST LEVEL (E)	—	—	—	—	02
I-MARK ADJUST LEVEL (R)	—	—	—	—	07
I-MARK SLICE LEVEL	—	—	—	—	1.4 V
GAP ADJSUT LEVEL (E)	—	—	—	—	02
GAP ADJSUT LEVEL (R)	—	—	—	—	07
GAP SLICE LEVEL	—	—	—	—	1.4 V
PAPER ADJUST LEVEL (R)	—	—	—	—	07
PAPER SLICE LEVEL	—	—	—	—	1.4 V
MACHINE SETTING					
USB SERIAL NO.	—	—	—	—	ENABLE
POWER ON SETTING	—	—	—	—	STANDBY
AUTO LABEL FEED	—	—	—	—	ENABLE
AUTO FEED POS	—	—	—	—	+00 dot
FACTORY MODE					
FACTORY CLEAR					
COUNTER CLEAR	—	—	—	—	NONE
COUNTER INDICATION	—	—	—	—	NONE
LIFE COUNTER	—	—	—	—	0.0M
HEAD COUNTER	—	—	—	—	0.0M
CUT COUNTER	—	—	—	—	0
TEST PRINT	—	—	—	—	YES
SIZE SELECT	—	—	—	—	LARGE

3.14 TEST PRINT MODE

```
        ┌─────────────────────────────┐
        │ Press and hold FEED button  │
        │   +  Power button to on     │
        └─────────────────────────────┘
                      │
        ┌─ ─ ─ ─ ─ ─ ─│─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─┐
        │             ▼                       │
        │  ┌──────────────────┐               │
        │  │ TEST PRINT       │               │
        │  │ MODE SELECT      │               │
        │  │ USER TEST      ► │               │
        │  │  └─┤ SERVICE TEST      ► │        │
        │     │ BARCODE           ► │         │
        │     │ HEAD CHECK        ► │         │
        │     │ FONTS             ► │         │
        │     │ FACTORY           ► │         │
        │     └────────────────────┘          │
        └─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ┘
                      │  FEED button
```
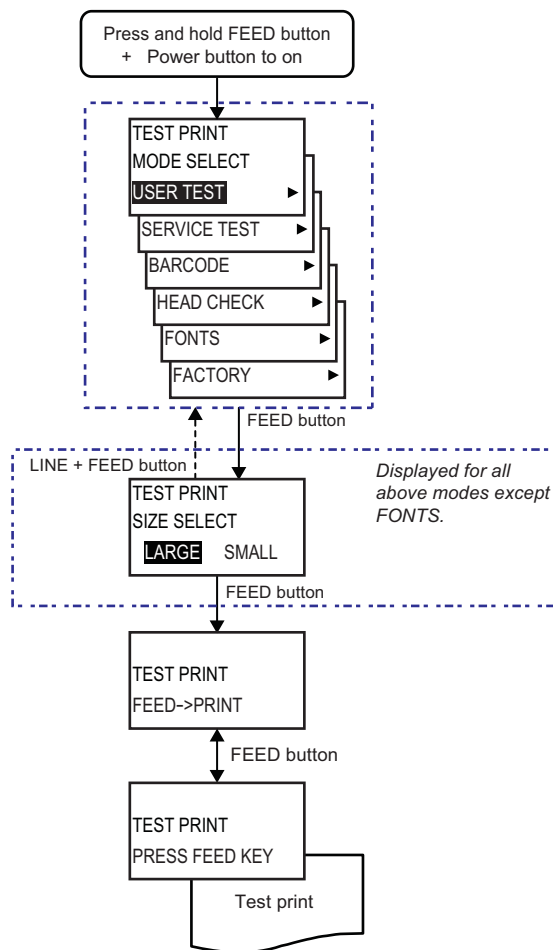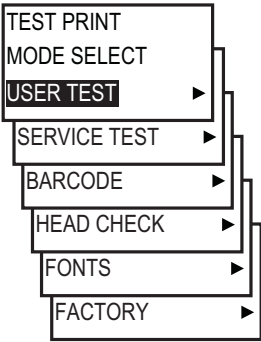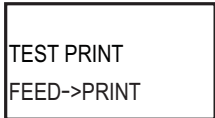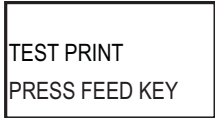
The Test print mode offers six different printer status options for troubleshooting.

1. Make sure that the power of the printer is set to off.

2. While holding down the **FEED** button, press the ⏻ power button. Release the ⏻ power button when the indicators come on. Keep holding the **FEED** button until the printer beeps.

3. TEST PRINT MODE SELECT is displayed on the screen. Press the **LINE** button to select the test print contents as shown above. Press the **FEED** button to save the setting and proceed to the next screen.

4. SIZE SELECT screen will display for all MODE SELECT items except FONTS. Press the **LINE** to select the size. Press the **FEED** button to save the setting and move to the next screen. To return to the MODE SELECT screen, press the **LINE** and **FEED** buttons simultaneously.

5. Press the **FEED** button to start printing. Press the **FEED** button while printing to pause the test print operation. Press the **FEED** button again to continue printing.

To exit the Test print mode

Make sure that the printer is in pause mode, press the ⏻ power button to set printer to off.

3.14 TEST PRINT MODE (Cont'd)

TEST PRINT MODE	
Menu	**Description**
TEST PRINT MODE SELECT USER TEST ▶ SERVICE TEST ▶ BARCODE ▶ HEAD CHECK ▶ FONTS ▶ FACTORY ▶	Choosing the test print contents. **USER TEST**: The configuration settings of the printer will be printed. **SERVICE TEST**: This test print is for service engineer use. **BARCODE**: The barcodes installed in this printer will be printed. **HEAD CHECK**: The head check pattern of the selected media size area will be printed. **FONTS**: The contents of the fonts installed in this printer will be printed. **FACTORY**: The factory test print will be performed. The initial setting is USER TEST.
TEST PRINT SIZE SELECT LARGE SMALL	If you chose test prints of USER TEST, SERVICE TEST, BARCODE, HEAD CHECK or FACTORY in the previous menu (except FONTS), this screen appears for selecting print size. In this screen, you can choose to print the test results in LARGE or SMALL print widths. **SMALL**: Test print in 50 mm (1.97") wide **LARGE**: Test print in 104 mm (4.09") wide The initial setting is LARGE.
TEST PRINT FEED->PRINT TEST PRINT PRESS FEED KEY	Test print is in progress Press the **FEED** button to start printing. Press the **FEED** button while printing to pause the test print operation. Press the **FEED** button again to continue printing. **To exit the Test print mode** Make sure that the printer is in pause mode, press the ⏻ power button to set printer to off.

3.14 TEST PRINT MODE (Cont'd)

3.14.1 Types of Test Prints

The following test print types are available.

1. Factory test print
2. Configuration test print (User test print)
3. Service test print
4. Barcode test print
5. Head check test print
6. Font test print

3.14.2 Factory Test Print

The Factory test print will print out the printer's setting.
Printed contents are subject to change without notice and the value depends on individual settings.
The printer setting will be printed on 3 pages when executing factory test print via the test print mode.

1) **First piece** --

Printed Item Name	Item Name	Description
Model Name	Model name	CW408
Firm Version	Firmware version	58.xx.xx.xx
Firm Date	Firmware creation date	YY.MM.DD (The last two digits of the year, month, and date)
Check Sum	CONT PCB's checksum	(B)xxxx (P)xxxx (K)xxxx (A)xxxx
PCB Version	CONT PCB's version	x
PCB S/N	CONT PCB's serial number	xxxxxxxx
Life Counter	Life counter	Printing the total usage. xxxxxxxxx.x(m)
Head Counter 1 Head Counter 2 Head Counter 3	Head counter 1, 2, 3	Printing the total usage of print head. xxxxxxxxx.x(m)
Cutter Counter	Cutter counter	Printing the cutter usage. xxxxxx(cuts)
Head-Check [All]	Head check result	Performing head check and printing out its result. Head check OK: OK Head check NG: NG (NG will be highlighted)
Pitch [-3.75~+3.75]	Print position adjustment value	±3.75(mm)
Offset [-3.75~+3.75]	Stop position adjustment value	±3.75(mm)
Darkness [00~99]	Darkness adjustment value	xx
Factory Pitch	Print position adjustment value for factory setting	±xx(dot)
Factory Cutter	Cut position adjustment value for factory setting	±xx(dot)
Factory Disp	Dispense position adjustment value for factory setting	±xx(dot)

3.14 TEST PRINT MODE (Cont'd)

Printed Item Name	Item Name	Description
Factory TearOff	Tear off position adjustment value for factory setting	±xx(dot)
Factory ALF	ALF position adjustment value for factory setting	±xx(dot)
Sensor Type	Sensor type	Printing the selected sensor type. I-mark: Reflective sensor Gap: Transmissive sensor
Option Unit	Installed option	Cutter/ Dispenser/ None
Sensor1	Sensor type	Reflective, Transmissive
Low [Lo<0.6]/ High [0.9<Hi-Lo]/ Slice Level Adjust Level(Emit) Adjust Level(Recv)	Sensor level	The sensor level selected by the sensor type will be shown. 1. When the sensor is disabled, Low/High will be indicated as "None". 2. When the slice level is automatic, it will be indicated as "Auto". 3. When the slice level is not automatic, Low/High will be indicated as "----". 4. When Low/High levels are outside the specified range, they will be highlighted.
Sensor2	Sensor type	Paper Check
Slice Level Adjust Level(Recv)	Sensor level	The sensor level selected by the sensor type will be shown. 1. When the slice level is automatic, it will be indicated as "Auto".

3.14 TEST PRINT MODE (Cont'd)

2) **Second piece** --
When a large print size is selected due to test print layout, the following information will be printed out.

Printed Item Name	Item Name	Description
Print Speed	Print speed	2 ~ 6 (inch/s)
Print Darkness	Print darkness	1 (Lightest) ~ 10 (Darkest) A
Print Offset V	Vertical print offset position	±xxxx(dot)
Print Offset H	Horizontal print offset position	±xxxx(dot)
Label Size	Label size (Pitch/Width)	(P)xxxx X (W)xxx (dot)
Zero Slash	Zero slash setting	Zero with a slash through it: Enable Zero without a slash: Disable
Codepage	Character code setting	858
Kanji Font	Kanji font	GB18030
Character Pitch	Character pitch	Printing by proportional pitch: Proportional Printing by fixed pitch: Fixed
Operation Mode	Operation mode settings	Continuous/ Tear Off/ Cutter/ Dispenser
Backfeed Action	Backfeed action	After: Action 1 Before: Action 2 No backfeed motion: None
Print Method	Print method	Direct Thermal
Sensor Type	Sensor type	I-mark sensor: Reflective Sensor Gap sensor: Transmissive Sensor Sensor disabled: None
OLED Sleep Time	OLED sleep time	00 ~15 (min)
OLED Brightness	OLED brightness	01 (dark) ~ 03 (bright)
OLED Language	OLED language	ENGLISH/ CHINESE
Head Check	Head check setting	When head check is disabled: None When head check is enabled: Checking actual print area: Normal Checking barcode print area: Barcode
Head Check Mode	Head check mode	1Item/ Page(xxxxxx)/ Start-End/ None
Auto Online	Auto online	Enable/ Disable
Initial Feed	Initial feed	Enable/ Disable
Online Feed	Online feed	Enable/ Disable
Priority Setting	Priority setting	Command/ Internal
Command Error	Command error	Enable/ Disable
Paper End Search	Paper end search	ROLL/ FANFOLD
Buzzer	Buzzer	Enable/ Disable
Option waiting time	Option waiting time	1000 (ms)
Ignore CR/LF	Ignore CR/LF	Enable/ Disable
Ignore CAN/DLE	Ignore CAN/DLE	Enable/ Disable
Protocol Code	Protocol code setting	Standard code: Standard Non-standard code: Non-standard Also, the protocol code set for the printer will be printed out. STX:xxH, ETX:xxH, ESC:xxH, ENQ:xxH, CAN:xxH, NULL:xxH, OFFLINE:xxH, EURO:xxH

3.14 TEST PRINT MODE (Cont'd)

3) **Third piece** --
When a large print size is selected due to test print layout, the following information will be printed out.

Printed Item Name	Item Name	Description
Select Interface	Select interface	AUTO/ USB/ LAN
Interface 1	Interface 1	USB
Protocol	Protocol setting	Status-4
USB S/N	USB serial number	xxxxxxxx
Interface 2	Interface 2	LAN
Protocol	Protocol setting	Status-3 Status-4 (ENQ) Status-4 (CYC)
Mac Address	Mac address	xx:xx:xx:xx:xx:xx
IP Address	IP address	xxx.xxx.xxx.xxx
Subnet Mask	Subnet mask	xxx.xxx.xxx.xxx
Gateway Address	Default gateway	xxx.xxx.xxx.xxx
DHCP/RARP	DHCP/RARP setting	Enable / Disable
PORT 1/2/3	LAN port number 1, 2 and 3	xxxx/ xxxx/ xxxx

3.14 TEST PRINT MODE (Cont'd)

3.14.3 Configuration Test Print (User Test Print)

Printed Item Name	Description
Print Speed	2 to 6(inch/s)
Print Darkness	1 (Lightest) ~ 10 (Darkest) A
Print Offset V	±xxxx(dot)
Print Offset H	±xxxx(dot)
Label Size	(P)xxxx X (W) xxx (dot)
Operation Mode	Continuous mode: Continuous Cutter mode: Cutter Dispenser mode: Dispenser Tear-off mode: Tear off
Backfeed Action	After: Action 1 Before: Action 2 No backfeed motion: None
Print Method	Direct thermal printing: Direct thermal
Sensor Type	I-mark: Reflective sensor Gap: Transmissive sensor Sensor disabled: None
OLED Sleep Time	00 ~15 (min)
OLED Brightness	01 (dark) ~ 03 (bright)
OLED Language	ENGLISH/ CHINESE
Zero Slash	Zero slash enabled: Enable Zero slash disabled: Disable
Codepage	858
Kanji Font	GB18030
Character Pitch	Printing by proportional pitch: Proportional Printing by fixed pitch: Fixed

Head Check	Disabled: None
	Enabled:
	   Actual print area checking: Normal
	   Barcode print area checking: Barcode

Head Check Mode	1Item/ Page(xxxxxx)/ Start-End/ None
Auto Online	Enable/ Disable
Initial Feed	Enable/ Disable
Online Feed	Enable/ Disable
Priority Setting	Command/ Internal
Command Error	Enable/ Disable
Paper End Search	ROLL/ FANFOLD
Buzzer	Enable/ Disable
Option waiting time	1000 (ms)
Ignore CR/LF	Enable/ Disable
Ignore CAN/DLE	Enable/ Disable
Protocol Code	Standard/ Non-Standard Printing out the protocol code set for the printer. STX:xxH, ETX:xxH, ESC:xxH, ENQ:xxH, CAN:xxH, NULL:xxH, OFFLINE:xxH, EURO:xxH
Printed contents of the interfaces will be the same as that of factory test print.	

3.14 TEST PRINT MODE (Cont'd)

3.14.4 Service Test Print

The contents of the Service test print are similar to the printout in the User test print mode.

3.14.5 Barcode Test Print

The barcodes used for test print are as follows.
1. CODABAR(NW-7)
2. CODE 39
3. ITF
4. JAN/EAN 13
5. JAN/EAN 8
6. INDUSTRIAL 2/5
7. MATRIX 2/5
8. CODE 93
9. UPC E
10. CODE 128
11. UCC 128
12. CUSTOMER
13. QR CODE
14. MAXICODE
15. PDF417

3.14.6 Head Check Test Print

Printing out the results of the head check.

3.14.7 Font Test Print

The fonts used for test print are as follows.
1. OCR-A FONT(15X22)
2. OCR-B FONT(15X22)
3. XU FONT(5X9)
4. XS FONT(17X17)
5. XM FONT(24X24)
6. XB FONT(48X48)
7. XL FONT(48X48)

3.15 MAINTENANCE MODE

In Maintenance mode, you can further access Service mode for more printer configurations.
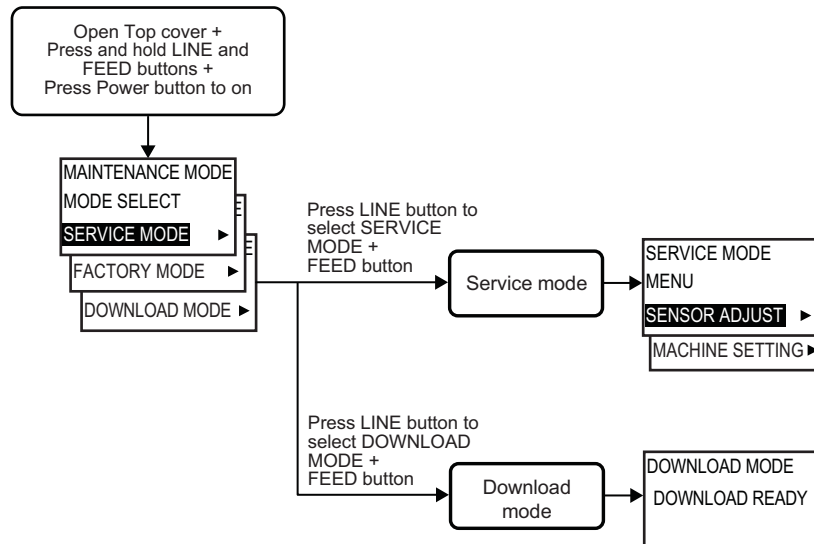
1. Make sure that the power of the printer is set to off.

