SATO
DCS & Labeling Worldwide

Operator Manual

For printer model:

TH2 Series

PN: 9001233(A)

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

FCC Statement

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.

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Safety Precautions

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

Pictographic Symbols

This instruction 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.

Always ground the connections

- Always connect the printer’s ground wire to a ground. Not grounding the ground wire could result in 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.

⚠ 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.

Battery Pack

- Never try to take apart the battery pack or modify it in any way such as with a solder iron.

- Never expose the battery to direct flame, throw it into fire, or take any actions that may lead to shorting.

- When charging the battery pack, make sure to use the printer or specified battery charger.

AC Adapter/ Battery Charger (Option)

- Use only the specified voltage. Using a different voltage may create the danger of fire or electric shock.

- Use only the specified AC adapter. Using a different one may create the danger of fire or electric shock.

- Never use the battery charger with any other battery pack except for the specified one. Doing so can rupture the battery, cause leakage, fire or electric shock.

⚠ 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.

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.

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.

Replacing the Rechargable Battery Pack

- Use only the specified battery pack.

- When replacing the battery pack, make sure to install the pack in the correct orientation. Incorrectly replacing the battery creates the danger of explosion, injury or damage to surrounding areas.

Lithium coin battery

- Risk of explosion if battery is replaced by an incorrect type.

- Apply insulation treatment for the used battery by sealing the contact with tape or the like and dispose it according to the local safety regulatory.

Print head

- The print head is hot after printing. Be careful not to get burned when replacing paper or cleaning immediately after printing.

- Touching the edge of the print head immediately after printing could result in injury. Use caution when replacing the label or cleaning the print head.
- You should not replace the print head without having received the proper training.

Loading paper

- When loading roll paper, be careful not to get your fingers pinched between the paper 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 the TH2 Series 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 splashed with 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 label 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 via the supplied AC adapter.

Connect the power cord to a grounded power outlet.

Make sure that the printer is plugged into a grounded power outlet.

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

1

INTRODUCTION

Thank you for your investment in this SATO printer product.

This Operator Manual contains the basic information about the installation, setup, configuration, operation and maintenance of the printer.

A total of eight topics are covered in this section, and they are organized as follows:

Section 1: Introduction
Section 2: Installation
Section 3: Configuration and Operation
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 in this section:

- Features of the printer
- Unpacking
- Parts Identification

1.1 FEATURES OF THE PRINTER

The SATO TH2 Series printer is a compact, portable Direct Thermal printer, designed with a built-in alpha-numeric keypad, designed specifically for point-of-usage labelling applications. It can be used as a stand alone printer with predefined formats, or it can be connected to a PC for variable labelling applications. The key features of the TH2 Series are:

- Application Enabled Printing (AEP)
- Standard Real Time Calendar for date coded labelling
- Large and adjustable LCD Screen - 128 x 64 pixels (5 lines by 16 characters)
- Integrated Dispenser
- Easy Media Loading
- Multiple Interfaces (USB, LAN, WLAN)
- Easy Maintenance
- Anti-Microbial Casing
- Linerless Label Support (Availability is subject to future development.)
- Battery Pack and Charger Option
- PS/2 Barcode Scanner Option
- SD Card Option
- Printer Options – Cutter, Keypad cover, Wall mount kit
- Multilingual Printer [English (default), Danish, German, Spanish, French, Italian, Dutch, Norwegian, Swedish]
- European Codepages and Unicode: UTF-8 encoding support
- Application Tools - AEP Works, TH PSIM, TH2 Download Tools

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 of the packaging from the printer.

3. Remove the accessory items from the packaging.

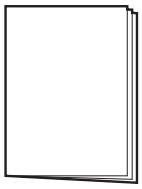
4. Set the printer on a solid, flat surface. Inspect the shipping container and printer for any sign of damage that may have occurred during shipping. Please note that SATO shall hold no liability for any damage of any kind sustained during shipping of the product.

Notes:
- If the printer has been stored in the cold, allow it to reach room temperature before turning it on.
- Please 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 shipment for repairs.

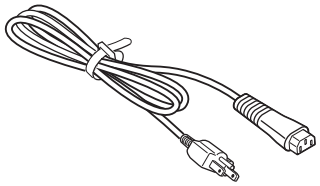
1.2.1 Included Accessories

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

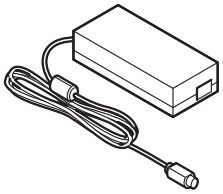
User Documents
(Quick Guide, Warranty, etc)



AC Power plug*



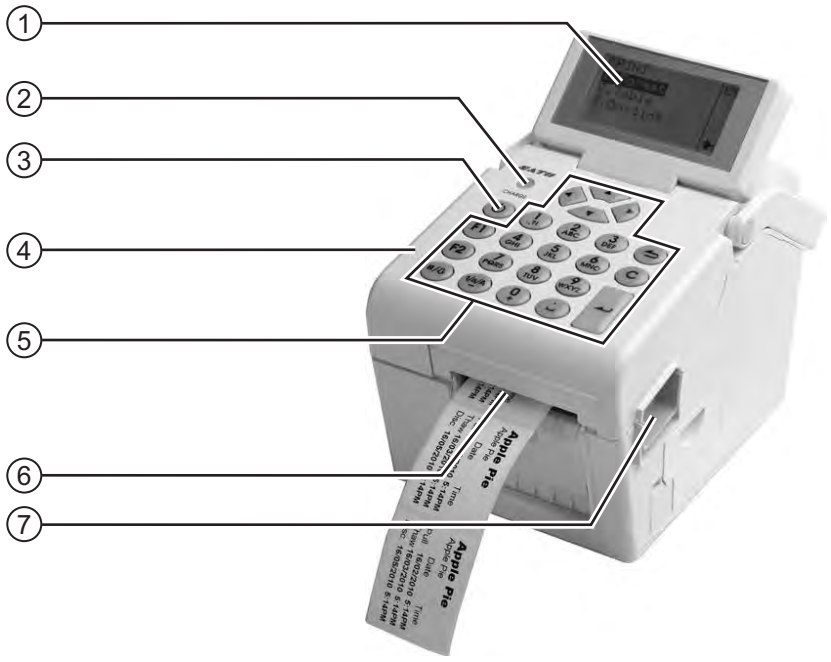
AC adapter



* The shape of the power plug may vary, depending on the location where it was purchased.

1.3 PARTS IDENTIFICATION

Front view



① **LCD panel**

Display the operator menus, printer status, selections for settings and error message. The LCD panel can be tilted to an angle which is most comfortable for the user's view.

② **CHARGE indicator**

It turns on when the optional battery pack is charging. It turns off when the battery pack is fully charged or no battery pack is in the printer.

③ ⏻ **Power button**

Press and hold for one second to turn on the power.

Press and hold for three seconds to turn off the power.

④ **Top cover**

Open this cover to load the media.

⑤ **Operator panel**

It consists of alpha-numeric keypad, arrow buttons and other functional buttons. Please refer to **Section 3.1 Operator Panel**, for details of individual buttons.

⑥ **Media ejection slot**

Opening for media output.

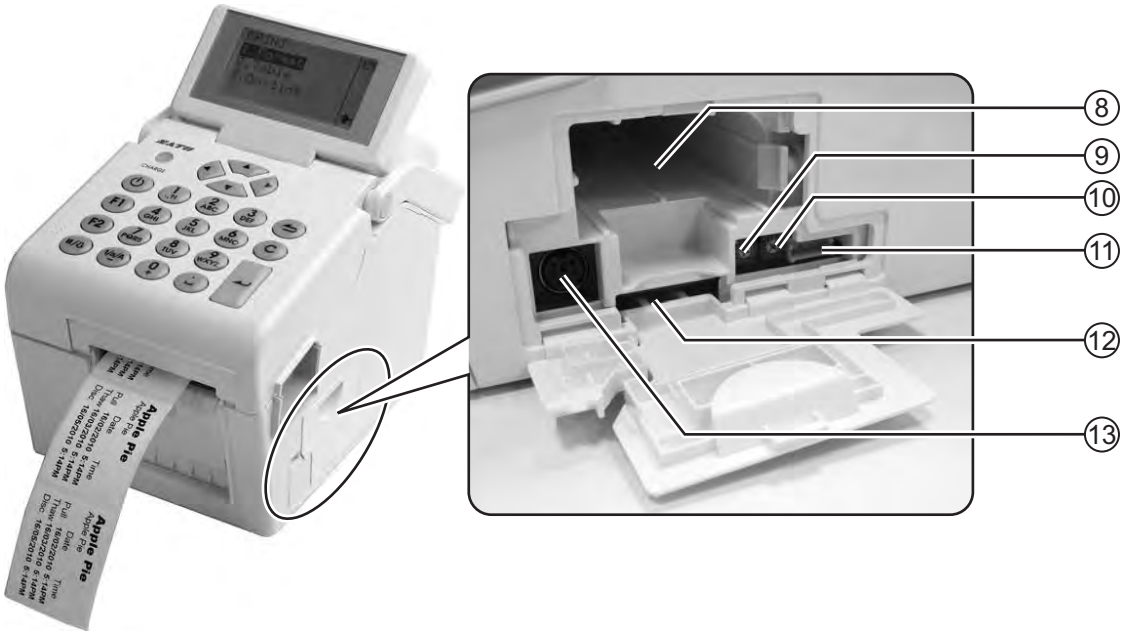
⑦ **Cover open/close latch**

Push the latch on the right side of the printer downward to open the top cover of the printer.

To close top cover, push down firmly on left and right side of top cover until click sound is heard. Make sure top cover is closed properly to ensure proper feeding and printing of labels.

1.3 PARTS IDENTIFICATION (cont'd)

Front view with battery cover open



⑧ **Battery pack compartment**

Insert the optional battery pack into the compartment with the terminal side facing inward.

⑨ **VR1 (I-Mark) potentiometer**

Adjust for I-Mark sensor level calibration.

Refer to **Section 3.7.2 When Media is selected in the SETUP menu** for details in calibration.

⑩ **VR2 (Gap) potentiometer**

Adjust for Gap sensor level calibration.

Refer to **Section 3.7.2 When Media is selected in the SETUP menu** for details in calibration.

⑪ **CN10 terminal**

To connect printer to the testing jig. This is only for used by SATO authorised technical personnel.

⑫ **SD card slot**

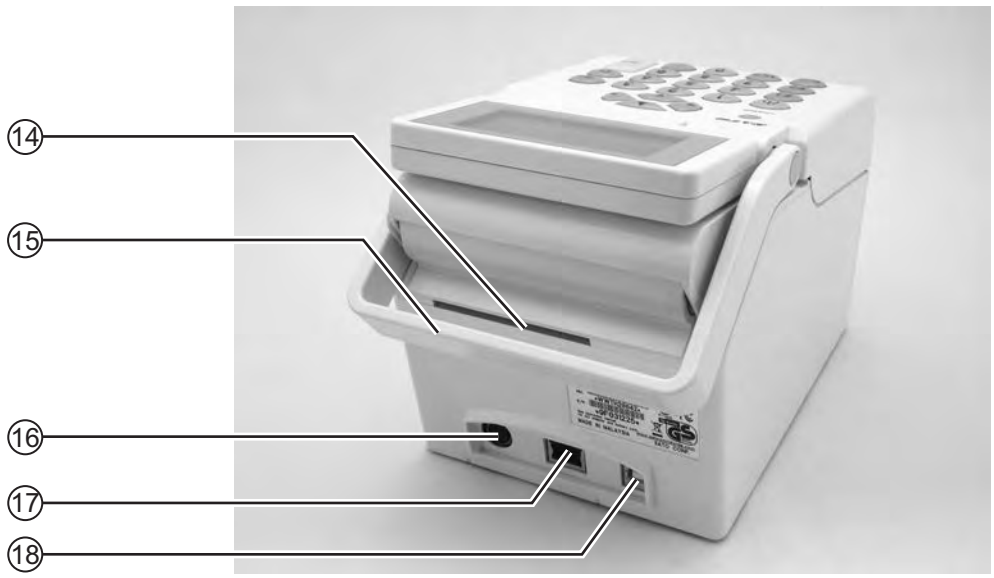
To insert SD card for additional memory.

⑬ **Scanner connector**

To connect printer to a PS/2 barcode scanner.

1.3 PARTS IDENTIFICATION (cont'd)

Back view



⑭ **Media inlet**

An opening for Fan-folded media or media from unwinder to feed in to the printer.

⑮ **Handle**

To carry the printer around.