2. Press the **cover open latch** on the right side of the printer to open the **top cover** of the printer.

3. While holding down the **LINE** and **FEED** buttons simultaneously, press the ⏻ power button to set the

    printer on. Release the ⏻ power button when the indicators come on. Keep holding the **LINE** and **FEED** buttons until the printer beeps.
    The printer will then enter MAINTENANCE MODE.

4. Press the **LINE** button to select SERVICE MODE or DOWNLOAD MODE, and then press the **FEED** button to enter to the selected mode.

    Note:
    FACTORY MODE is strictly for SATO authorized service personnel use. Any mis-adjustment or setting may disrupt the performance of the printer and may cause malfunction.

Note:
In Maintenance mode, all menu screens are displayed in English only. This includes all the menu screens for Service mode, Factory mode and Download mode.

3.16 SERVICE MODE

In SERVICE MODE menu, you can program various dimensional settings of the printer. Press the **LINE** button to select SENSOR ADJUST or MACHINE SETTING, and then press the **FEED** button to enter to the selected mode. Refer to the following flowcharts of the all setting and display menus available in SERVICE MODE.

3.16.1 Overview of Sensor Level Adjustment
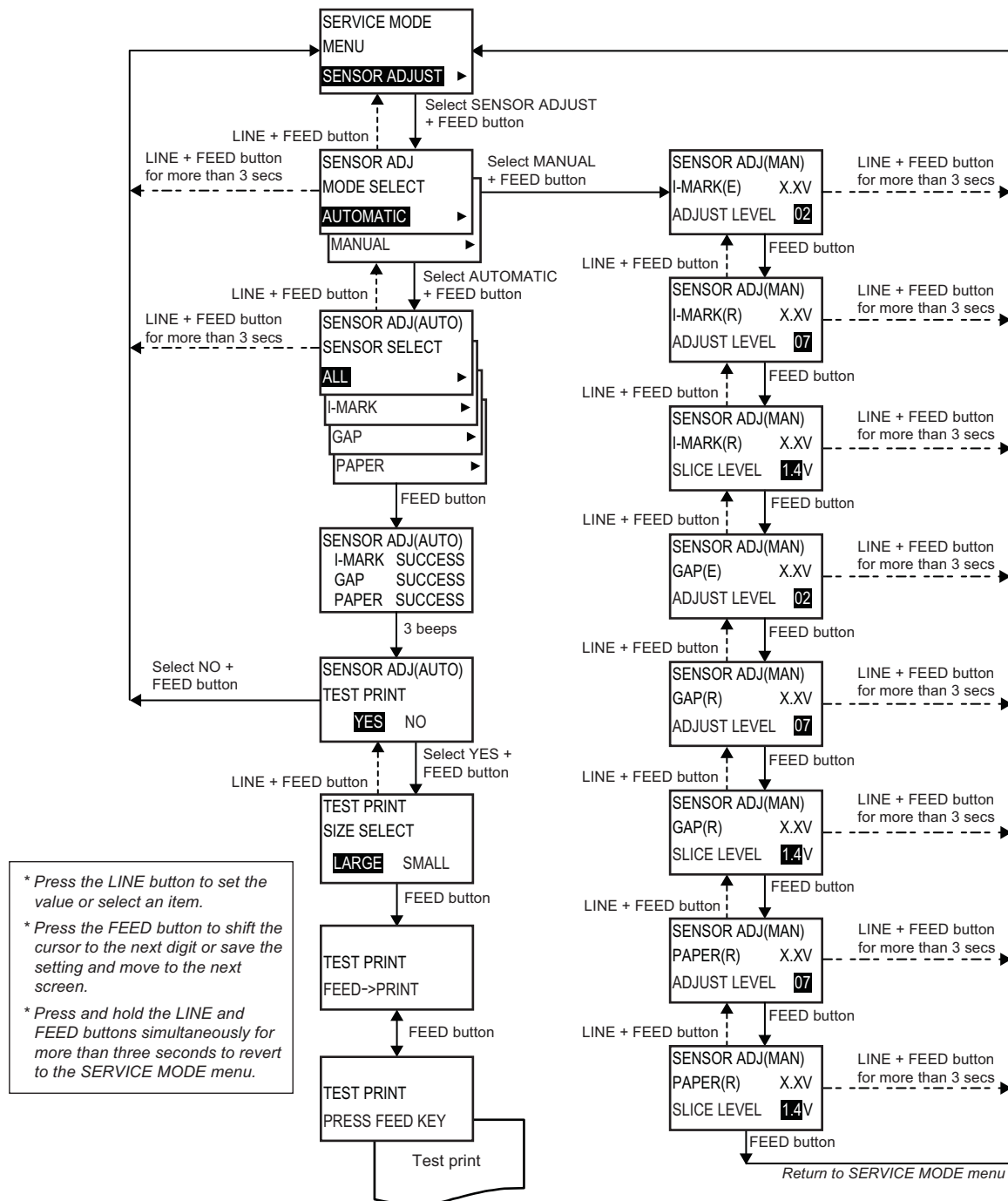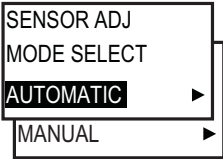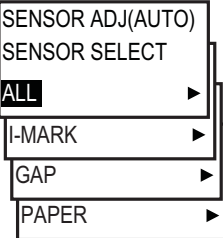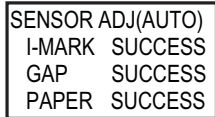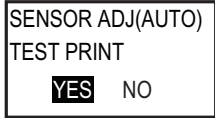
3.16 SERVICE MODE (Cont'd)

1. When SENSOR ADJUST is selected in the SERVICE MODE menu, press the **FEED** button to switch to the next setting options as shown above. To return to the previous setting option, press the **LINE** and **FEED** buttons simultaneously.

2. When the desired setting option is displayed, press the **LINE** button to select an item or to set the value and then press the **FEED** button to save the setting.

SENSOR ADJUST MODE	
Menu	**Description**
SENSOR ADJ MODE SELECT AUTOMATIC ▶ MANUAL ▶	To set the sensor adjustment method. **AUTOMATIC** or **MANUAL** can be selected. The initial setting is AUTOMATIC.
SENSOR ADJ(AUTO) SENSOR SELECT ALL ▶ I-MARK ▶ GAP ▶ PAPER ▶	To select the sensor for automatic sensor adjustment. **ALL**: Adjust I-mark sensor, Gap sensor and Paper sensor. **I-MARK**: Adjust I-mark sensor. **GAP**: Adjust Gap sensor. **PAPER**: Adjust Paper sensor. The initial setting is ALL.

SENSOR ADJ(AUTO)
I-MARK   SUCCESS
GAP   SUCCESS
PAPER   SUCCESS
	This screen shows the result of adjustment for the sensor selected in sensor adjustment (AUTO) selection screen.
	The screen displays SUCCESS when automatic adjustment succeeded.
	The screen displays FAILURE when automatic adjustment failed.
	
	When ALL is selected for SENSOR SELECT:
	    The screen displays the result of adjustment for I-MARK, GAP and PAPER.
	When I-MARK is selected for SENSOR SELECT:
	    The screen displays the result of adjustment for I-MARK.
	When GAP is selected for SENSOR SELECT:
	    The screen displays the result of adjustment for GAP.
	When PAPER is selected for SENSOR SELECT:
	    The screen displays the result of adjustment for PAPER.
	
	Buzzer emits three beeps and goes to TEST PRINT screen.

SENSOR ADJ(AUTO) TEST PRINT YES NO	This screen confirms issuance of a test print for the result of the auto sensor adjustment. The initial setting is YES.
TEST PRINT SIZE SELECT LARGE SMALL	To set the test print size of sensor adjustment result. In this screen, you can choose to print the test results in LARGE or SMALL print widths. **SMALL**: Test print in 50 mm (1.97") wide **LARGE**: Test print in 104 mm (4.09") wide The initial setting is LARGE.

3.16 SERVICE MODE (Cont'd)

<table>
<tr>
<th colspan="2">SENSOR ADJUST MODE</th>
</tr>
<tr>
<th>Menu</th>
<th>Description</th>
</tr>
<tr>
<td>
TEST PRINT
FEED->PRINT

TEST PRINT
PRESS FEED KEY
</td>
<td>
Test print is in progress
Press the **FEED** button to start printing.
Press the **FEED** button while printing to pause the test print operation. Press the **FEED** button again to continue printing.

To exit the Test print mode
Make sure that the printer is in pause mode, press the ⏻ power button to set printer to off.
</td>
</tr>
<tr>
<td>
SENSOR ADJ(MAN)
I-MARK(E)   X.XV
ADJUST LEVEL   02
</td>
<td>
Displays the current voltage of I-mark sensor on the upper part of the display. Adjust the light emission level of I-mark sensor with the **LINE** button. This offset determines how soon the sensor will respond to an incoming I-mark.
The adjustment range is between 00 to 03 and is shown on the bottom line of the display. The initial setting is 02.
Press the **FEED** button to save the setting and move to the next screen.
</td>
</tr>
<tr>
<td>
SENSOR ADJ(MAN)
I-MARK(R)   X.XV
ADJUST LEVEL   07
</td>
<td>
Displays the current voltage of I-mark sensor on the upper part of the display. Adjust the light reception level of I-mark sensor with the **LINE** button. This offset determines how soon the sensor will respond to an incoming I-mark.
The adjustment range is between 00 to 15 and is shown on the bottom line of the display. The initial setting is 07.
Press the **FEED** button to save the setting and move to the next screen.
</td>
</tr>
<tr>
<td>
SENSOR ADJ(MAN)
I-MARK(R)   X.XV
SLICE LEVEL   1.4V
</td>
<td>
Displays the current voltage of I-mark sensor on the upper part of the display. The slice level is calculated automatically and displayed on the bottom line. You can also adjust the slice level by pressing the **LINE** button.
The input range is 0.0V, and from 0.3V to 2.9V (adjustable in increments of 0.1V). The initial setting is 1.4V.
Notes:
• The slice level is automatically set by firmware when the value is set to 0.0V.
• In the case of automatic calculation, calculated value will be displayed automatically after printing.
Press the **FEED** button to save the setting and move to the next screen.
</td>
</tr>
<tr>
<td>
SENSOR ADJ(MAN)
GAP(E)   X.XV
ADJUST LEVEL   02
</td>
<td>
Displays the current voltage of Gap sensor on the upper part of the display. Adjust the light emission level of Gap sensor with the **LINE** button. This offset determines how soon the sensor will respond to an incoming Gap.
The adjustment range is between 00 to 03 and is shown on the bottom line of the display. The initial setting is 02.
Press the **FEED** button to save the setting and move to the next screen.
</td>
</tr>
<tr>
<td>
SENSOR ADJ(MAN)
GAP(R)   X.XV
ADJUST LEVEL   07
</td>
<td>
Displays the current voltage of Gap sensor on the upper part of the display. Adjust the light reception level of Gap sensor with the **LINE** button. This offset determines how soon the sensor will respond to an incoming Gap.
The adjustment range is between 00 to 15 and is shown on the bottom line of the display. The initial setting is 07.
Press the **FEED** button to save the setting and move to the next screen.
</td>
</tr>
</table>

3.16 SERVICE MODE (Cont'd)

SENSOR ADJUST MODE	
Menu	**Description**
SENSOR ADJ(MAN) GAP(R) X.XV SLICE LEVEL 1.4V	Displays the current voltage of I-mark sensor on the upper part of the display. The slice level is calculated automatically and displayed on the bottom line. You can also adjust the slice level by pressing the **LINE** button. The input range is 0.0V, and from 0.3V to 2.9V (adjustable in increments of 0.1V). The initial setting is 1.4V. **Notes**: • The slice level is automatically set by firmware when the value is set to 0.0V. • In the case of automatic calculation, calculated value will be displayed automatically after printing. Press the **FEED** button to save the setting and move to the next screen.
SENSOR ADJ(MAN) PAPER(R) X.XV ADJUST LEVEL 07	Displays the current voltage of Paper sensor on the upper part of the display. Adjust the light reception level of the Paper sensor with the **LINE** button. This offset determines how soon the sensor will respond to incoming media. The adjustment range is between 00 to 15 and is shown on the bottom line of the display. The initial setting is 07. Press the **FEED** button to save the setting and move to the next screen.
SENSOR ADJ(MAN) PAPER(R) X.XV SLICE LEVEL 1.4V	Displays the current voltage of Paper sensor on the upper part of the display. The slice level is calculated automatically and displayed on the bottom line. You can also adjust the slice level by pressing the **LINE** button. The input range is 0.0V, and from 0.3V to 2.9V (adjustable in increments of 0.1V). The initial setting is 1.4V. **Notes**: • The slice level is automatically set by firmware when the value is set to 0.0V. • In the case of automatic calculation, calculated value will be displayed automatically after printing. Press the **FEED** button to save the setting and move to the SERVICE MODE menu.

3.16 SERVICE MODE (Cont'd)

3.16.2 Overview of Machine Setting Menu

Return to SERVICE MODE menu

* Press the LINE button to set the value or
  select an item.

* Press the FEED button to shift the cursor to
  the next digit or to save the setting and move
  to the next screen.

* Press and hold the LINE and FEED buttons
  simultaneously for more than three seconds
  to revert to the SERVICE MODE menu.
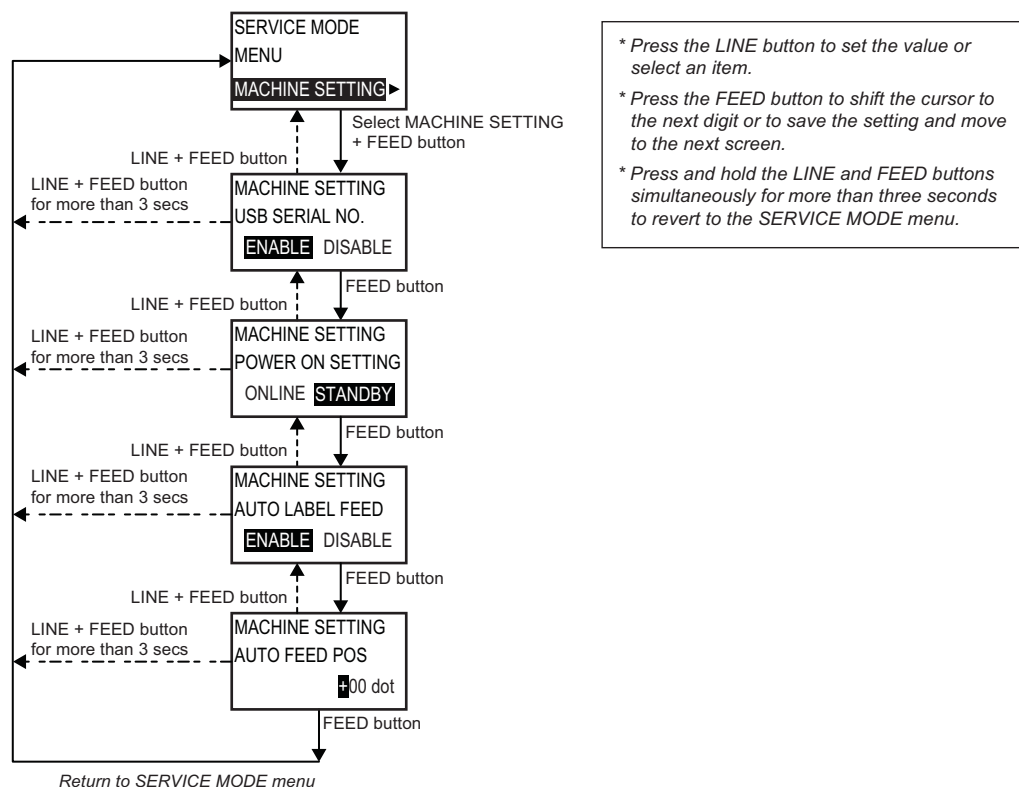
1. When MACHINE SETTING is selected in the SERVICE MODE menu, press the **FEED** button to switch to the next setting options as shown above. To return to the previous setting option, press the **LINE** and **FEED** buttons simultaneously.

2. When the desired setting option is displayed, press the **LINE** button to select the item or to set the value and then press the **FEED** button to save the setting.

MACHINE SETTING MODE	
Menu	**Description**
MACHINE SETTING USB SERIAL NO. ENABLE DISABLE	Enabling/Disabling USB serial number return. **ENABLE**: Returns USB serial number. **DISABLE**: Does not return USB serial number. (Returns all "0", zero.) The initial setting is ENABLE.
MACHINE SETTING POWER ON SETTING ONLINE STANDBY	Setting the power mode ON. **ONLINE**: The printer will automatically power on after the AC power is connected. The printer is in online mode. **STANDBY**: The printer is in standby mode and will only power on once the ⏻ power button is pressed. The initial value is STANDBY.