⑯ **DC input power connector**

Supplies power to the printer by inserting the power cable of the AC adapter.

⑰ **LAN interface connector***

To connect printer to the host computer using LAN interface.

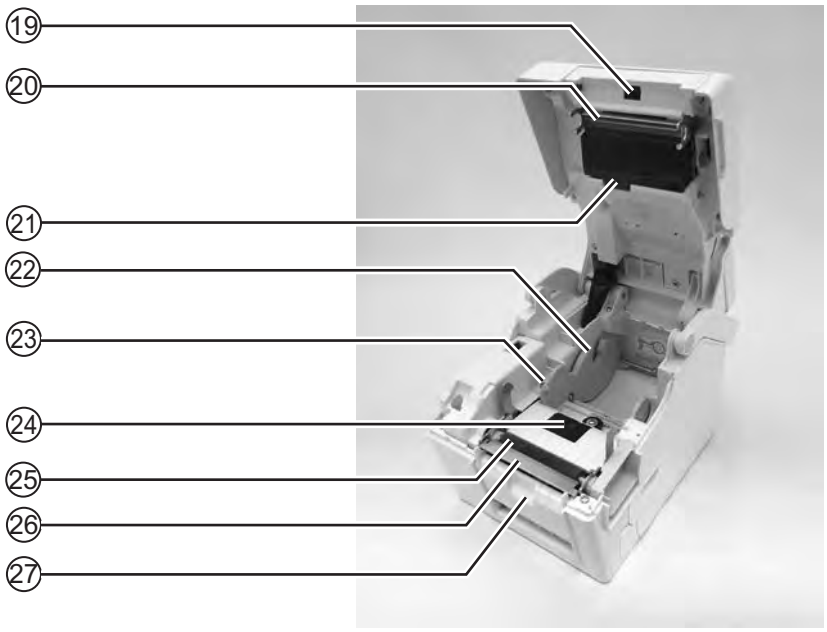
⑱ **USB interface connector***

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

*** The availability of the interface connector depends on the type of printer you purchased.**

1.3 PARTS IDENTIFICATION (cont'd)

Internal view when Top cover is opened



⑲ **Dispensing sensor (Label taken sensor)**

Detects the label is taken away after dispensed.

⑳ **Print head**

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

㉑ **Gap sensor**

Detects the gap of the label.

㉒ **Roll media holder**

To hold the roll media and adjust it to meet the size of the media used.

㉓ **Media guide**

A guide for the media to feed properly.

Make sure the media guides are adjusted to both edges of the label roll.

㉔ **I-Mark/ Gap sensor**

Detects the I-Mark on the media or gap of the label.

㉕ **Platen roller**

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

㉖ **Dispenser/ Tear off plate**

Used to separate the label from the liner or to tear off the journal paper.

㉗ **Pressure bracket**

To hold the dispensing roller for label liner (backing paper) movement.

2

INSTALLATION

This section helps you load the consumable media in the printer, and provides adjustment instructions and instructions to install other optional attachment units.

The following information is provided:

- 2.1 Site Location
- 2.2 Media Selection
- 2.3 Loading Media
- 2.4 Connections

2.1 SITE LOCATION

Consider the following when setting up the printer:

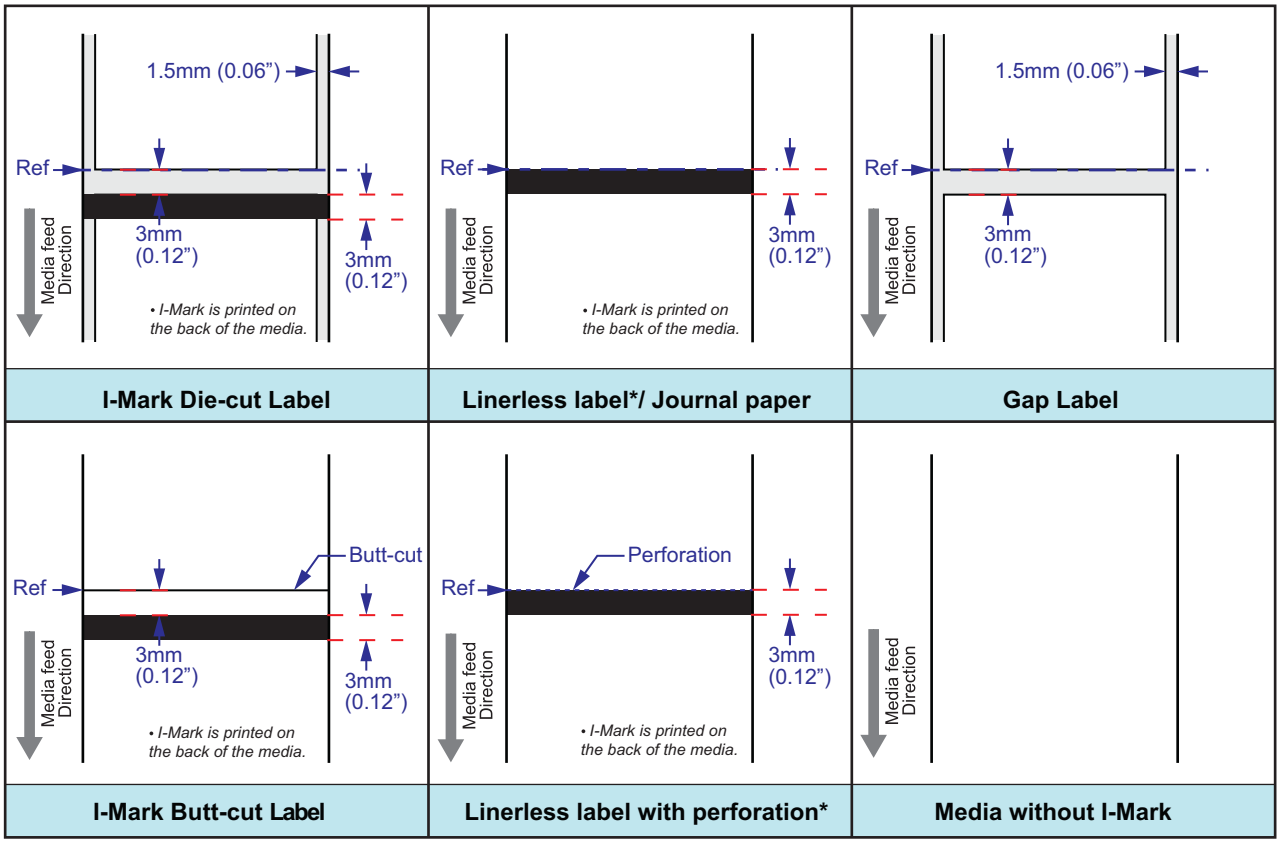
- Place the printer on a solid flat surface with adequate space. Make sure there is enough space above the printer to provide clearance for the top cover to swing open.
- Place it away from hazardous materials or dusty environments.
- Place it within operational distance of the host computer if connected, within interface cable specifications.

2.2 MEDIA SELECTION

The size and type of the labels 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, **please use SATO-certified label supplies on this printer.** Using supplies not tested and approved for use 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 roll media. The printer uses sensors to detect I-Marks or Gaps on the media in order to precisely position the print content.



* The availability of linerless option is subject to future development. For more information, you may contact to SATO sales representatives.

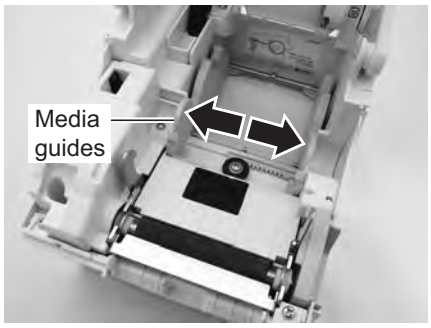
2.3 LOADING MEDIA

2.3.1 Loading Roll media

1. Press the **cover open/close latches** (1) on right side of the printer to unlock the top cover, and then open the **top cover** (2).

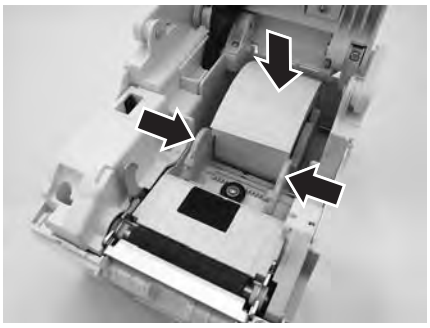
Note:
Make sure that the cover rests firmly so that it will not fall forward and injure your hands.

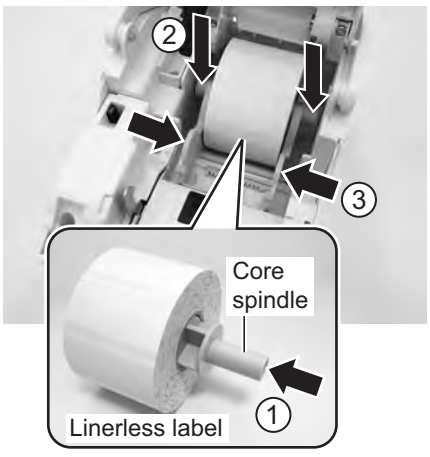
2. Adjust the width of the **media guides** to the widest position.



3. Load the media onto the **media compartment.**
Then adjust the **media guides** inward till the **media guides** press lightly against the media roll.
Turn the media roll lightly by hand and confirm that it rotates smoothly. Otherwise, media may not be fed correctly during operation.

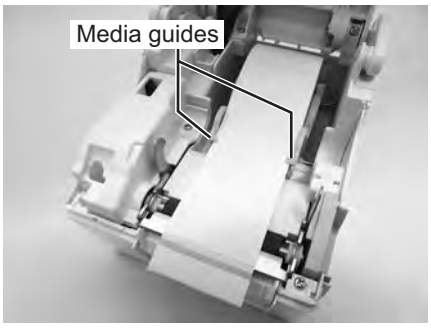
Note:
When using linerless label*, you need to insert the supplied label core spindle onto the roll label core and then place the label with the spindle hook on the media holder.
* The availability of linerless option is subject to future development. For more information, you may contact to SATO sales representatives.





2.3 LOADING MEDIA (cont'd)

4. After pulling out the media, pass the media through the **media guides** and place the leading edge of the media on top of the **platen roller**.
Note:
Make sure the printed side of the media is facing upwards.



Printed side should face upwards

5. Close the **top cover** until it snaps into position.
Notes:
- Be careful not to get your fingers pinched while closing the top cover.
- **To load the media in the dispenser**, please refer to **Section 2.3.2 To route the label when using the dispenser**, for further instructions.

6. After loading the media, press ⏻ power button if printer is turned off. If printer is on, press **C** button to clear Cover open error.

When the printer is ready, press the ⏸/⇩ pause/ feed button to output the leading part of the media.

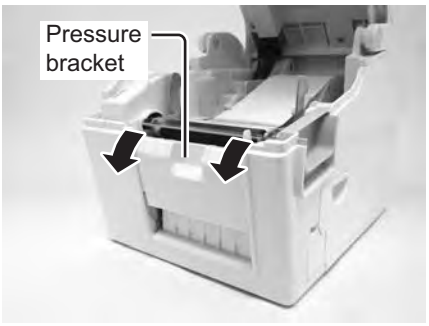
⚠ Caution
- When replacing media, bear in mind that the print head and its surrounding area remain hot. Keep your fingers away from these areas to prevent injury.
- Avoid touching even the edge of the print head with your bare hands.

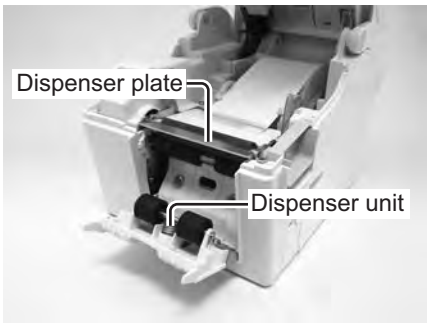
2.3 LOADING MEDIA (cont'd)

2.3.2 To route the label when using the dispenser

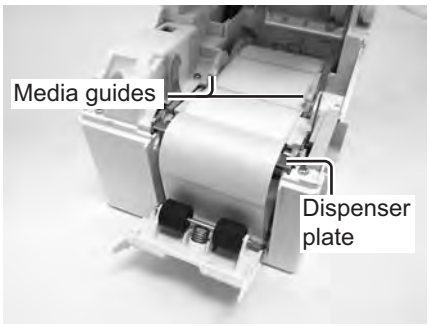
1. Follow the procedures in **Section 2.3.1 Loading Roll media**, from step 1 to 4, to load the roll media onto the media holder.