3.16 SERVICE MODE (Cont'd)

MACHINE SETTING MODE	
Menu	**Description**
MACHINE SETTING AUTO LABEL FEED **ENABLE** DISABLE	To set the Auto label feed function. This function enables the printer to feed media automatically in online mode after starting up the printer. **ENABLE**: Feed the media in online mode after the printer is started up. **DISABLE**: Does not feed the media in online mode after the printer is started up. The initial setting is ENABLE.
MACHINE SETTING AUTO FEED POS **+**00 dot	To adjust the Auto feed position. Press the **LINE** button to change the setting value and press the **FEED** button to move the cursor to next digit. Setting range is between -99 to +99 dots. The initial value is +00 dot. **Notes:** • This is to fine-tune the offset position of the first label after auto feed is completed. • Make sure to check the actual operation when you adjust the position. Auto feed may not work properly and label may fall off. • Factory preset is set as default. Default value is not initialized by executing factory all clear. • You can confirm the settings by referring to the FACTORY ALF in FACTORY TEST PRINT.

3.17 DOWNLOAD MODE

This download feature allows the operator to download data (firmware, font/logo, Truetype font, configuration), from the host computer through selected interface and write in the Flash ROM memory. When downloading is complete, the display will return to the original screen after three seconds. If an error occurs, an error message will display and identify the reason.

> ⚠ **CAUTION:**
> • Downloading firmware will initialize all the previous settings (USER MODE, ADVANCED MODE). Write down its setting details or keep a copy of FACTORY TEST PRINT for your information in case you wish to maintain the same settings in the future.
> • Do not set the power to on or off while downloading. This will damage the CONT board (main PCB).

MAINTENANCE MODE
MODE SELECT
DOWNLOAD MODE ▶

Select DOWNLOAD MODE +
FEED button

DOWNLOAD MODE
DOWNLOAD READY
Waiting to receive the data from the selected interface.

Download font and logo

Program download

DOWNLOAD MODE
FONT DOWNLOAD
READY
* Continue to display while acquiring font or logo information.

Indication of new entry

Indication of overwriting

Deletion

DOWNLOAD MODE
RECEIVING. . .
S[   ]E

DOWNLOAD MODE
DELETING. . .
S[   ]E

DOWNLOAD MODE
DELETING. . .
S[   ]E

DOWNLOAD MODE
WRITING. . .
S[   ]E

DOWNLOAD MODE
RECEIVING. . .
S[   ]E

DOWNLOAD MODE
VERIFYING. . .
S[   ]E

DOWNLOAD MODE
WRITING. . .
S[   ]E

DOWNLOAD MODE
PROGRAM DOWNLOAD
COMPLETED

DOWNLOAD MODE
FONT REGISTRY
COMPLETED

DOWNLOAD MODE
FONT DELETE
COMPLETED

After 3 beeps sound, the printer returns to to the DOWNLOAD READY screen.

3.17 DOWNLOAD MODE (Cont'd)

Preparation:
When downloading from the host computer through the connected interface, make sure that the interface is connected and selected in the INTERFACE MODE.

1. In MAINTENANCE MODE, press the **LINE** button to select DOWNLOAD MODE and then press the **FEED** button.

2. DOWNLOAD READY is displayed on the screen. Send the data for downloading from the host computer.

3. The printer displays the download status on the screen as shown in the above flowchart. The screen changes depending on the data download from the host computer.

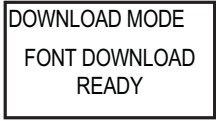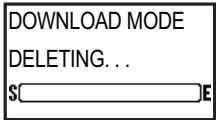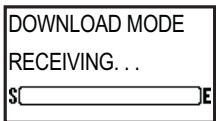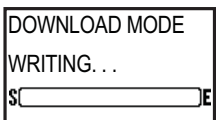| DOWNLOAD MODE	
Menu	**Description**
DOWNLOAD MODE DOWNLOAD READY	Waiting to receive download data. The printer waits to receive the data from the interface selected in the interface mode. The following data will be received from the PC and written to the main ROM. (1) Firmware data (2) Font/ logo data (3) Truetype font When Firmware data is received, it goes to RECEIVING screen. When font, logo and Truetype fonts are received, it goes to FONT DOWNLOAD READY screen.
DOWNLOAD MODE FONT DOWNLOAD READY	Waiting to receive font data. When downloading the font for the first time, it goes to RECEIVING… screen. To overwrite or delete font data, it goes to DELETING… screen.
DOWNLOAD MODE DELETING. . . S[ ]E	Deleting font data. The progress bar shown on the lower portion of screen indicates deleting status of download data. To overwrite font data after deleting the font data, it goes to RECEIVING… screen. To delete the font data, it goes to FONT DELETE COMPLETED screen.
DOWNLOAD MODE RECEIVING. . . S[ ]E	Receiving download data. The progress bar shown on the lower portion of screen indicates the data reception status. After receiving the download data, it goes to WRITING… screen.
DOWNLOAD MODE WRITING. . . S[ ]E	Writing download data. The progress bar shown on the lower portion of screen indicates writing status of download data. After writing the download data, it goes to FONT REGISTRY COMPLETED screen when downloading font and logo. Or, it goes to VERIFYING… screen when downloading firmware.

3.17 DOWNLOAD MODE (Cont'd)

DOWNLOAD MODE	
Menu	**Description**
DOWNLOAD MODE VERIFYING. . . S[ ]E	Verifying download data. The progress bar shown on the lower portion of screen indicates verification status of download data. After verifying the download data, it goes to PROGRAM DOWNLOAD COM-PLETED screen.
DOWNLOAD MODE PROGRAM DOWNLOAD COMPLETED	Completion of download. Emitting three short beeps when program download is completed. Goes to DOWNLOAD READY screen automatically three seconds later.
DOWNLOAD MODE FONT REGISTRY COMPLETED	Completion of font data registry. Emitting three short beeps when font registry is completed. Goes to DOWNLOAD READY screen automatically three seconds later.
DOWNLOAD MODE FONT DELETE COMPLETED	Completion of font data deletion. Emitting three short beeps when font delete is completed. Goes to DOWNLOAD READY automatically three seconds later.

3.18 PROTECTIVE FUNCTION

3.18.1 Protective Function of AC Adapter (Print Pause Function)

When the print ratio per media is too high, the printer activates the protective function and print job is pause temporarily. The warning message, PAUSE, is displayed on the screen. Refer to **Section 5.1.4 Warning Messages** for details.
The print pause duration differs depending on the print ratio, print speed, print darkness and the print head temperature.

3.18.2 Protective Function of AC Adapter (Speed Reduction Function)

When the print ratio exceeds 70% (583 dots) in any of a horizontal line, and the print speed is within 4 inches/sec to 6 inches/sec, it activates protective function. The print speed becomes 4 inches/sec or 3.7 inches/sec.

Notes:
- Print contents do not affect this function.
- This process is carried out for each print. When there is one high print ratio printout in sequential print, the printer stops media feed and resumes printing with reduced print speed.
- Upper limit of strobe is the same as 4 inches/sec printing.
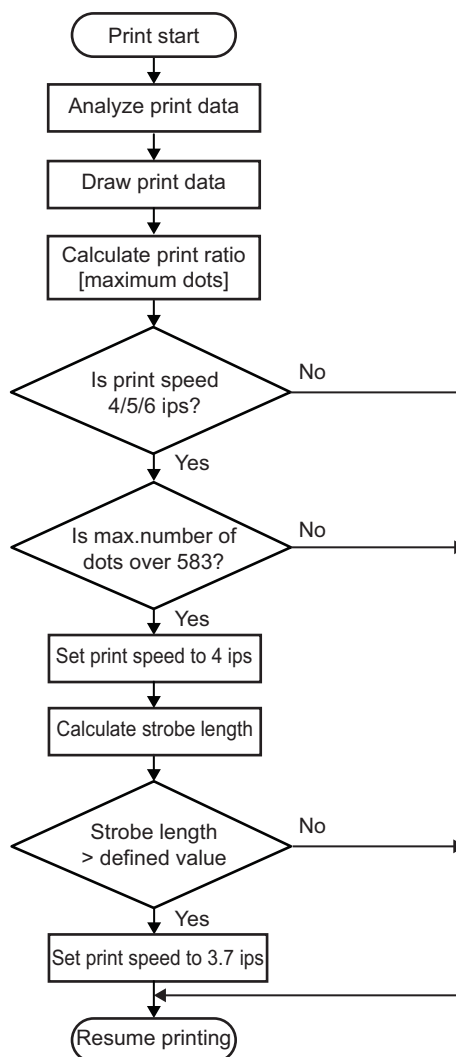
3.19 POWER SAVING MODE

This function is designed to reduce power consumption by reducing the screen brightness when the printer is not operated for a specified period of time. The time to start the power save mode can be set via the BRIGHTNESS TIMER setting screen in the Operation settings mode. Refer to **Section 3.9 Operation Settings Mode** for instructions.

The setting range is 00 to 15 (minute)
Note: When 00 minute is specified, the power save mode is disabled.
Initial setting is 00 minute.

```
OP SETTINGS
BRIGHTNESS TIMER
            00 MIN
```
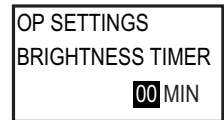
3.19.1 Conditions to Start Power Save Mode

At the following conditions, the printer starts the power save mode and decreases the screen brightness when the time specified on the BRIGHTNESS TIMER setting screen has elapsed. In this function, only the screen brightness is decreased and the on-screen message remains displayed.

- The printer has not received the print data command (ESC+A~ESC+Z) from any interface.
  * Each protocol's status return request, cancel request and incorrect data are omitted.
  * When print job exists in the printer or ONLINE indicator is off, the printer will stop detecting commands in receive data.
  * For "data start command", refer to CW408 Reference Command.
- No button is pressed for more than the set time period.
- The printer is not in error mode for more than the set time period.
- The printer is neither printing nor feeding media for more than the set time period.
- The printer is in online mode or offline mode for more than the set time period.

3.19.2 Conditions to Cancel Power Save Mode

Following one of the instructions below will cancel the power save mode and resume the screen brightness to the set level (brightness set in the screen brightness).

- The printer received print data command from any interface.
  * Each protocol's status return request, cancel request and incorrect data are omitted.
  * When print job exists in the printer or ONLINE indicator is off, the printer will stop detecting commands in receive data. In this condition, you cannot cancel the power save mode.
- Pressed any button on the operator panel.
- Printer error such as "Head open" occurred.
- The printer started printing operation.

Pressing any button while power save mode is activated, will return the display back to the original brightness. The expected operation of the pressed button is ignored. (For example, the printer does not go offline by pressing the **LINE** button when the display is dimmed in online mode.)

4

CLEANING AND MAINTENANCE

This section provides information on user maintenance for the CW408 printer.

The informations in this section are as follows:
- 4.1 When to Clean the Print Head and Platen Roller
- 4.2 How to Clean the Printer (Cleaning Kit)
- 4.3 How to Clean the Printer (Cleaning Sheet)
- 4.4 Easy Replacement of Parts
- 4.5 Adjusting Print Quality

⚠ **Caution**
- After printing, the print head and its surroundings can be hot. Wait until the printer cools down before you clean the printer.
- Make sure that the printer is set to off before you clean the printer.
- The suggested cleaning schedules here are just guidelines. If necessary, clean as appropriate, depending on the degree of contamination.
- Use only the approved cleaning kit from SATO to clean the printers.

4.1 WHEN TO CLEAN THE PRINT HEAD AND PLATEN ROLLER

The print head not only generates printouts of barcodes, but also graphics and text. To produce optimal printing, it must be kept clean from dirt and adhesive that constantly accumulate on the print surface. Furthermore, dirt can accumulate along the media path, affecting parts like sensors and guides, and reducing their performance.

You can get the cleaning kit and the cleaning sheet from your SATO reseller or technical support center.

The cleaning kit
• Clean the printer head, platen roller, media sensor and media guide when you have used one roll of media.
• Clean other parts when you have used six rolls of media.

The cleaning sheet
• Always clean the print head when there is any burned glaze on the surface of the print head. Clean the print head when you have used six rolls of media.

4.2 HOW TO CLEAN THE PRINTER (CLEANING KIT)

Follow the instructions supplied with the cleaning kit. Use the items to clean the following parts.

1. Make sure that the printer is set to off, and remove the AC power cord.

2. Press the **cover open latch** on the right side of the printer to open the **top cover** of the printer.

3. Flip the **top cover** to the left until it is fully open.

4. Remove the media.

Cleaning the print head

5. Wipe off the dirt on the **print head** using a cleaning pen or a cotton swab dabbed with the cleaning liquid. (See figure on the right)

6. Check for any black coloring or adhesive on the swab after cleaning. Discard the dirty swabs.

7. Repeat, if necessary, until the swab is clean after it is pressed over the print head.
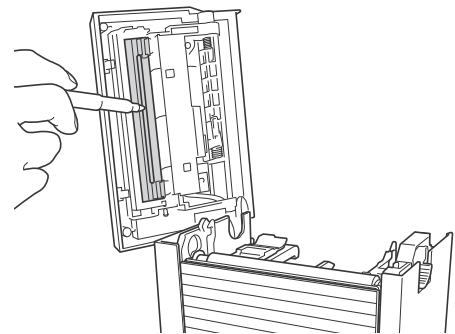
Cleaning the platen roller, sensor and media guide

8. The **platen roller** is the black rubber roller near the front panel. Wet some cotton swabs or cotton cloth with cleaning solution. While rotating the **platen roller** with your fingers, clean the entire length of the roller using one or more cotton swabs. Wipe any dirt or accumulated adhesive off the **platen roller**.

Platen roller
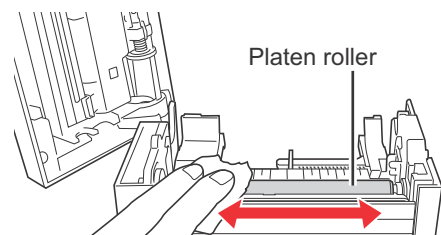
4.2 HOW TO CLEAN THE PRINTER (CLEANING KIT) (Cont'd)

9. Locate the **I-mark sensor** and **Gap sensor** on the left **media guide**.

10. Dab a cotton cloth with the same cleaning solution. Clean any foreign matter from the exposed surface of the **media guides** and **sensor**. Insert the cotton cloth in the slot of the **media guide** and briskly clean it with a back and forth motion.

11. Repeat the cleaning procedure when it is necessary. The **platen roller** should be cleaned whenever foreign matter, such as dust or adhesive, is present.

I-mark and Gap sensor is underneath the media guide

Media guide

Cotton cloth
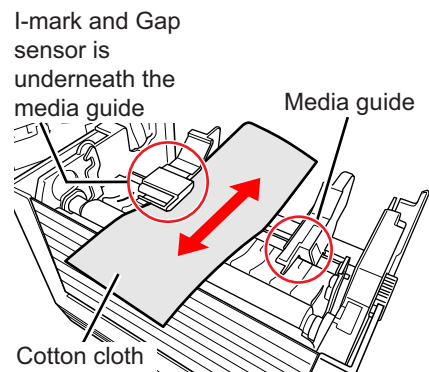
4.3 HOW TO CLEAN THE PRINTER (CLEANING SHEET)

If the cleaning kit does not clean the stubborn debris on the print head, clean the print head with the cleaning sheet.

1. Set the printer to off.

2. Remove the AC power cord.

3. Lift the **top cover**.

4. Remove the media.

5. Put the print head cleaning sheet between the **print head** and the **platen roller**. Make sure that the coarse side of the cleaning sheet points to the surface of the print head elements.

6. Close the **top cover** with approximately 25 mm (1 inch) of the cleaning sheet extended out of the printer.

7. Use one hand to hold the printer, while the other hand slowly pull the exposed cleaning sheet outwards until it is removed.

8. Do the procedure again two to three times from steps 3 to 7.

9. You can stop to clean with the cleaning sheet when no more additional dirt appears on it.

10. Use the cleaning pen from the cleaning kit or use a cotton swab moistened with head cleaner to gently remove any remaining dirt from the **print head**.
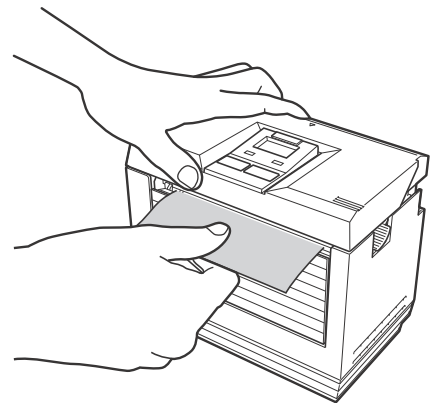
4.4 EASY REPLACEMENT OF PARTS

It is easy to replace the print head and platen roller of the CW408 printer.
The one-touch, tool-less print head release mechanism enables the print head to be quickly and easily replaced. The platen roller can be replaced without use of any tools.

4.4.1 How to Replace the Print Head

The print head on the printer is a user-replaceable item. If it becomes damaged for any reason, it can be easily removed and replaced. Contact your SATO reseller or technical support center for information on obtaining a new print head.

⚠ **Caution**
- Static electricity can result in component damage. Observe appropriate grouping procedures when replacing any components.
- Wear protective gloves to avoid contaminating the sensitive print head surface.