2. Pull the two corners of the **pressure bracket** out to open the **pressure bracket**.

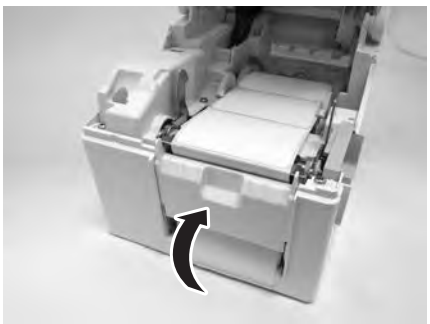




3. Peel off the first two leading labels from the liner (backing paper) and then pull out the leading liner (backing paper) from the **media holder**.
Pass the liner (backing paper) over the **dispenser plate** so as to cover it. Then pass the liner (backing paper) under the **pressure bracket** as shown.



4. If the paper is not taut, roll the paper on the **media holder** so that the paper is taut.
Next, tightly close the **pressure bracket** with the liner (backing paper) passing through it.

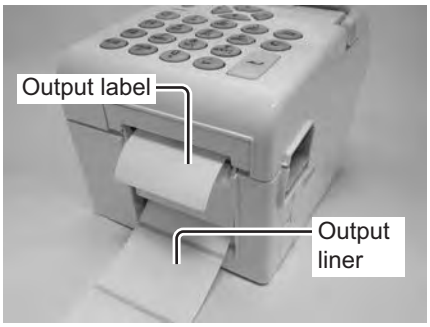


2.3 LOADING MEDIA (cont'd)

5. Close the **top cover** until it snaps into position.

6. After loading the media, press ⏻ power button to turn on the power if printer is turned off. If printer is on, press **C** button to clear Cover open error.

When the printer is ready, press the ⏸/⇩ pause/ feed button to output an empty label and stop at the dispenser. This procedure is to ensure that the label is loaded correctly.



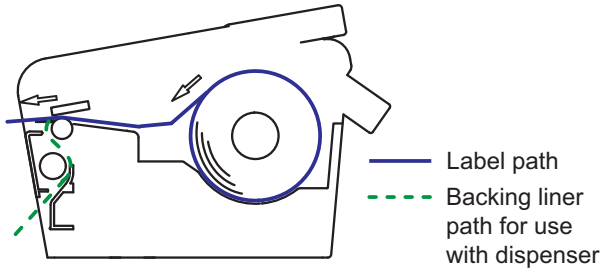
Notes:

- There may be cases when the dispenser does not function properly due to the thickness of the labels used.
- The Dispenser unit is effective for label pitch 16 to 120 mm (0.6" to 4.7") long. However, the label size limitation may vary with application conditions.
- Labels over 100 mm (3.9") long may curl at dispenser due to the nature of the material. There is no remedy for this.

⚠ Caution

- When replacing media, bear in mind that the print head and its surrounding area remain hot. Keep your fingers away from these areas to prevent injury.
- Avoid touching even the edge of the print head with your bare hands.

2.3.3 Overview of the Roll media loading path



2.4 CONNECTIONS

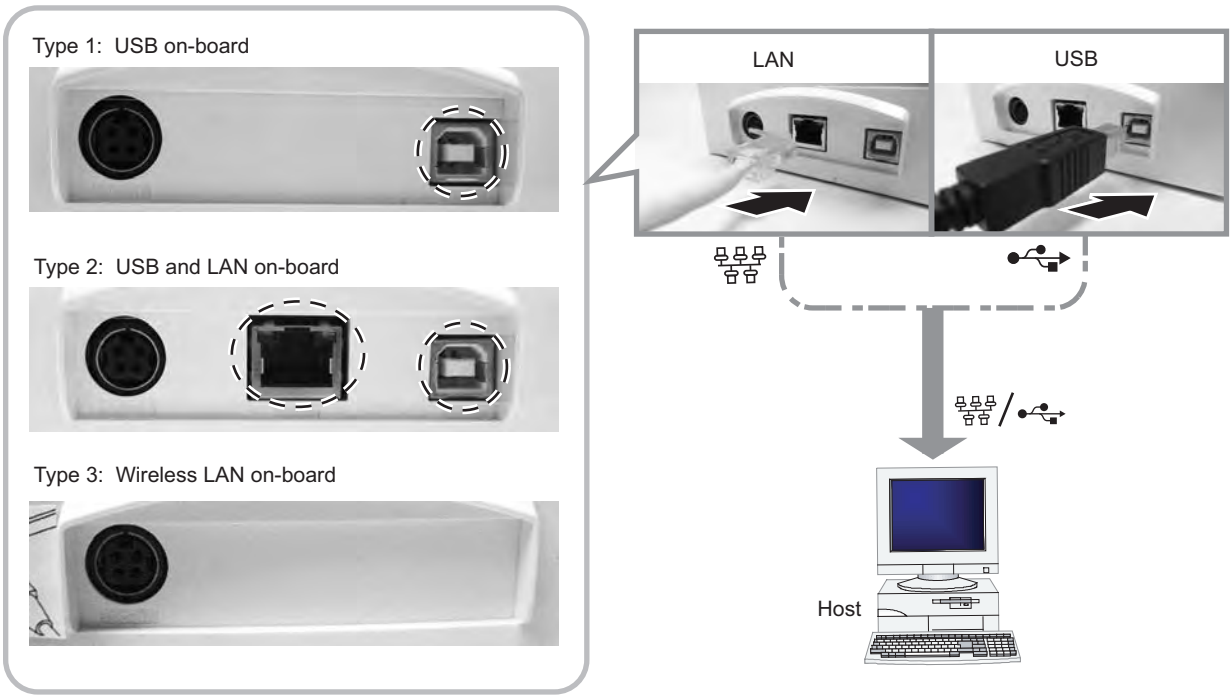
This section explains the power cable and interface cable connection procedures.

2.4.1 Standard interface connection

TH2 Series printers have three types of Main PCBs, and each type of PCB is equipped with a different type of interface to perform data communication with the host. These are described as follows.

1) **Type 1**: USB on-board
2) **Type 2**: USB and LAN on-board
3) **Type 3**: Wireless LAN on-board

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.



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.