---

1. Make sure that the printer is set to off, and remove the AC power cord.

2. Lift the **top cover**.

3. While pressing on the two sides of the **print head assembly** ①, slide the **print head assembly** downward to unlock.

Make sure that the latch ② on the side of the **print head assembly** is unlocked.
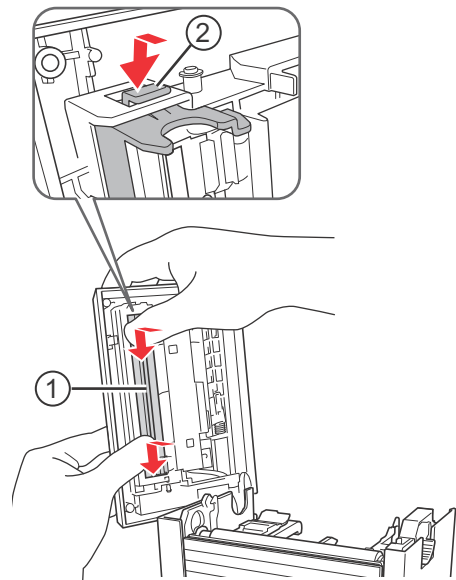
4. Lift and pull out the **print head assembly** ③ a little to reveal the **wiring harnesses** ④.

5. Disconnect the **wiring harnesses** ④ on both sides of the **print head** to remove the defective **print head**.

6. Carefully connect the **wiring harnesses** to the new **print head**. The connectors are keyed so that they can only be inserted in the correct orientation.
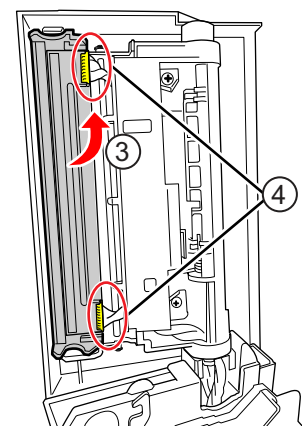
Caution:
While handling the **print head**, be careful not to scratch the printing surface of the **print head**. Scratching the surface will cause permanent and irreparable damage that is not covered by the warranty!

4.4 EASY REPLACEMENT OF PARTS (cont'd)

7. Insert the **shaft** ⑤ of the new **print head assembly** into the hole on the left side of **top cover**.

8. Press on both sides of the **print head assembly** ⑥ and slide upwards ⑦ to lock the **print head assembly** in place.
Make sure that the latch ⑧ on the side of the **print head assembly** is locked.

9. Close the **top cover**.

10. Restore power, reload media, reset the head counter and perform a test print to make sure that the **print head** is connected properly.
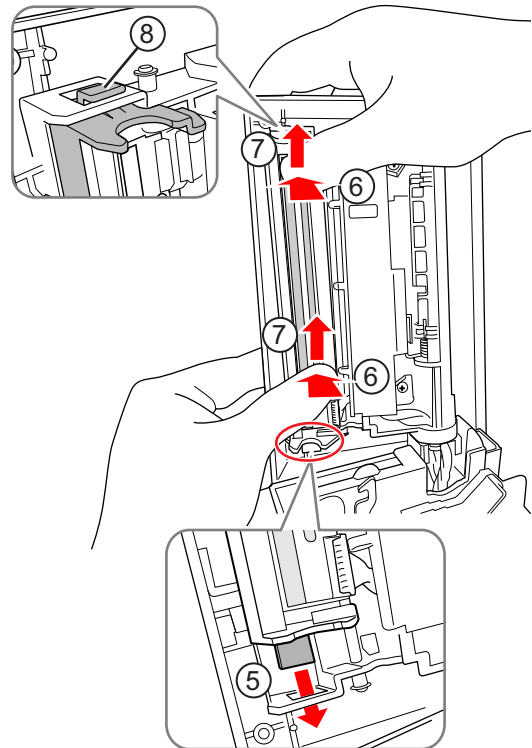
4.4.2 How to Replace the Platen Roller

1. Make sure that the printer is set to off, and remove the AC power cord.

2. Lift the **top cover**.

3. Locate the **dispenser bar** ① in front of the **platen roller** ②, and flip the **dispenser bar** ③ in the direction as shown.

4. Lift the **dispenser bar** ④ to remove the defective **platen roller assembly** and replace it with a new one.

5. Follow the above steps, in reverse sequence, to reassemble the new **platen roller**. Make sure that the **dispenser bar** snaps back in position.
Perform a media feed to make sure that the **platen roller** is assembled correctly.
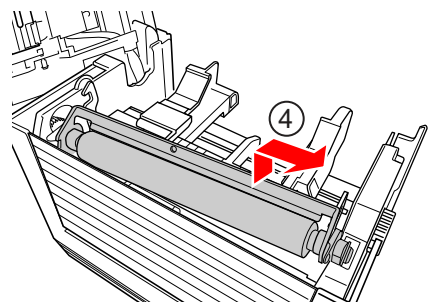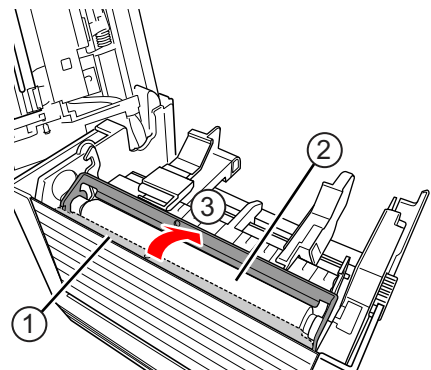
4.5 ADJUSTING PRINT QUALITY

Print quality can be optimized with regular cleaning and maintenance of the print head and components along the media path. Additionally, you can fine-tune print quality by adjusting print darkness and print speed settings.

4.5.1 Adjusting Print Darkness

This adjustment allows the user to control (within a specified range) the amount of power applied to the individual print head heat elements. It is important to find a proper print darkness level based on your particular media. The printed images should not be too light nor should it "bleed." The edges of each image should be crisp and well defined.

Print darkness (Print settings mode) — The Print darkness can be set from the PRINT SETTINGS mode menu or by sending the Print darkness software command from the host computer. There are ten settings, from 1 (lightest) to 10 (darkest). The default setting is 5.
Once the value has been selected, the Print darkness setting of the Adjustment mode can be used to make fine adjustments. For instructions on setting Print darkness, refer to **Section 3.7 Print Settings Mode**.

```
PRINT SETTINGS
PRINT DARKNESS
              05
```

Print darkness (Adjustment mode) — The fine adjustment for Print darkness is in ADJUSTMENT MODE menu. It provides a continuous range of adjustment for precise changes. See **Section 3.4 Adjustment Mode** for instructions on performing Print darkness adjustments.

```
ADJUSTMENT MODE
PRINT DARKNESS
              50
```

Note:
The Print darkness adjustment will affect the darkness in all of the command code speed ranges, that is, if the Print darkness is adjusted for lighter print, the darkness will be lighter in all speed ranges selected by the command code.

Darkness range (Advance settings mode) — The Darkness range can be set from the ADVANCE SETTINGS mode menu. Available options are A and B, with B being the darkest density. See **Section 3.11 Advance Settings Mode** for instructions on performing Darkness range.

```
ADVANCE SETTINGS
DARKNESS RANGE
A    B
```

4.5.2 Adjusting Print Speed

Besides varying the rate at which media are printed, this adjustment can be used to regulate any changes in print quality.

Print speed— Print speed can be set from the PRINT SETTINGS mode menu or by sending the Print speed software command from the host computer.
Setting range is from 2 to 6 IPS (inches per second)
The initial value is 4 IPS.
For instructions on setting Print speed, refer to **Section 3.7 Print Settings Mode**.

```
PRINT SETTINGS
PRINT SPEED
           4  IPS
```
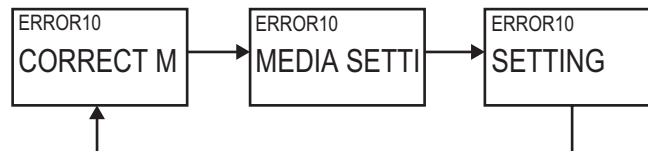
5

TROUBLESHOOTING

If you are unable to produce printouts on the CW408 printer, use this section to make sure the basics have been checked, before deciding you are unable to proceed any further.
The section is divided into four parts:

- 5.1 Error Signal Troubleshooting

- 5.2 Troubleshooting Table

- 5.3 Interface Troubleshooting

- 5.4 Test Print Troubleshooting

5.1 ERROR SIGNAL TROUBLESHOOTING

5.1.1 About Scrolling Message

This printer uses bigger font size to display error message for better visibility. The error message scrolls to display the full text when the text is too long.

```
ERROR10          ERROR10          ERROR10
CORRECT M   →    MEDIA SETTI  →   SETTING
```

5.1.2 Error Messages

No.	ERROR DISPLAY	LED/ BUZZER	ERROR CONDITION	CORRECTIVE ACTION
01	**MACHINE ERROR** ERROR01 MACHINE ER	**ONLINE: Off** **ERROR: On** **Message: MACHINE ERROR** **1 long beep**	**1) Defective PCB board** **To clear error: Power off**	**1) Consult your SATO reseller or technical support center to replace the PCB board**
02	**FLASH ROM ERROR** ERROR02 ROM ERROR	**ONLINE: Off** **ERROR: On** **Message: ROM ERROR** **1 long beep**	**1) Access failure to Flash ROM** **2) Exceeded maximum number of writes to Flash ROM.** **3) Access failure to EEP ROM.** **To clear error: Power off**	**1) Consult your SATO reseller or technical support center to replace the PCB board**
07	**COVER OPEN** ERROR07 COVER OPEN	**ONLINE: Off** **ERROR: Blinks** **Message: COVER OPEN** **3 short beeps**	**1) Cover is not latched.** **2) Micro-switch of cover open detection is defective.** **To clear error: Open and then close cover**	**1) Latch cover securely.** **2) Adjust the micro-switch.**
10	**SENSOR ERROR** ERROR10 CORRECT ME	**ONLINE: Off** **ERROR: Blinks** **Message: CORRECT MEDIA SETTING** **3 short beeps**	**1) Improper pitch sensor level** **2) Sensor type is not set correctly** **3) Media meandering** **To clear error: Open and then close cover**	**1) Adjust pitch sensor level** **2) Use the correct sensor for the media** **3) Clean and adjust the media route**
11	**HEAD ERROR** ERROR11 HEAD ERROR	**ONLINE: Off** **ERROR: On** **Message: HEAD ERROR** **1 long beep**	**1) Print head damage** **• Error will be detected only when head check is enabled** **To clear error: Change print area or power off**	**1) Replace print head or consult your SATO reseller or technical support center**

5.1 ERROR SIGNAL TROUBLESHOOTING (Cont'd)

| No.	ERROR DISPLAY	LED/ BUZZER	ERROR CONDITION	CORRECTIVE ACTION
14	DOWNLOAD DATA ERROR ERROR14 DOWNLOAD DATA E	ONLINE: Off ERROR: On Message: DOWN-LOAD DATA ERROR 1 long beep	1) Received invalid data. 2) Not enough download area To clear error: Press the FEED button	1) Check downloaded data. 2) Check the size of downloaded data.
15	CUTTER ERROR ERROR15 CUTTER ERR	ONLINE: Off ERROR: Blinks Message: CUTTER ERROR 3 short beeps	1) Media was jammed at the cutter unit. 2) Cutter's blade does not return to the original position. To clear error: Press the FEED button	1) Clean the cutter unit. 2) Press the FEED button and move the cutter blade to the original position.
21	KANJI DATA ERROR ERROR21 KANJI DATA	ONLINE: Off ERROR: On Message: KANJI DATA ERROR 3 short beeps	1) Reading invalid Kanji data that was imported to Kanji memory. To clear error: Power off	1) Replace PCB board.
26	OVERHEAT ERROR ERROR26 PRINTER OV	ONLINE: Blinks ERROR: Blinks Message: PRINTER OVERHEATED. PLEASE WAIT. 1 long beep	1) Printer's temperature is beyond the allowable range. To clear error: Stop operating the printer and cool it down	1) Stop operating the printer and let it cool down.
27	COMMAND ERROR ERROR27 INVALID DATA Caaa:<bb>:cc	ONLINE: Off ERROR: Blinks Message: INVALID DATA 3 short beeps	1) Invalid command or parameter was found in print data. 2) Print ratio per media exceeded 50% (416 dots) when using Print darkness level B. [Note] • This screen appears when setting [DISPLAY ERROR] to "ENABLE". • Detected command information will be shown at the bottom of the screen. To clear error: Leave the printer for a certain period. Press the LINE button	1) Confirm print data. 2) Adjust print layout so that print ratio is lower than 50%.

5.1 ERROR SIGNAL TROUBLESHOOTING (Cont'd)

No.	ERROR DISPLAY	LED/ BUZZER	ERROR CONDITION	CORRECTIVE ACTION
38	**SET MEDIA ERROR** SET MEDIA	**ONLINE: On** **ERROR: Off** **Message: SET MEDIA** **3 short beeps**	**1) No media in the printer.** **2) Media is not loaded correctly.** **3) Incorrect pitch sensor level.** **To clear error: Feed media**	**1) Load media into the printer.** **2) Load media properly.** **3) Adjust the pitch sensor level.**

5.1.3 More Information about Command Error

Printer motion when detecting command error

When DISPLAY ERROR is set to ENABLE in Advance settings mode, the printer displays the information of a command in which error was detected. This information is displayed at the bottom of the screen. The printer stopped the printing.

This error can be cleared by pressing the **LINE** button, but the data in which an error was detected will be discarded and not print.

ERROR27

INVALID DATA

Caaa:<bb>:cc
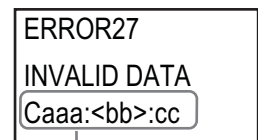
Command information in which a command error was detected

Position of error occurrence

"**Caaa**" in error message shows location of the command where error was detected.

"**aaa**" shows the number of ESC command from ESC+A, but the number does not include ESC+A.

The number displayed in **aaa** is up to 999, and the number beyond 999 is displayed as 999.

Example)

When a command error is detected by Horizontal Print Position <H> command.

```
------- :   [ESC]A
C001 :   [ESC]V100
C002 :   [ESC]H99999          -> Location of command error
C003 :   [ESC]L0202
C004 :   [ESC]X2,ABCDEF
C005 :   [ESC]Q1
C006 :   [ESC]Z
```

In this case, **C002** is the location of error.

Name of error command

<**bb**> in error message shows a name of command where error was detected.

* When it is 1 byte command, it will be left aligned.

5.1 ERROR SIGNAL TROUBLESHOOTING (Cont'd)

Error code
"**cc**" in error message shows cause of command error by code.

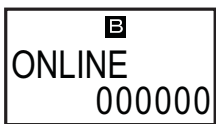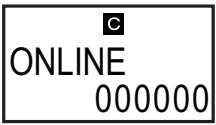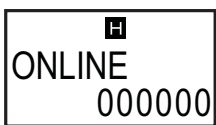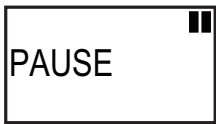| Code <cc>	Cause
01	Analyzed improper command
02	Received improper parameter
03	Analyzed improper graphic and external character data
04	(Not applicable for CW408 printer.)
05	Number specified by registration command is already taken
06	(Not applicable for CW408 printer.)
07	Data is not registered
08	Specified print start position is outside the printable area
99	Print rate of print data is high when using darkness range B.

Command error when Print darkness range is B
When using Print darkness range B and print ratio exceeds 50% (416 dots),
command error occurs because the print ratio is too high.
In this case, the screen message on the left is displayed.
Adjust print layout so that print ratio is under 50%.

```
ERROR27
INVALID DATA
C000:<AA>:99
```

5.1 ERROR SIGNAL TROUBLESHOOTING (Cont'd)

5.1.4 Warning Messages

Note that the printer will continue issuing media while detecting a warning message.

No.	WARNING DISPLAY	LED/ BUZZER	ERROR CONDITION	CORRECTIVE ACTION
01	**BUFFER NEAR FULL** B **ONLINE** **000000**	**ONLINE: On** **ERROR: Blinks** **No beep sound**	1) Available space for receive buffer is low.	1) Do not send the data from the host until the analysis of received data is completed.
02	**COMMAND ERROR** C **ONLINE** **000000**	**ONLINE: On** **ERROR: Off** **1 short beep**	1) Command error was detected. 2) Print ratio per media exceeded 50% (416 dots) when using print darkness level B. • This screen appears only when DISPLAY ERROR is set to DISABLE in Advance settings mode. To clear error: The Icon will be cleared when receiving next item or cancelling the job.	1) Confirm print data. 2) Adjust print layout so that print ratio is lower than 50%.
03	**HEAD ERROR** H **ONLINE** **000000**	**ONLINE: On** **ERROR: Off** **No beep sound**	1) Detected print head damage with "STANDARD" HEAD CHECK and continued printing operation using "BARCODE" HEAD CHECK. To clear error: Power off (Print head replacement)	1) Replace print head.
04	**PRINT PAUSE** ▋▋ PAUSE	**ONLINE: Blinks** **ERROR: Off** **No beep sound**	1) Print ratio per one media exceeded certain level.	1) Wait for a while.