2.4.2 To activate the connected interface

When using LAN or WLAN as connection to the host PC, you may need to set the configuration on the **PRINTER SETUP** menu. Please refer to **Section 3.7.6 When Network is selected in the SETUP menu (LAN)** or **Section 3.7.7 When Network is selected in the SETUP menu (Wireless LAN)** for details.

2.4 CONNECTIONS (cont'd)

2.4.3 Connecting the Power Cable

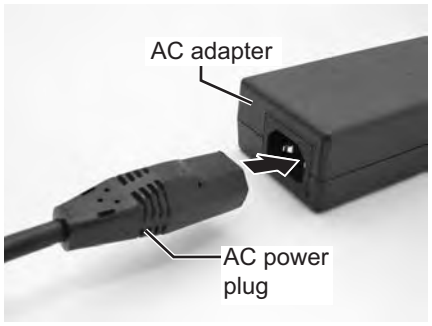
Warning

- Be sure to connect the ground wire. Failure to do so may cause an electric shock.
- Do not operate the power button or plug in/ unplug the power cable while your hands are wet. Doing so may cause an electric shock.

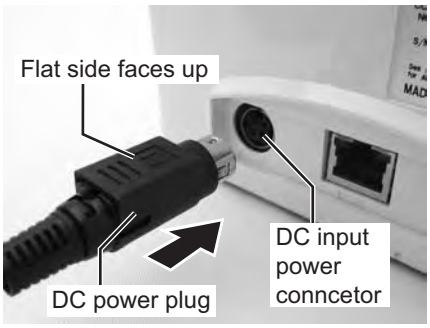
Caution

The power cable and the AC adapter provided with this printer are for use with this printer only. They cannot be used with other electrical devices.

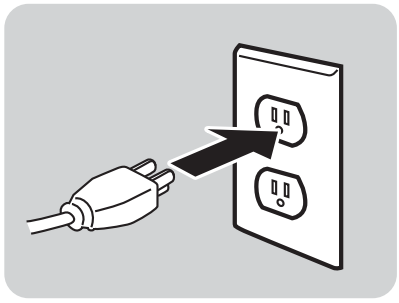
1. Connect the supplied AC power plug to the supplied AC adapter.



2. Connect the DC power plug from the AC adapter to the **DC input power connector** on the back of the printer. Make sure the flat side of the DC power plug is facing upward. Secure the printer with one hand, and insert the cable firmly.



3. 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 240V, 50/60 Hz.
A 3-pin plug is attached to the power cord provided with your printer. One of these pins is the ground wire.
You must use a 3-pin power outlet. The plug will not work with a 2-pin power outlet.

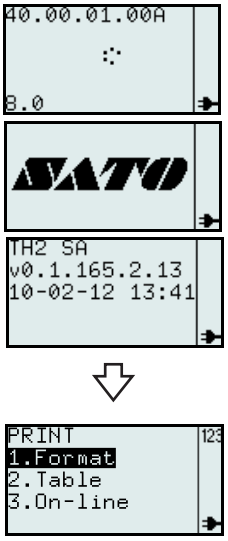


Note:
The shape of the power plug may vary depending on the location where the printer was purchased.

2.4 CONNECTIONS (cont'd)

2.4.4 Turning On the Power

> **Warning**
> Do not operate the power button or plug in/ unplug the power cable while your hands are wet. Doing so may cause an electric shock.



Press the ⏻ power button on the operator panel for one second.
The LCD displays the **PRINT** menu after the start-up display.

Note:
The first **PRINT** menu might not look like this screen. It depends on customer application loaded into the printer.

2.4.5 Turning Off the Power

When you have completed the printing job, turn the printer off.
Be sure to confirm that the print job is completed.

Press and hold the ⏻ power button for more than three seconds until you hear two short beeps.
The LCD display is turned off.

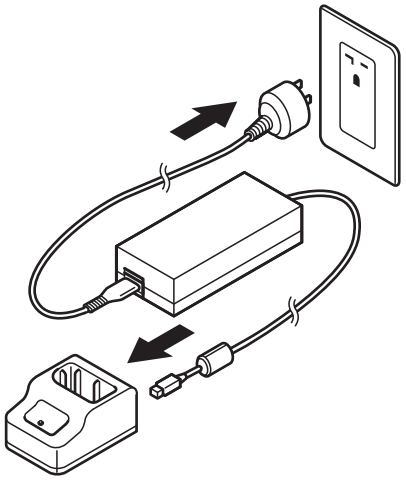
> **Caution**
> - Be sure to turn the printer power off before detaching the DC power plug of the AC adapter, or disconnecting the AC power plug.
> - Note that disconnecting the AC power plug in ways other than described above may prevent the printer from correctly storing settings in memory.
> - No battery pack is necessary when the AC adapter is used. When the battery pack and AC adapter are used simultaneously, the printer begins to charge the battery, if the battery is not fully charged.

2.4 CONNECTIONS (cont'd)

2.4.6 Charging the optional battery pack with the optional battery charger

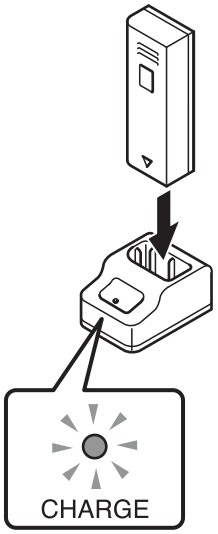
> **Caution**
> The optional battery pack and battery charger purchased for this printer are specific to this printer only. Do not use them for other electrical devices.

1. Connect the DC power plug of the AC adapter to the charger unit. Then, connect the AC power cable to the AC adapter and plug the other end of the cable to the AC outlet.



2. Insert the battery pack into the slot, with the terminal pointing downward.
When charging begins, the **CHARGE** lamp (red) lights. When charging is complete, the **CHARGE** lamp lights green (fully charged).

3. Remove the battery pack when charging is complete.



> **Charging time**
> It takes about 1.5 hours for the **CHARGE** lamp to turn green when charging a completely depleted battery.

Notes:

- When the **CHARGE** lamp is not lit, check that the battery pack is installed securely.
  The battery may not be charged when not securely installed.
- When a charged battery pack is installed, the **CHARGE** lamp first lights red, then lights green.

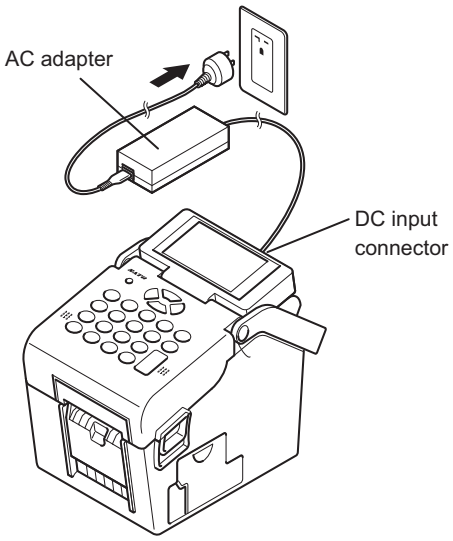
2.4 CONNECTIONS (cont'd)

2.4.7 Charging the optional battery pack with the printer

> **Caution**
> The power cable and the AC adapter provided with this printer are for use with this printer only. They cannot be used with other electrical devices.

1. Insert the DC power cable into the **DC IN** input connector.

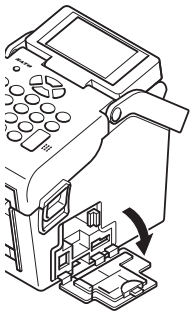
2. Connect the power cord to the AC adapter and plug it to the outlet. When charging begins, the **CHARGE** LED lights. When charging is complete, the **CHARGE** LED turns off (fully charged).



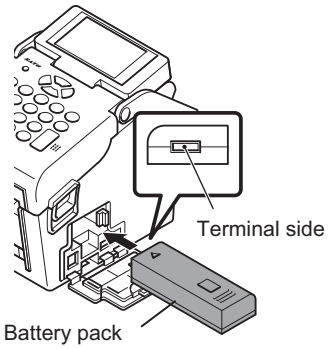
> **Charging time**
> It takes about 6 hours for the **CHARGE** LED to turn off when charging a completely depleted battery.

2.4.8 Installing and removing the optional battery pack

1. Open the battery cover.

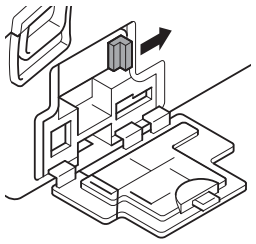


2. Insert the battery pack, then close the battery cover. Insert the battery pack with the connector side toward the printer.



2.4 CONNECTIONS (cont'd)

3. To remove the battery pack, press the blue hook to unlock it, then hold the tab and pull out the battery pack.



Caution

- Be sure to turn the power off before removing or replacing the battery pack. When the power is off, the LCD display turns off. Do not remove the battery pack until the LCD display turns off.
- If you remove the battery before the LCD turns off (or goes dark), you may prevent the printer from correctly storing settings in memory.

2.4.9 Connecting optional scanner

The optional scanner can be connected to the TH2 series printer with the PS/2 connector on the right side of the printer.

1. Open the smaller cover on the right of the printer.

2. Plug in the optional scanner connector to the connector with the arrow indication facing upwards.

Note:
Only a compatible scanner can be connected to TH2 Series printer. Contact your SATO sales representative for more details.

2.4.10 Installing optional SD card

The optional SD card file system is used both to extend the on-board flash memory, and to download firmware, data bases or applications. It shall be a FAT file system, so that it can be accessed without special applications in a PC.

You can connect the optional SD card to the CD card slot located at the bottom right of the printer.

1. Open the bigger cover on the right of the printer.

2. Insert the SD card with the orientation the same as the picture shown on back of the cover.

3

OPERATION AND CONFIGURATION

Before using the printer, please consult this manual first. Otherwise, you may change default settings upon which the instructional procedures in this manual are based.

The TH2 Series printer is shipped with standard printer firmware including the standard application **SA** (Stand-alone). The stand-alone application is written in the Lua scripting language. This application can be configured by the user using the operator panel and the LCD of the printer. A users can create label formats, add data tables and change the printer settings. This section explains these procedures.

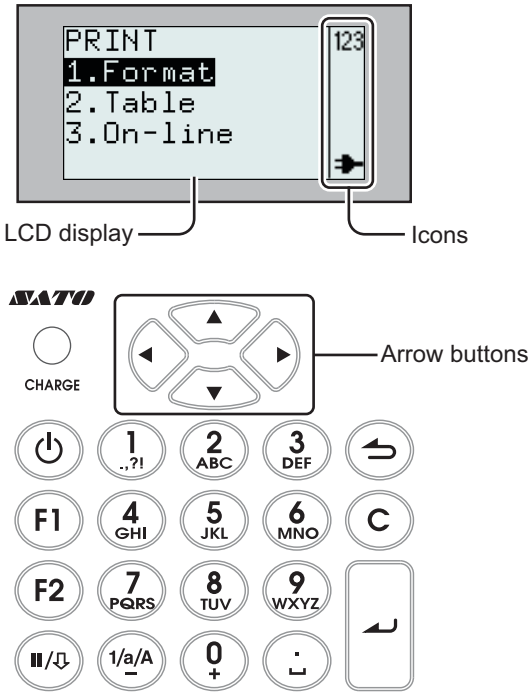
Another more efficient way to develop custom applications is to use the Windows application development tool, **AEP Works**. Instead of editing on the printer itself, **AEP Works** is used for this purpose. Label formats, data tables, printer settings, fonts, images and special Lua functions are created with this tool. The application is then packaged into an application package file (.pkg file) that can be distributed and downloaded to the printer.

Additional download utility tools are available for end users to facilitate downloading of applications as package files to the printer by USB or LAN/WLAN interface and to do modification of the data tables that resides in the printer. The applications package can also be stored on a SD card which can be used to updating the printer with a new application.

Note:
When receiving the printer, an application might have been pre-installed by SATO or a partner of SATO. Thus the actual operation of the printer might be different from what is described in this manual. The section about the printer setup should still apply but the actual printer setting parameters might have been set differently from what is described as default values in this manual.

3.1 OPERATOR PANEL

The operator panel is located on the top surface of the printer. The operator panel is comprised of an alpha-numeric keypad and an LCD panel.



- **CHARGE** LED indicator
  The CHARGE indicator is illuminated when the installed battery pack is charging. The CHARGE indicator turns off when the battery pack is fully charged or when no battery pack is in the printer.