5.1 ERROR SIGNAL TROUBLESHOOTING (Cont'd)

5.1.5 More about Head Check Function

The head check function detects the integrity of the heating elements in the thermal 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.
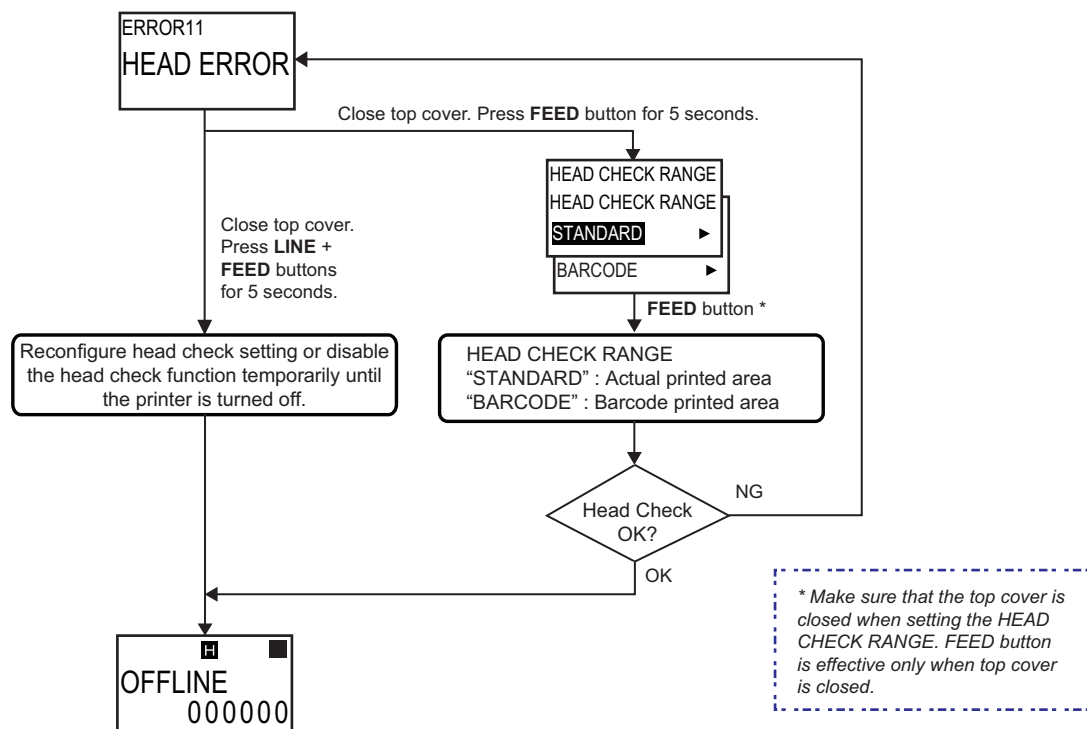
When a head check error occurs during normal printing (barcodes, text and graphics), press and hold down the **FEED** button for five seconds. At the next screen, select BARCODE, then press the **FEED** button and see if printing can be resumed normally. If printing resumes, the print head fault does not fall on the barcode area for the current print job. As such, printing may be continued but with degraded print quality and readable barcode.

If the head check error still occurs and the current print job has to be completed, the printing can be forced to resume by holding down the **LINE** and **FEED** buttons for five seconds. Please 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, get the print head replaced.

5.2 TROUBLESHOOTING TABLE

TROUBLESHOOTING TABLE	
IMAGE VOIDS	
Dirty print head.	Clean print head.
Defective print head.	Replace print head.
Defective main circuit board.	Have SATO authorized service personnel replace main board.
Damaged or worn platen roller.	Replace platen roller.
Poor media quality.	Use higher quality media. Use only SATO-certified media.
LIGHT PRINT IMAGES	
Low print head darkness.	Adjust darkness level setting.
Foreign material on print head.	Clean print head and platen roller.
Excessive print speed.	Reduce print speed setting.
UNEVEN PRINT DARKNESS	
Damaged or worn platen roller.	Replace platen roller as required.
Dirty print head.	Clean print head as necessary.
MEANDERING MEDIA	
Incorrectly loaded media.	Make sure that the media is loaded correctly.
Improperly adjusted media guides.	Adjust as required.
Damaged or worn platen roller.	Replace platen roller as required.
SMEARED PRINT IMAGES	
Poor media quality.	Use higher quality media. Use only SATO-certified media.
Foreign material on print head and platen roller.	Clean print head and platen roller.
Foreign material on media.	Use higher quality media. Use only SATO-certified media.
Excessive print head energy.	Adjust darkness level setting.
Excessive print speed.	Adjust print speed as required.
NO MEDIA MOVEMENT	
Incorrect media sensor selected.	Check printer configuration for proper sensor selection.
No voltage output.	Have SATO authorized service personnel to test power supply and replace as required.
Drive motor not operating.	Have SATO authorized service personnel to check the wiring harness connection. Replace as necessary.
INCORRECT MEDIA POSITIONING	
Incorrect media sensor selection.	Make sure that the correct sensor is selected.
Improper sensor adjustment.	Adjust sensor sensitivity as required.
Data input error.	Make sure that the data stream is correct.
Incorrect offset settings.	Adjust offset settings as required.

5.2 TROUBLESHOOTING TABLE (Cont'd)

TROUBLESHOOTING TABLE

PRINTER CREATES A BLANK MEDIA	
Data input error.	Make sure that the data stream is correct.
Incorrect media sensor selection.	Set the sensor correctly.
Print head is disconnected.	Power off the printer and make sure that the print head is properly connected.
Defective print head.	Replace print head as required.
Defective main circuit board.	Have SATO authorized service personnel to replace main board.
NO DISPLAY AT ALL	
Power supply issues.	Make sure that the cable is properly connected. Check/ replace power supply.

5.3 INTERFACE TROUBLESHOOTING

This section provides a checklist for the various interface types. Locate the checklist relative to the interface used and perform each of the troubleshooting tasks until the problem has been isolated.

UNIVERSAL SERIAL BUS (USB) INTERFACE

If nothing prints during a test print, verify the device drivers have been successively installed by performing the following:

CHK	TROUBLESHOOTING STEP
	Click on Start, Settings, and then Control Panel.
	Click on System within the new window.
	Click on the Device Manager tab.
	Make sure that the View Device By Type is checked.
	Scroll to SATO-USB Device and make sure that errors do not exist. Reinstall as required.
	Reboot the PC and the printer.

LAN ETHERNET INTERFACE

CHK	TROUBLESHOOTING STEP
	Make sure that the interface has been correctly configured. Wait two minutes and run self-test to verify. If a test print does not print, there may be a hardware problem.
	Make sure that the cable and its ports are not defective.
	Make sure that a faulty print server or other protocol related scenarios are not creating a queue setup issue. Systematically perform checks and tests to isolate the cause.
	If using TCP/IP, make sure that a valid IP address is specified and that all parameters are correct (subnet mask, gateway, etc.). Attempt to PING the IP address assigned to the network interface.
	If using a repeater or hub, make sure that the SQE is set to off. Also make sure that the repeater port is not defective by trying the print server on another port.
	Install the IPX/SPX protocol on a workstation to determine if the network device can be discovered via the MAC address. If possible, configure the appropriate protocols and retest connectivity.
	Use a crossover cable to isolate the printer from the network by connecting from the interface and workstation. Verify that the parameters match on each. Test connectivity.

5.4 TEST PRINT TROUBLESHOOTING

This section provides instruction on special printing to identify and resolve specific print problems.

5.4.1 Hex Dump

Allows the operator to determine if there were problems in the downloading of data. The contents of the print buffer can be examined using the Hex dump mode. In the left column, each line of data received is numbered. The center column provides the data in hexadecimal format. And in the right column, the same data is provided in the ASCII format. Refer to **Section 3.12 HEX Dump Mode** for more details to perform this activity.

5.4.2 Test Print

Allows the operator to identify specific problems regarding mechanical performance and setup. The test print is designed to assist in the identification of print problems. Refer to **Section 3.14 Test Print Mode** for more details to perform this activity.

6

BASIC SPECIFICATIONS

6.1 PRINTER BASIC SPECIFICATIONS

Specifications are subject to change without notice.

MODEL NAME	CW408

PHYSICAL CHARACTERISTICS	
Width	178 mm (7.0")
Height	146 mm (5.7")
Depth	112 mm (4.4")
Weight	1.5 kg (3.3 lbs.)

POWER SUPPLY	
Input Voltage	Input power voltage: AC 100 V - 240 V, ±10% (Full range) Frequency: 50 ~ 60 Hz
Power Consumption	At peak: 78 VA / 50 W (Print ratio 16%) In standby: min 5.6 VA/ 2.3 W Input voltage condition: AC 100 V/ 50 Hz

ENVIRONMENTAL (EXCLUDING MEDIA)	
Operating Temperature	0 to 40°C (32 to 104 °F)
Storage Temperature	-5 to 60°C (23 to 140 °F)
Operating Humidity	30 to 80% RH, Non-condensing
Storage Humidity	30 to 90% RH, Non-condensing

PRINT	
Method	Direct Thermal
Print Speed (Selectable)	2 to 6 Inch/sec (50.8 to 152.4 mm/sec) (Setting value: 2, 3, 4, 5, 6 IPS) *When using with dispenser, the print speed will be up to 4 inch/sec (100 mm/sec). *Print speed varies depending on the media used.
Resolution	8 dots/mm (203 Dots Per Inch)

Non-printable Area	Pitch direction Top: 1.5 mm (0.06") or less (exclude liner)
	                    Bottom: 1.5 mm (0.06") or less (exclude liner)
	Width direction Left: 1.5 mm (0.06") or less (exclude liner)
	                    Right: 1.5 mm (0.06") or less (exclude liner)

Maximum Print Width	104 mm (4.1")
Maximum Print Length	400 mm (15.7 ")
Print Darkness	Darkness range: A, B Darkness level: 1 to 10 * There are 10 levels of print darkness such as "1A ~ 10A". Default is 5A. *Command error occurs when the print ratio per one line in B range exceeds 50% (417 dots). Check the print layout before printing.

MEDIA (Be sure to use media manufactured or certified by SATO)		
Size	Continuous	**Width:** 25 to 115 mm (1.0" to 4.5") **Width including liner:** 28 to 118 mm (1.1" to 4.6") **Pitch:** 25 to 397 mm (1.0" to 15.6") **Pitch including liner:** 28 to 400 mm (1.1" to 15.7")
	Tear-off	**Width:** 25 to 115 mm (1.0" to 4.5") **Width including liner:** 28 to 118 mm (1.1" to 4.6") **Pitch:** 25 to 397 mm (1.0" to 15.6") **Pitch including liner:** 28 to 400 mm (1.1" to 15.7")
	Cutter	**Width:** 25 to 115 mm (1.0" to 4.5") **Width including liner:** 28 to 118 mm (1.1" to 4.6") **Pitch:** 25 to 397 mm (1.0" to 15.6") **Pitch including liner:** 28 to 400 mm (1.1" to 15.7")
	Dispenser	**Width:** 25 to 115 mm (1.0" to 4.5") **Width including liner:** 28 to 118 mm (1.1" to 4.6") **Pitch:** 25 to 100 mm (1.0" to 3.9") **Pitch including liner:** 28 to 103 mm (1.1" to 4.1")
	Single label print	**Width:** 25 to 115 mm (1.0" to 4.5") **Width including liner:** 28 to 118 mm (1.1" to 4.6") **Pitch:** 127 to 397 mm (5.0" to 15.6") **Pitch including liner:** 130 to 400 mm (5.1" to 15.7")
Type	Direct thermal Use media roll, fan-fold media or single label specified by SATO.	
Roll Diameter (Media Roll)	Maximum outer diameter 115 mm (4.5")	
Core Diameter (Media Roll)	Inner core diameter 40 mm (1.6")	

MEDIA (Be sure to use media manufactured or certified by SATO)	
Fan-fold Media	Max. folded height 100 mm (3.9") (External media feed) (Height restriction may apply to the media setting location)
Thickness	Cutter:0.08 to 0.12 mm (0.003" to 0.005") Others:0.08 to 0.21 mm (0.003" to 0.008")
Wind Direction	Face-Out

PROCESSING	
CPU	32 Bit RISC-CPU 125 MHz
Flash ROM	8 MB [Allocation]: 4 MB allocated for main memory 4 MB allocated for font area and user area
SDRAM	64 MB
Receive Buffer	2.95 MB maximum (Near full: 2 MB, Release: 1 MB)

PRINTER LANGUAGE	
Standard	SATO Barcode Printer Language (SBPL)

INTERFACES		
Interfaces on Board	USB	USB2.0 High-speed B-type connector
	LAN	10BASE-T/100BASE-TX auto-switching Protocol: TCP/IP, LPR, FTP, TELNET

CHARACTER FONT CAPABILITIES	
MATRIX FONTS	
XU	5 dots W x 9 dots H (Alphanumeric, symbols, Kana)
XS	17 dots W x 17 dots H (Alphanumeric, symbols, Kana)
XM	24 dots W x 24 dots H (Alphanumeric, symbols, Kana)
XB	48 dots W x 48 dots H (Alphanumeric, symbols, Kana)
XL	48 dots W x 48 dots H (Alphanumeric, symbols, Kana)
OA Font (OCR-A)	15 dots W x 22 dots H (Alphanumeric, symbols)
OB Font (OCR-B)	20 dots W x 24 dots H (Alphanumeric, symbols)
Chinese Fonts	GB180303 16 dots W x 16 dots H (Sung: Mincho) 24 dots W x 24 dots H (Heiti: Gothic) Font area in Flash ROM: 1.58 MB (compressed) Font area in SD-RAM: 3.02 MB (non-compressed)
OUTLINE FONTS	
	Alphanumeric characters and symbols
EXTENDED FONTS	
	Font download data created with font creation tool in the accessory CD

CHARACTER FONT CAPABILITIES	
CHARACTER CONTROL	
Magnification	1 to 12 times (vertical and horizontal)
Rotation	0°, 90°, 180°, 270°

BARCODE CAPABILITIES	
Linear Bar Codes	UPC-A/E JAN/EAN CODE39 CODE93 CODE128 GS1-128(UCC/EAN128) ISBT128 CODABAR(NW-7) ITF Industrial 2 of 5 Matrix 2 of 5 MSI UPC add-on code POSTNET GS1 DataBar Omnidirectional GS1 DataBar Truncated GS1 DataBar Stacked GS1 DataBar Stacked Omnidirectional GS1 DataBar Limited GS1 DataBar Expanded GS1 DataBar Expanded Stacked * GS1 DataBar is the new version of RSS.
Two Dimensional	QR code (including Micro QR) Security QR code PDF417 (including Micro PDF) MAXI code GS1 DataMatrix DataMatrix (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 Stacked Omnidirectional Composite (CC-A/CC-B) GS1 DataBar Limited Composite (CC-A/CC-B) GS1 DataBar Expanded Composite (CC-A/CC-B) GS1 DataBar Expanded Stacked Composite (CC-A/CC-B) GS1-128 Composite (CC-A/CC-B/CC-C)
Ratios	1:2, 1:3, 2:5, User definable bar widths
Rotation	Parallel 1 (0°), Parallel 2 (180°), Serial 1 (90°) and Serial 2 (270°)
Magnification	2 to 12 times * Onefold of barcode is excluded from this specifications.

VERSATILE FUNCTIONS

	1) Status return function 2) Graphics function (Printing graphic) 3) Sequential number function (Sequential number) 4) Form overlay function (Cleared at power off) 5) External font registration function (Cleared at power off) 6) Character correction function (Smoothing) 7) Black/white inversion function 8) Ruled line function 9) Zero slash switching function (Support XU, XS, XM, XB, XL, outline font) 10) Dump list function (HEX dump mode) 11) Outline font function 12) Outline modification function 13) Tag/Label auto-feed function (support no-disposal of the first and the last label)

SELF-DIAGNOSIS FUNCTION

	1) Broken head element check 2) Cover open detection 3) Paper end detection 4) Test print 5) Kanji data check 6) Cutter error (Only when cutter unit is installed)

PROTECTION FUNCTION

	1) Print head overheating protection: Pausing print Pause print when print head reaches a certain level of temperature. 2) Peak current protection: Separate printing process Perform separate printing when print ratio in horizontal direction exceeds 50%. 3) Overload protection: Pausing print Pause print after end of print depends on the print ratio of print data. 4) Average current protection: Print speed limitation Limit print speed when print ratio in horizontal direction exceeds 70%. 5) Chassis overheating protection: Pausing print Pause print when printer chassis reaches a certain level of temperature.

HARDWARE AND RELATED

Operation Buttons	1) ⏻ Power button 2) **LINE** button 3) **FEED** button
Indicators	OLED: Yellow/ blue ONLINE: Green LED ERROR: Red LED
Buzzer	Built-in buzzer with sound ON/OFF function

SENSING	
Gap (Transmissive)	Sensitivity adjustable
I-mark (Reflective)	Sensitivity adjustable
Paper Sensor (Transmissive)	Sensitivity adjustable
Cover Open	Fixed
Dispenser Sensor	Fixed (Available only when dispenser unit is installed)

OPTIONS	
	1) Cutter unit 2) Dispenser unit 3) Unwinder unit

STANDARD ACCESSORIES	
	1) Power cord 2) Documentations (Quick guide, Global warranty program leaflet, etc.)

REGULATORY COMPLIANCE	
Safety Regulation	EN60950-1 GB4943-2001
EMC Regulation	EN55022, EN55024 GB9254-2008, GB17625.1-2003
Packaging Drop Standard	Comply with JIS

Environmental (RoHS)	The RoHS directive (six hazardous) restricts the use of six hazardous materials listed below.
	  Hexavalent chromium------------------------ Max. 0.1%
	  Lead and lead compounds------------------- Max. 0.1%
	  Mercury and mercury compounds---------- Max. 0.1%
	  Cadmium and cadmium compounds------ Max. 0.01%
	  Polybrominated biphenyls (PBB)------------ Max. 0.1%
	  Polybrominated diphenyl ethers (PBDE)--- Max. 0.1%

6.2 OPTIONAL ACCESSORIES SPECIFICATIONS

CUTTER SPECIFICATIONS	
Media Type	Label, tag 1) Avoid to cut on the label area (glued area) 2) Perforation and leading part of media are forbidden areas for cutting. Cut rear area of perforation.
Media Size	Width: 25 to 115 mm (1.0" to 4.5") Width including liner: 28 to 118 mm (1.1" to 4.6") Pitch: 25 to 397 mm (1.0" to 15.6") Pitch including liner: 28 to 400 mm (1.1" to 15.7")
Thickness	0.08 to 0.12 mm (0.003" to 0.005")
Dimensions	W 178 X D134 X H 146 mm (with printer) (W 7.0" X D 5.3" X H 5.7")
Weight	1.8 kg (3.96 lbs) (with printer)
Durability	300 thousand times
Cut Position Adjustment	Adjustment is available with the cut position in Adjustment mode by using OLED and buttons on the operator panel.
Mechanism	Guillotine cutter
Self Diagnosis Function	Cutter malfunction detection

DISPENSER SPECIFICATIONS	
Media Type	Label only 1) Availability and operating condition are constrained depending on the media type, glue type and label size. 2) Peel-end treatment is fundamental for the dispenser. Media that has no peel-end treatment should be evaluated in each case. 3) You cannot use liner with perforation and/or slit for dispenser. 4) You can use strong glue type and weak glue type but not the type in between for dispenser.
Media Size	Width: 25 to 115 mm (1.0" to 4.5") Width including liner: 28 to 118 mm (1.1" to 4.6") Pitch: 25 to 100 mm (1.0" to 3.9") Pitch including liner: 28 to 103 mm (1.1" to 4.1")
Thickness	0.08 to 0.21 mm (0.003" to 0.008")
Dimensions	W 178 X D 122 X H 146 mm (with printer) (W 7.0" X D 4.8" X H 5.7")
Weight	1.6 kg (3.5 lbs)
Durability	Unit: 150 km, Nip roller: 30 km
Detection Sensor	Dispenser sensor (Transmissive type)
Dispensed Position Adjustment	Adjustment is available with the offset position in Adjustment mode by using OLED and buttons on the operator panel.

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7

INTERFACE SPECIFICATIONS

This section presents the interface types and their specifications for the CW408 printer. These specifications include detailed information to assist in the selection of the most appropriate method for the printer to interface with the host.

This section presents the following information:

- 7.1 Interface Types
- 7.2 Universal Serial Bus (USB) Interface
- 7.3 Local Area Network (LAN) Ethernet

7.1 INTERFACE TYPES

CW408 printer is equipped with a multiple interfaces board to perform data communication with the host.

The following built-in interfaces are available.
1) USB interface (USB2.0 High-speed, B type connector)
2) LAN interface (10BASE-T/100BASE-TX automatic switch over, RJ45 connector)
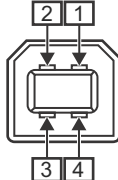
⚠ **Caution**
Never connect or disconnect interface cables (or use a switch box) with power applied to either the host or printer. This may caused damage to the interface circuitry in the printer/ host and is not covered by warranty.

7.2 UNIVERSAL SERIAL BUS (USB) INTERFACE

The Universal Serial Bus (USB) interface of the printer complies with USB2.0 standard.

7.2.1 Basic Specifications
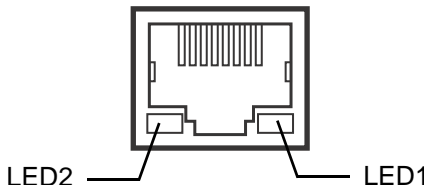
Interface Connector	
	Series B plug Cable length: 5 m (16.4 feet) or less (Twisted pair shielded)
Version	USB2.0 High-speed
Protocol	Status 4
Maximum Receive Buffer Capacity	2.95 MB

7.2.2 Pin Assignments

Pin No.	Description
1	VBus
2	-Data(D-)
3	+Data(D+)
4	GND

7.3 LOCAL AREA NETWORK (LAN) ETHERNET

7.3.1 Basic Specifications

Interface Connector	
	LED2 —————— LED1 Connector type: RJ45 Cable type: 10BASE-T, 100BASE-TX (Category 5 and upper) Cable length: 100 m (328 feet) or less
Protocol	Status 3, Status 4
Link/Status LED	Status LED1 lights up when establishing the LINK with Ethernet device or when receiving the packets.

LED	Color	Conditions
LED1	Green	Lights up for 10 ms when receiving packets
LED2	Orange	Lights off when recognizing the connection to 10BASE-T
		Lights up when recognizing the connection to 100BASE-TX
		Lights up when LAN interface cable is not connected.

7.3 LOCAL AREA NETWORK (LAN) ETHERNET (Cont'd)

7.3.1 Basic Specifications (Cont'd)

Communication Configuration	The following communication settings are available in the Interface mode of the printer.

Item	Setting Range
Protocol	STATUS3 STATUS4 (Cyclic response mode) STATUS4 (ENQ response mode) (Default)
IP address	0.0.0.0 ~ 255.255.255.255 Default: 192.168.1.1
Subnet mask	0.0.0.0 ~ 255.255.255.255 Default:255.255.255.0
Gateway address	0.0.0.0 ~ 255.255.255.255 Default:0.0.0.0
IP address setting	DHCP Disable (Set by manual) DHCP Enable Default: Disable (Set by manual)
RARP setting	RARP Disable RARP Enable Default: Disable

* IP address, Subnet mask, Gateway address can be set by printer setting tool, such as SATO All-In-One application.
* If the printer cannot obtain IP address from DHCP server at DHCP enabled, default of IP address becomes [0.0.0.0].

Maximum Receive Buffer Capacity	2.95 MB

0 MB   2.95 MB

Buffer near full occurred
Remaining 0.95 MB

Buffer near full released
Remaining 1.95 MB

7.3 LOCAL AREA NETWORK (LAN) ETHERNET (Cont'd)

7.3.2 Software Specifications

Protocol   TCP/IP
Network layer   ARP, RARP, IP, ICMP
Session layer   TCP, UDP
Application layer   LPD, FTP, TELNET, BOOTP, DHCP

Notes
- LPR, FTP and dedicated socket protocol of TCP/IP are available for sending print data.
- Dedicated socket protocol is available to obtain printer status.

7.3.3 TCP/IP Specifications

In TCP/IP protocol environment, LPD and FTP are provided for printing. TELNET is provided for the setup of each variable. RARP and BOOTP/DHCP are available for the setup of each IP address.
In Windows XP, Windows Vista, Windows 7, Windows Server 2003, Windows Server 2008,and Windows Server 2008 R2 environments, IP address and each variable can be set using the printer setting tool, such as SATO All-In-One application.

In socket connection, monitor the transmission of print data and the printer status by using [Printer Driver] and [Status Monitor]. Note that multiple sessions cannot be established at the same time. For more information about [Printer Driver] and [Status Monitor], refer to your SATO reseller or technical support center.

7.3.4 LPD Specifications

LPD protocol complies with RFC1179 and handles the list of logical printer names as queue name such as lp, sjis and euc.

Queue Name	Kanji Filter Applied	Input Kanji Code
lp	Not available	N/A
sjis	Not available	N/A
euc	Not available	N/A

When sending a job by LPR, the transmission order of data file/control file within the job does not affect the printing operation.

Notes
- A job deletion by LPR is not supported.
- Only Status 4 is available for LPD specification.
- When conducting large quantity printing with LPR, some data may be skipped because of the specification of Windows.
- Banner page print is not supported.

7.3.5 FTP Specifications

FTP protocol complies with RFC959 and handles the list of logical printer names as a transfer directory. File transfer to this directory executes print operation. Note that it is possible to specify ASCII(A), BINARY(I), and TENEX(L8) as transfer modes, however difference of the mode depends on the client.
In addition, a banner page can be printed with a proper setup.
There are three directory names such as lp, sjis and euc.

Queue Name	Kanji Filter Applied	Input Kanji Code
lp	Not available	N/A
sjis	Not available	N/A
euc	Not available	N/A

7.3 LOCAL AREA NETWORK (LAN) ETHERNET (Cont'd)

7.3.6 TELNET Specifications

TELNET complies with RFC854. This consists of an interactive menu form, and it enables you to change the internal setup, refer to it and to display the status. To change the setting details, enter 'root' user name and password at the time of login. Default value of root password is set to null (line feed only).

<Example of TELNET command>
   In MS-DOS command prompt, type in [TELNET xxx.xxx.xxx.xxx (IP address)] and enter user name and password to advance to the display below.

```
                    SATO PRINTER [ModelName] TELNET server.
                    Copyright 2011(C) SATO Corporation.
                    login: root
                    'root' user needs password to login.
                    password:
                    User 'root' logged in

                     No. Item                    Value         (level.1)
                    ---------------------------------------------------------
                      1 : Setup TCP/IP
                      2 : Display status
                     99 : Exit setup
                    Please select(1-99)?
```

1) Printer name is entered in [ModelName].
2) For the detailed settings of [1:Setup TCP/IP], refer to **Section 7.3.7 Setting/Displayed Items**.

7.3.7 Setting/Displayed Items

The following table shows the settings and referable sections as well as various variables.

TCP/IP related setting

Variable Identifier	Setting Range	Default (Factory Setting)
IP address	0.0.0.0 ~ 255.255.255.255	192.168.1.1
Subnet mask	0.0.0.0 ~ 255.255.255.255	255.255.255.0(Calculated from IP address)
Gateway address	0.0.0.0 ~ 255.255.255.255	0.0.0.0
RARP protocol	ENABLE/ DISABLE	DISABLE
DHCP protocol	ENABLE/ DISABLE	DISABLE
Keepalive time	30~300	180 (Sec)
Keepalive retry	1~99	17 (Times)
Socket cancel	Normal/Compatible	Normal
ROOT password	Any alphanumeric characters[16][1]	NULL (No password)

[1] Number in [ ] is the limit number of characters.

7.3 LOCAL AREA NETWORK (LAN) ETHERNET (Cont'd)

7.3.8 Common Notes for LAN Interface

1. For LAN interface setting, you can use the printer setting tool, such as SATO All-In-One application. Refer to your SATO reseller or technical support center for more information. Or you can visit our SATO home page at www.satoworldwide.com.

2. When opening or closing the print data port (Port 1024) or the status port (Port 1025) or the sending and receiving port (Port 9100), 150 ms to 200 ms interval is necessary between closing the port and opening the port again.
If the time interval after closing the port is too short, it may cause double connection.

Double connection means that the connection request (CONNECT) is sent to the port (Port 1024, Port 1025 or Port 9100) already connected (CONNECT (Socket OPEN)). In this case, this connection request will be rejected (Socket CLOSE).

3. Connecting and disconnecting LAN cable while the printer is connecting to the PC may result in communication failure. Please avoid connecting or disconnecting the cable while the printer is ON. In case of communication failure, restart the printer.
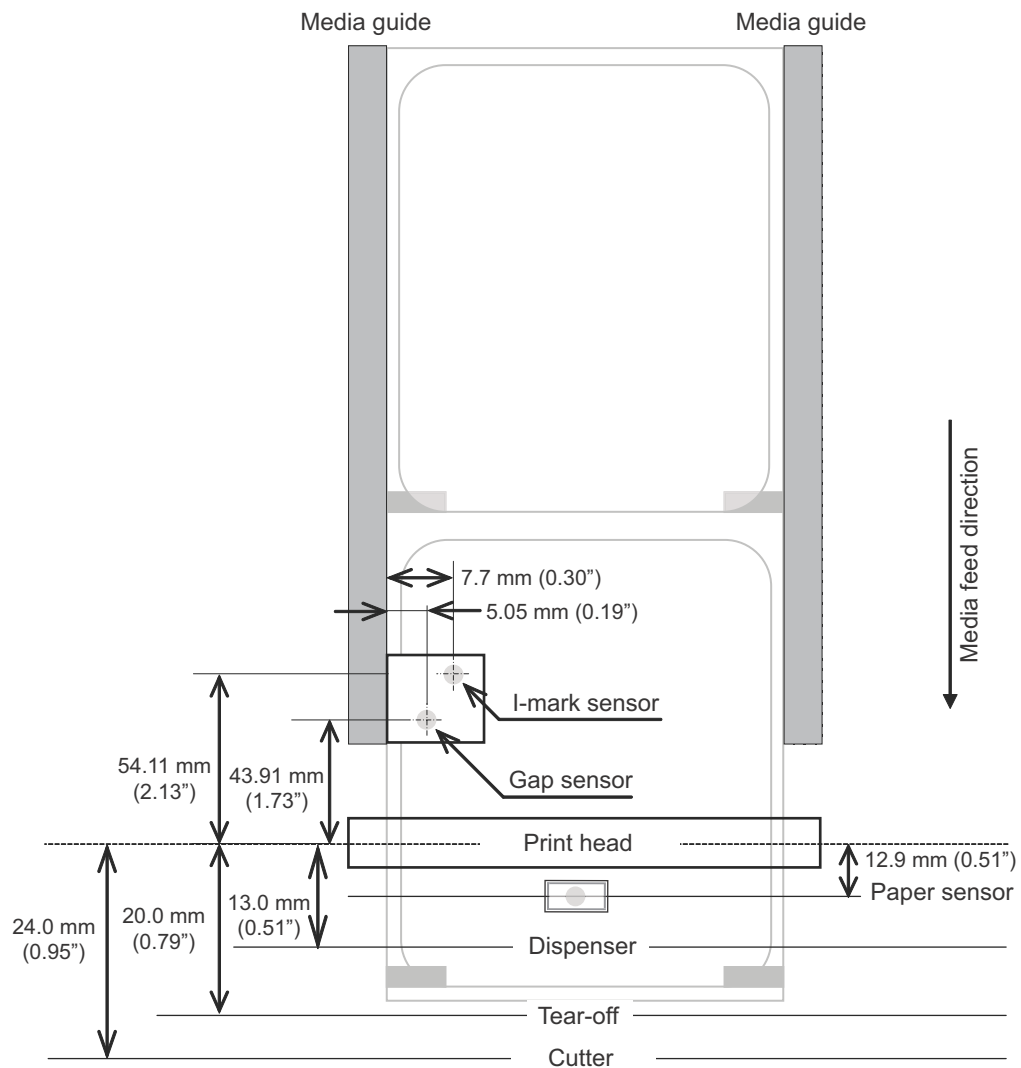
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8

APPENDIX

The following information is provided:

- 8.1 Positions of Sensors and Options

- 8.2 Operation Mode Selection

- 8.3 Base Reference Point

- 8.4 Base Reference Point Adjustment

- 8.5 Paper End

- 8.6 Automatic Media Feed

- 8.7 Information on Media When Using Cutter

8.1 POSITIONS OF SENSORS AND OPTIONS

Media guide   Media guide

Media feed direction

7.7 mm (0.30")

5.05 mm (0.19")

I-mark sensor

Gap sensor

54.11 mm (2.13")

43.91 mm (1.73")

Print head

12.9 mm (0.51")

Paper sensor

13.0 mm (0.51")

24.0 mm (0.95")

20.0 mm (0.79")

Dispenser

Tear-off

Cutter

8.2 OPERATION MODE SELECTION

There are four modes of printer operation: Continuous, Tear-off, Cutter and Dispenser mode. The differences are the ways in which the media and liner are ejected. Before printer configuration, one must determine which mode will be used. This section identifies the functional differences among the four.

Continuous mode
With this mode of operation, the media remains in position for printing at all times. To do so, means that the previous printed media is only available for removal when one to four additional media have been printed (quantity depends on media size). This mode of operation is specifically suited for printing bulk quantities to be applied later on.

Tear-off mode
With this mode of operation, after a batch of printing, the printer feeds the last media so that it is fully extended out of the printer's front for removal.
Upon receiving the next print data, the printer retracts the media so that the next media in line may be printed, then the printer feeds it. This cycle repeats for each batch of printing.

Cutter mode
With the optional cutter unit installed and enabled, this mode of operation will cut individual printed media or in multiples. The media will be advanced to the cutter blade, cut the media, and the unprinted media will retract for positioning of the next printing.

Dispenser mode
When the optional dispenser is installed and enabled, this mode of operation will peel the liner (backing paper) 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 unprinted media will retract and position itself so the next label may be printed.
This operation mode is specifically applicable to print operations where the label is to be immediately adhered.

8.3 BASE REFERENCE POINT

The base reference point is the point at which one determines the print and cut positions.
The base reference position differs, depending on the print mode or the media sensor to be used.
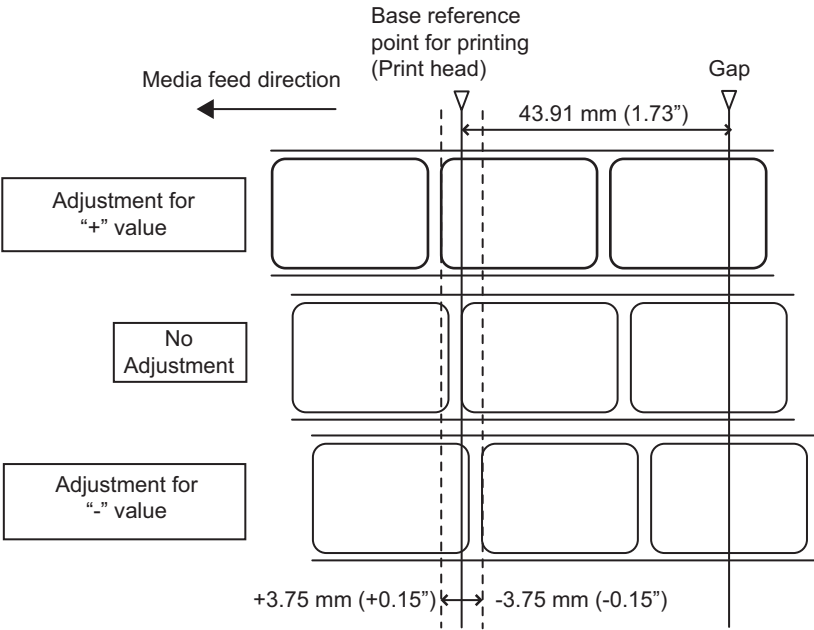.
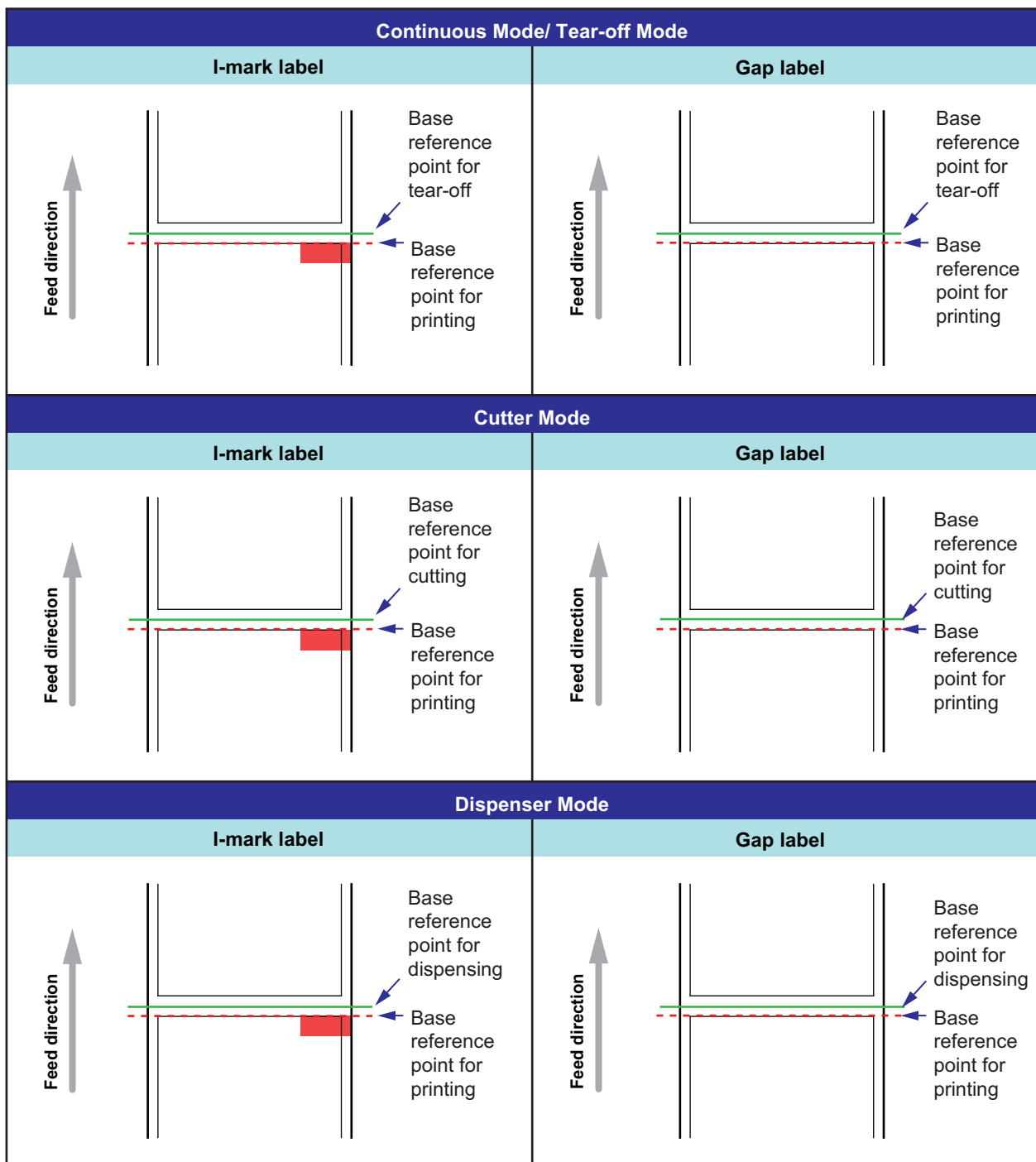
8.4 BASE REFERENCE POINT ADJUSTMENT

8.4.1 Adjustment of Base Reference Point for Printing (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") using the adjustment LCD setting described above. The shift experienced by the media or print layout can be offset with the adjustment of the pitch position.
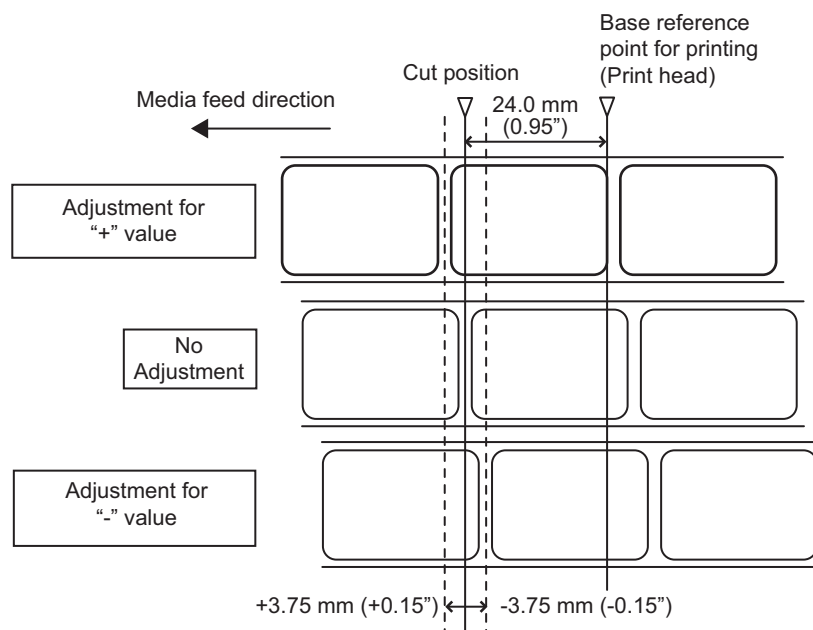

Note:
The above base reference point for printing is the stop position when sensor type is set to Gap sensor.

8.4 BASE REFERENCE POINT ADJUSTMENT (Cont'd)

8.4.2 Adjustment of the Stop Position

| Adjustment Location	Adjustment Range
Adjustment mode: Offset/ Cut position	+3.75 mm to -3.75 mm (+0.15" to -0.15")

The stop position for options (such as Cutter, Dispenser and Tear-off) is adjustable within the range of +3.75 mm to -3.75 mm (+0.15" to -0.15") using the adjustment LCD setting described above.

Note:
The above cutting position indicates the stop position when media sensor is set to Gap sensor.
The position for media in tear-off or dispense mode is adjustable in the same manner.

Adjustment requirements of stop position for various options are as follows:
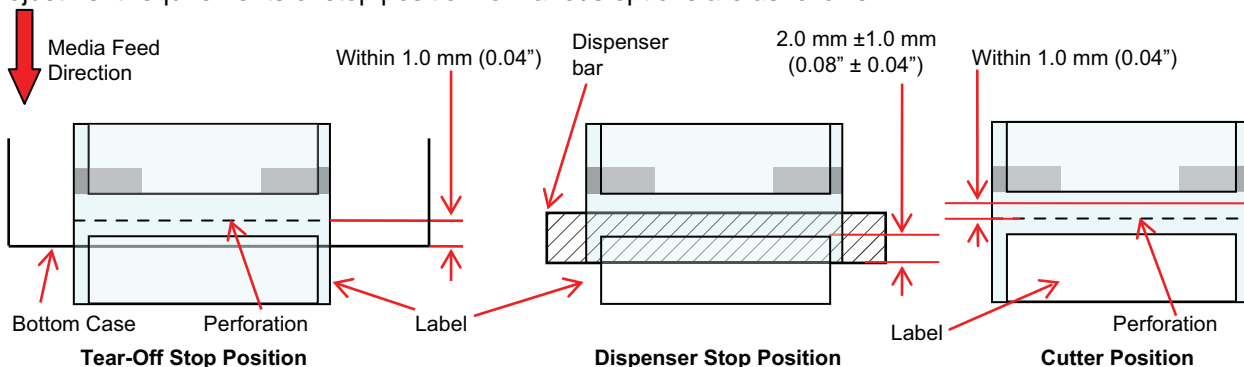
Tear-off: For perforated media, position of perforation should be +0 mm to +1.0 mm (+0" to +0.04") from the edge of printer (Non-perforated media uses media center position as a reference.)
Dispenser: The label stop position from the dispenser is 2.0 mm ± 1.0 mm (0.08" ± 0.04").
**Cutter:** For perforated media, cut the media after the perforation.
(For the non-perforated media, cut the center position +/- 0.5 mm (+/- 0.02") of the media.)

8.4 BASE REFERENCE POINT ADJUSTMENT (Cont'd)

8.4.3 Limitation on Base Reference Point Adjustment

After adjustment of the print position and the stop position for options, 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.
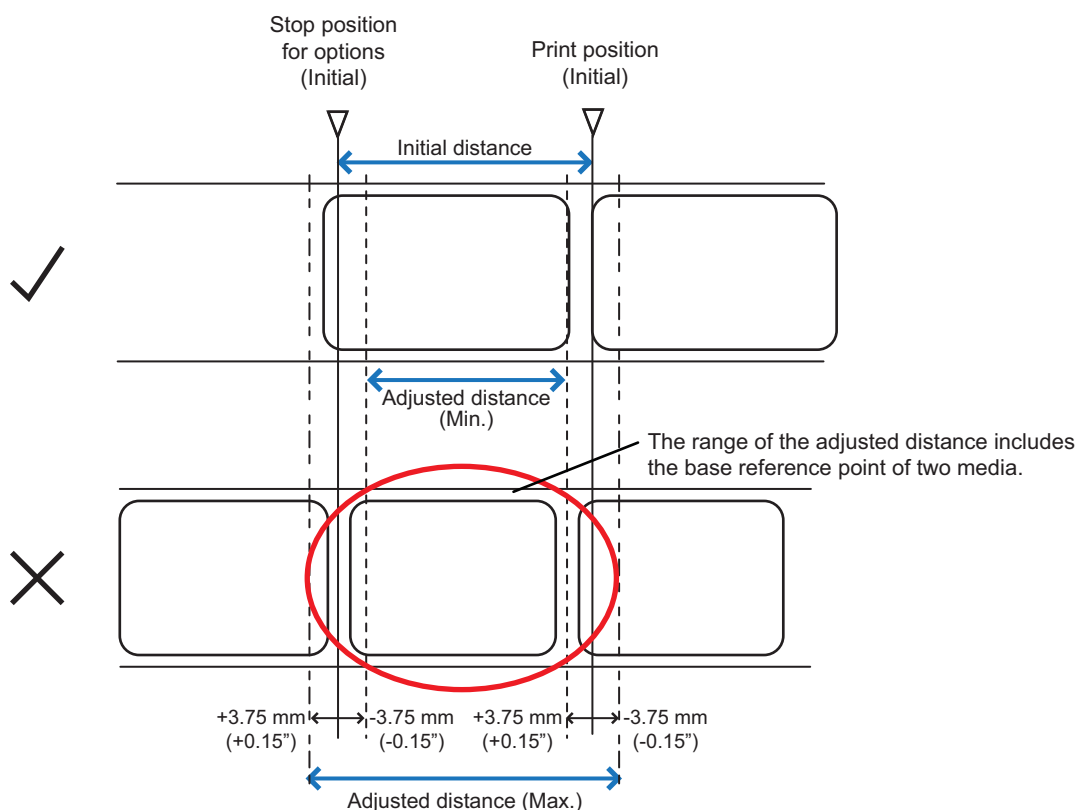

Adjustment range of the distance between the print position and the stop position for options:

| Types of Options	Adjusted Distance (Min.)	Initial Distance	Adjusted Distance (Max.)
Tear-off	12.5 mm (0.49")	20.0 mm (0.78")	27.5 mm (1.08")
Cutter	16.5 mm (0.65")	24.0 mm (0.94")	31.5 mm (1.24")
Dispenser	5.5 mm (0.22")	13.0 mm (0.51")	20.5 mm (0.81")

8.5 PAPER END

8.5.1 Paper End Detection in Feed (Media Roll)

The Paper end sensor detects "No media" state and notifies paper end error after feeding 15 mm (0.6").

Head position

Paper end sensor

49.9 mm (1.9")

15 mm (0.6")

(1)

(2)

Media feed direction
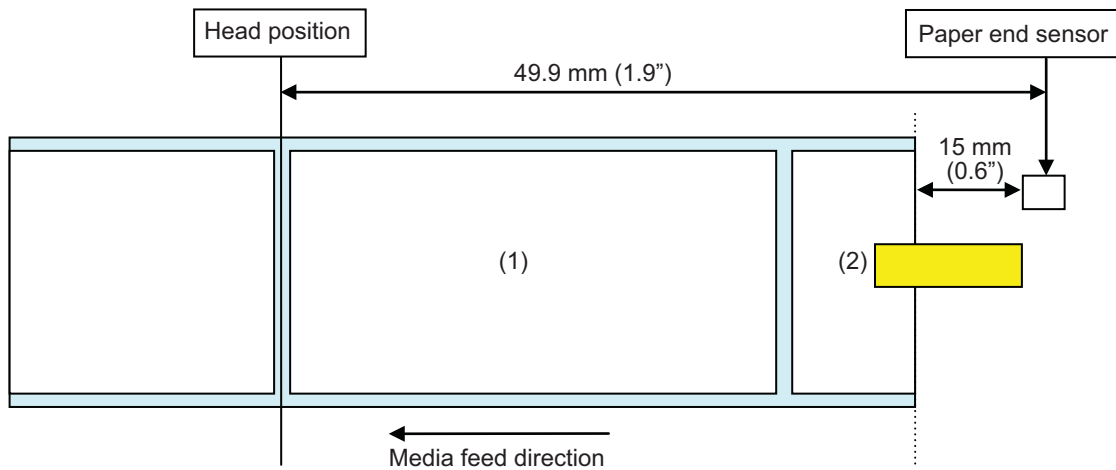
8.5.2 Paper End Detection in Print Motion (Media Roll)

[When the print content falls within the area from the head position to 15 mm (0.6") less than the paper end sensor (49.9 mm, 1.9")]

Head position

Paper end sensor

49.9 mm (1.9")

15 mm (0.6")

(1)

(2)

When the print content falls within this area

(1)

(2)

Media feed direction
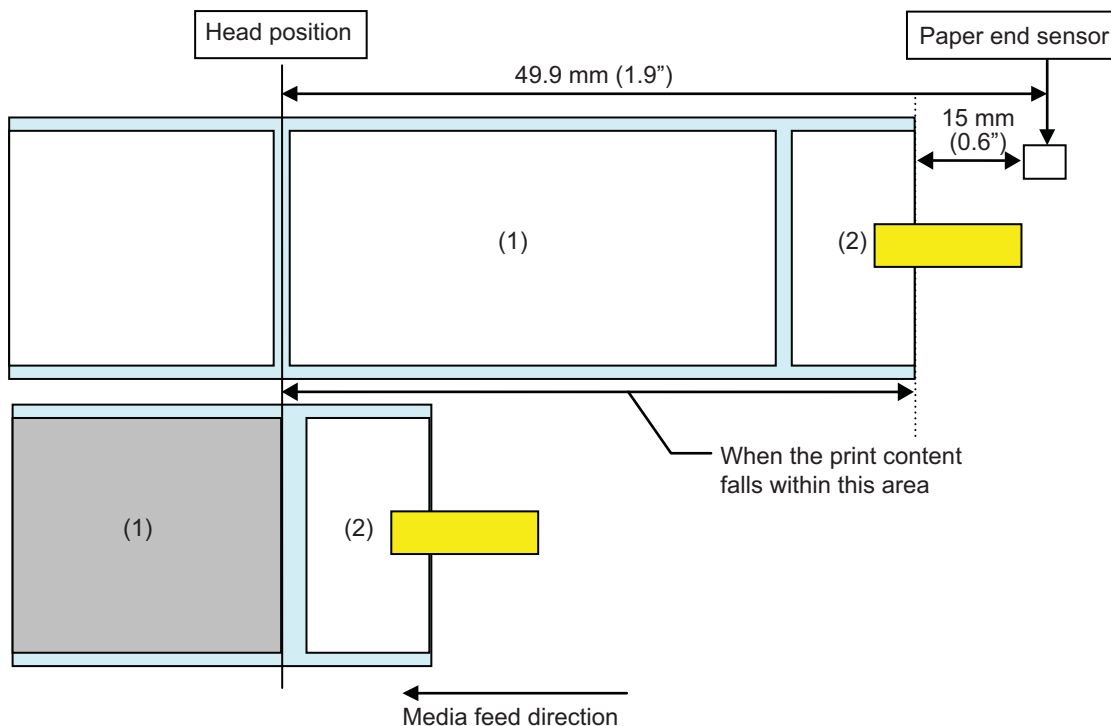
The printer behavior when paper end is detected is as follows:
- After completing the print of media (1), "Paper end error" will occur.
- After releasing the error, media (1) will not be printed again.

8.5 PAPER END (Cont'd)

[When the media pitch size is between the head position and the paper end sensor and is more than 15 mm (0.6").**]**

Head position
Paper end sensor

49.9 mm (1.9")

15 mm
(0.6")

(1)

Media feed direction
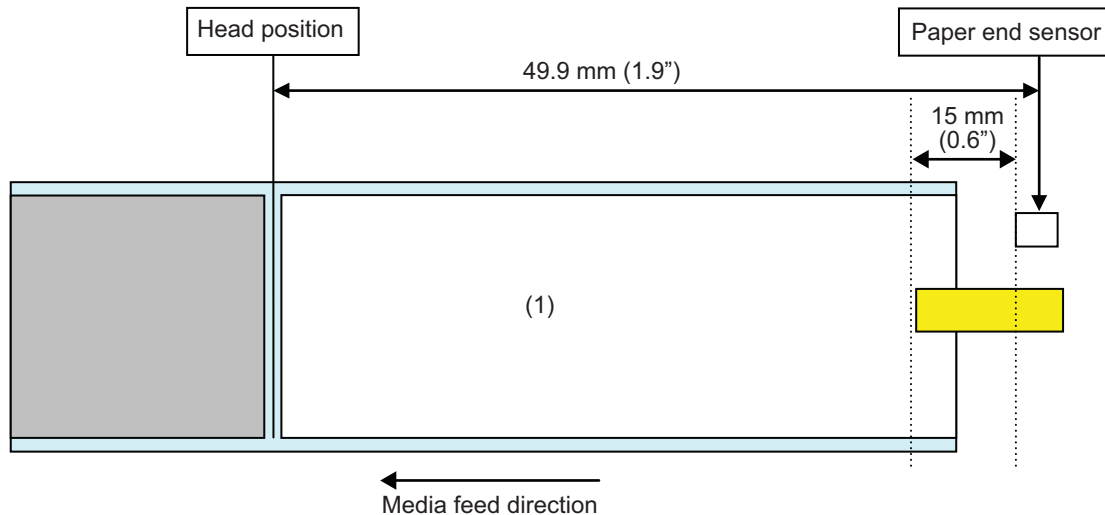
The printer behavior when paper end is detected is as follows:
- "Paper end error" will occur while printing the media (1), right after detecting "paper end".
- If an error occurs while printing, media (1) will be printed again after releasing the error. If the print job is completed at the time of error occurrence, media (1) will not be printed again.

8.5.3 Paper End Detection (Fan-fold Media)
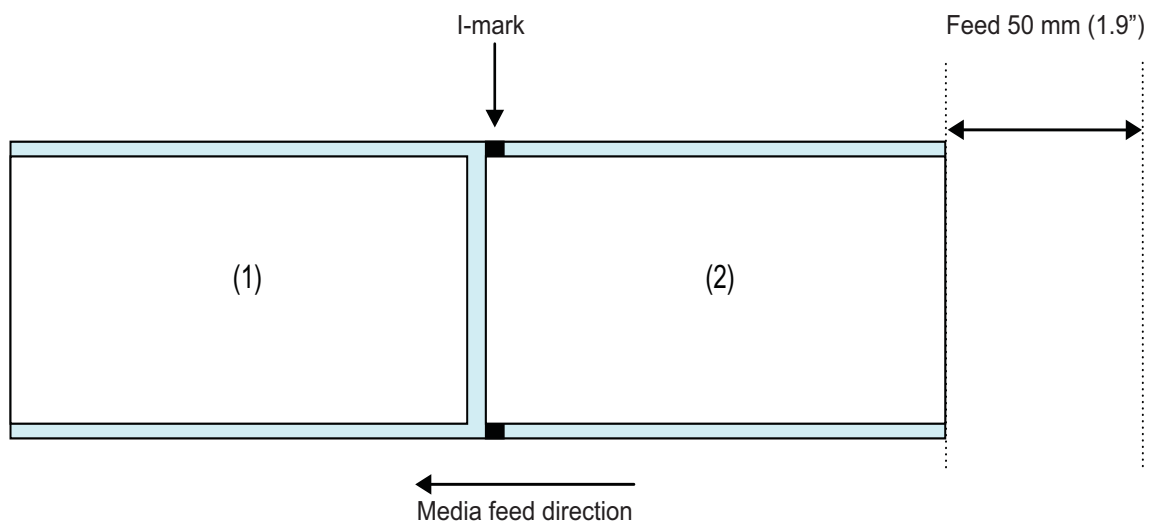
I-mark
Feed 50 mm (1.9")

(1)
(2)

Media feed direction

The printer behavior when paper end is detected is as follows:
- "Paper end error" will occur after printing the media (2) and feed media 50 mm (1.9").
- If an error occurs while printing or feeding 50 mm (1.9") after printing, media (2) will be printed again after releasing the error. If the print job is completed at the time of error occurrence, media (2) will not be printed again.
- In cutter mode, cut operation is not performed when "paper end error" occurs.
- When "ignore pitch sensor" is set, the paper end sensor will detect "No media" state and notify paper end error after feeding the media 15 mm (0.6").

8.6 AUTOMATIC MEDIA FEED

Automatic media feed setting is enabled when continuous, tear-off or cutter (excluding no-backfeed and excluding when dispenser unit is installed) mode is selected as an operation mode.
You can change the automatic media feed operation via the **AUTO LABEL FEED** setting in the service mode. (Refer to **Section 3.16.2 Overview of Machine Setting Menu**)
When using automatic media feed function, refer to note in **Section 8.6.3 Notes for Automatic Media Feed**.
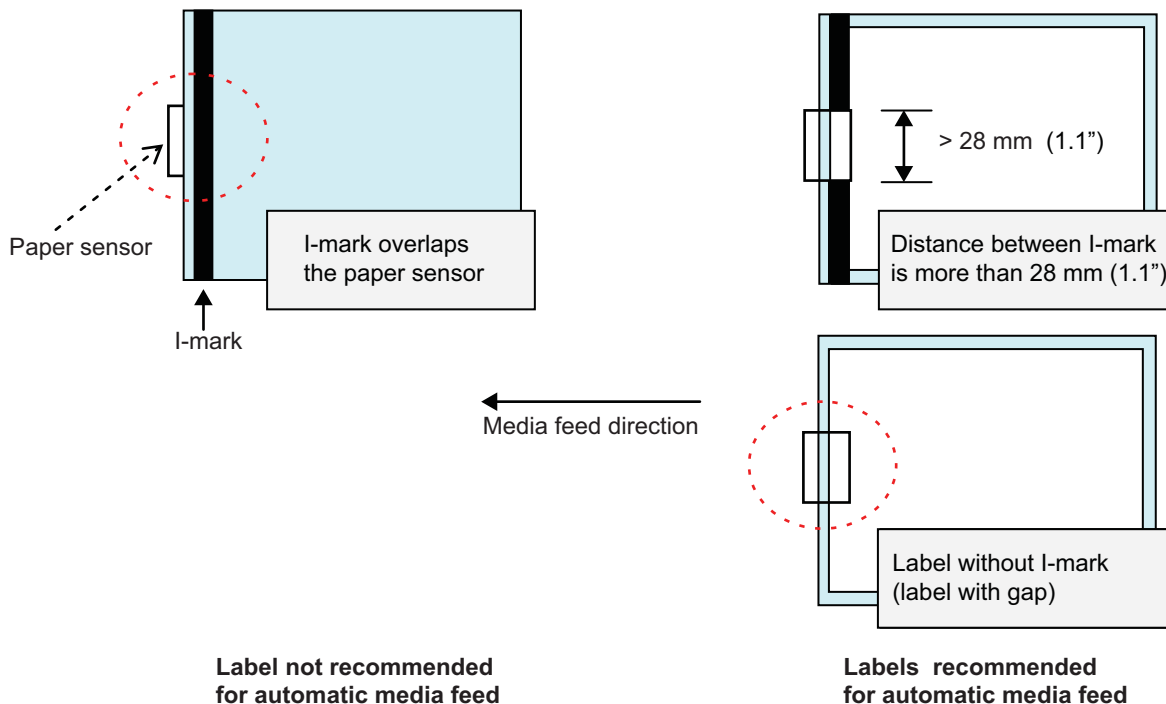
8.6.1 Automatic Media Feed (Enable)

When automatic media feed setting is enabled, the feed operation starts by inserting media to the media guide, or by closing the cover with the media inserted. After the paper sensor detects the front edge of the media, the printer feeds the media to the print position for continuous mode, tear-off mode or cutter mode. Printer will be ready for printing after completing the automatic media feed.

Media detection position   Media feed direction
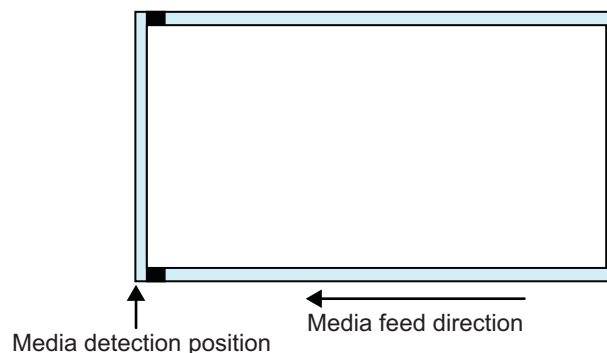
Notes:
- When inserting the media to the media guide, make sure that the length of the media is at least 130 mm (5.1") long for proper media detection.
- If I-mark overlaps the paper sensor as shown below, the front edge of the media will not be detected. In such case, disable the automatic media feed.

Paper sensor

I-mark overlaps the paper sensor

I-mark

> 28 mm (1.1")

Distance between I-mark is more than 28 mm (1.1")

Media feed direction

Label without I-mark (label with gap)

Label not recommended for automatic media feed   **Labels recommended for automatic media feed**

8.6 AUTOMATIC MEDIA FEED (Cont'd)

Notes (cont'd):
- If you place the media 150 mm (5.9") ahead of the print head, an error will occur when closing the cover.
- When the automatic media feed function is enabled in tear-off or cutter mode, the position of the first media is not set correctly. Press the **FEED** button in offline mode to adjust the position.

8.6.2 Automatic Media Feed (Disable)

When automatic media feed setting is disabled, the printer does not feed media automatically. Open the cover of the printer to set the media manually.

8.6.3 Notes for Automatic Media Feed

1. When setting the media with the cover open or when rebooting the printer, you have to set the first piece of the media. When setting the first media, make sure that the I-mark or gap of label does not overlap the paper sensor or I-mark sensor. (Sensor detection error or paper jam may occur when setting the media other than the first.)

2. When setting the media for the automatic media feed, make sure that the paper sensor can detect the media correctly. (For example, cut the perforated line of the media)

3. Make sure to set the new media as the printer is ready for printing after automatic media feed is completed. If you set a printed media, the printing overlaps the printed area of the media.

## 8.7 INFORMATION ON MEDIA WHEN USING CUTTER

8.7.1 Cutting of Labels

The correct cutting position is at the label gap. Cutting onto the label must be avoided because the label adhesive that accumulates on the blade will affect cutter sharpness.
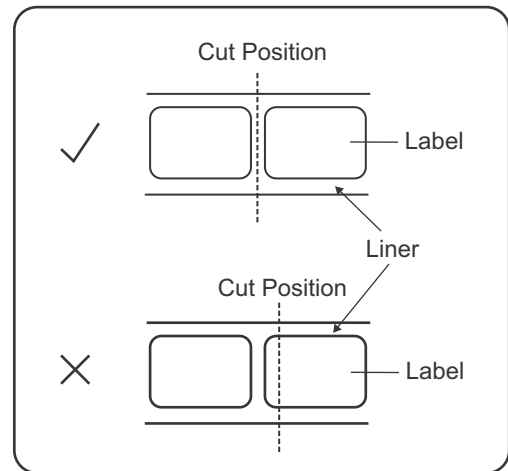
### 8.7.2 Cutting Media with Perforation

As for media with perforation, **cutting on or in front of the perforated lines is prohibited**. Cutting in those locations could cause the media to jam and the printer to malfunction. The perforated line +1 mm (+0.04") is the cut prohibited zone.
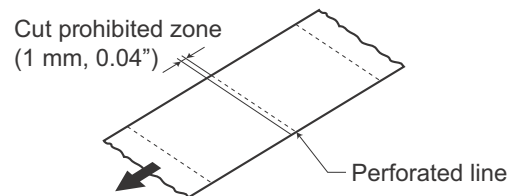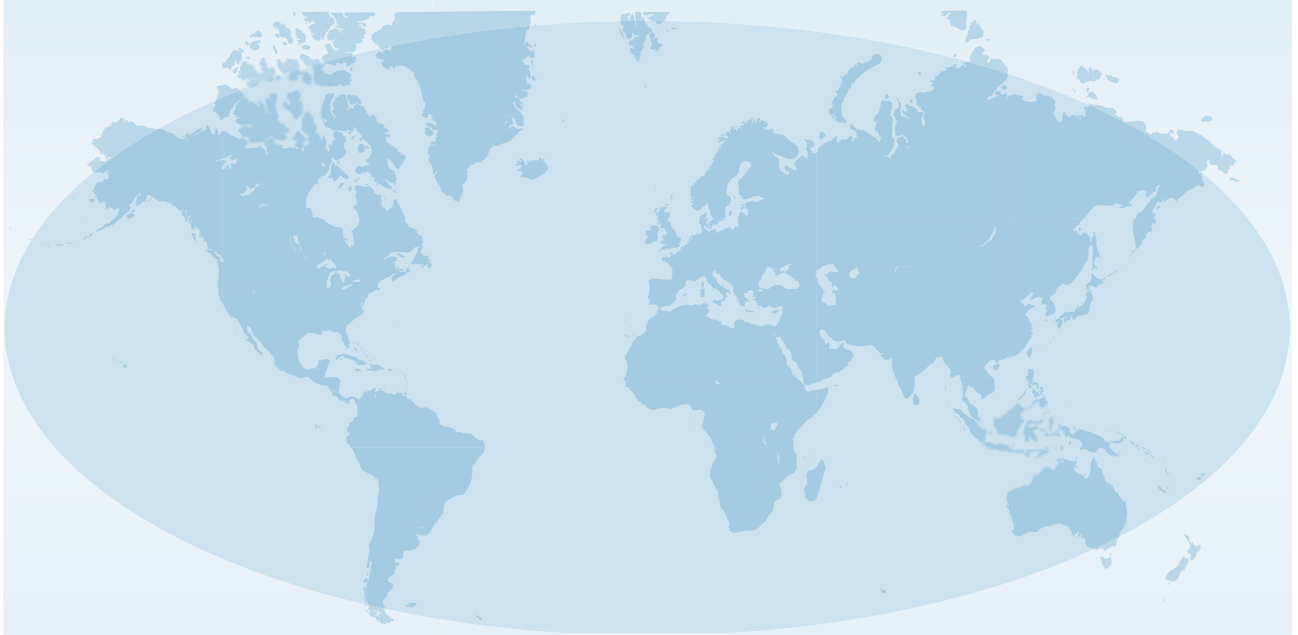

8.7.3 Cutter Replacement

Over time, the cutter loses its cutting ability and begins to show signs of wear.
Replace the cutter unit when the blade becomes blunt and cut edges are rough. (Please contact an authorized SATO representative for replacement.)
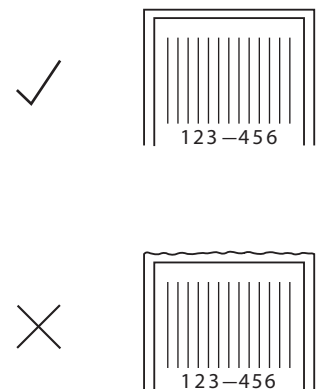
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Extensive contact information of worldwide SATO operations can be found on the Internet at **www.satoworldwide.com**

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