- Alpha-numeric keypad

Button	Function descriptions
▲, ▼, ◀, ▶ Arrow buttons	These cause the cursor to shift up, down, left and right on the screen in various setting modes.
⏻ Power	Press and hold for one second to turn on the power. Press and hold for three seconds to turn off the power.
F1	Access menus with a list of pre-defined shortcuts such as [1.Print Copy], [2.Symbols], [3.Preview], [4.Time Offset], [5.Profiles], [6.Setup], [7.Info], [8.Backup]. Shortcuts can be selected under Application Settings.
F2	**Scroll mode**: Press once during input mode, |‹ ›| icon will be displayed. Scroll within a column by pressing the ◀, ▶ arrow buttons. **Jump mode**: Press twice during input mode, ‹|› icon will be displayed. Jump between columns in a table by pressing ◀, ▶ arrow buttons.

3.1 OPERATOR PANEL (Cont'd)

Button	Function descriptions
⏸/⇩ Pause/ Feed	**Pause**: Print mode/press once; stop print job/cancel print job. Print mode/press again: Feed label. **Feed**: Feeds one label.
⮌ Menu/ Page up	**Menu**: Press for more than one second to go back to main menu. **Page Up**: Press once for less than one second to go up one level.
C	Delete characters. Press one time: Deletes the character to the left of the standing cursor. Hold down: Clear entire row of input characters.
↵ Enter	Confirms an input sequence. Confirms a selection in a menu list.
1 / a / A / -	Press the button to toggle among the input modes. The input mode will remain selected until the button has been pressed again. The current selected input mode is highlighted in the display by the following icons: 123 = numeric input a = lower case input A = upper case input In numeric input fields the key works as a minus sign.
1 / . / , / ? / !	Numeric input mode: Select 1 Lower case input mode: Select , - ? ! ´ % # & ¿ : ; / \ ¯ _ " ( ) @ 1 Upper case input mode: Select , - ? ! ´ % # & ¿ : ; / \ ¯ _ " ( ) @ 1 (In Lower or Upper case input mode, press the button for two seconds to get 1)
2 / A / B / C	Numeric input mode: Select 2 Lower case input mode: Select A B C Å Ä Æ À Ç 2 Upper case input mode: Select a b c å ä æ à ç 2 (In Lower or Upper case input mode, press the button for two seconds to get 2)
3 / D / E / F	Numeric input mode: Select 3 Lower case input mode: Select D E F È É Δ Φ 3 Upper case input mode: Select d e f è é δ ϕ 3 (In Lower or Upper case input mode, press the button for two seconds to get 3)
4 / G / H / I	Numeric input mode: Select 4 Lower case input mode: Select G H I Ì 4 Upper case input mode: Select g h i ì 4 (In Lower or Upper case input mode, press the button for two seconds to get 4)
5 / J / K / L	Numeric input mode: Select 5 Lower case input mode: Select J K L Λ 5 Upper case input mode: Select j k l λ 5 (In Lower or Upper case input mode, press the button for two seconds to get 5)

3.1 OPERATOR PANEL (Cont'd)

Button	Function descriptions
6 / M / N / O	Numeric input mode: Select 6 Lower case input mode: Select M N O Ñ Ö Ø Ò 6 Upper case input mode: Select m n o ñ ö ø ò 6 (In Lower or Upper case input mode, press the button for two seconds to get 6)
7 / P / Q / R / S	Numeric input mode: Select 7 Lower case input mode: Select P Q R S Π Σ 7 Upper case input mode: Select p q r s β π σ 7 (In Lower or Upper case input mode, press the button for two seconds to get 7)
8 / T / U / V	Numeric input mode: Select 8 Lower case input mode: Select T U V Ü Ù 8 Upper case input mode: Select t u v ü ù 8 (In Lower or Upper case input mode, press the button for two seconds to get 8)
9 / W / X / Y / Z	Numeric input mode: Select 9 Lower case input mode: Select W X Y Z 9 Upper case input mode: Select w x y z 9 (In Lower or Upper case input mode, press the button for two seconds to get 9)
0 / +	Numeric input mode: Select 0 Lower case input mode: Select + - * / = ( ) ; < > [ ] { } ^ ¡ | Θ Ξ Ψ Ω 0 Upper case input mode: Select + - * / = ( ) ; < > [ ] { } ^ ¡ | θ ξ φ ϖ 0 (In Lower or Upper case input mode, press the button for two seconds to get 0)
. / ␣	Numeric input mode: Select . Lower case input mode: Select ␣ € £ $ ¥ , . ; § @ Upper case input mode: Select ␣ € £ $ ¥ , . ; § @ (In Lower or Upper case input mode, press the button for two seconds to get .)

- **LCD Display**
  The display is 128 x 64 pixels with characters in five rows sixteen columns. The two right most columns in each row are reserved for status icons.

  List of Icons

No	Icon	Description
1	123	Displayed when printer is in numeric input mode.
2	a	Displayed when printer is in lower case input mode.
3	A	Displayed when printer is in upper case input mode.
4	⚠	Displayed when printer error occurred. Additional error message will be displayed.
5		Displayed when printer is powered up by AC power via the supplied AC adapter. The power cord is connected; the printer is powered from a 110 - 240 V AC outlet and the battery is being charged.

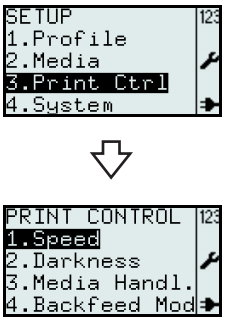
3.1 OPERATOR PANEL (Cont'd)

List of Icons (Cont'd)

No	Icon	Description
6		Displayed only when printer is powered by the battery. • 0 cell: Battery empty • 1 cell: Battery low • 2 cells: Battery half • 3 cells: Battery full
7		These icons are displayed only on the wireless LAN printer. • Displayed during startup. Indicates that LAN card is not responding. • Displayed when the LAN card is searching for signal. • Wireless field strength -- Weak • Wireless field strength -- Good • Wireless field strength -- Excellent
8		Displayed when the **F2** button has been pressed once during input mode. It is then possible to scroll within a column by using the ◀, ▶ arrow buttons.
9		Displayed when the **F2** button has been pressed twice during input mode. It is then possible to scroll between columns by using the ◀, ▶ arrow buttons.
10		Wrench icon displayed during EDIT mode or Printer Set up.
11		Peel Sensor: This animation indicates "Peeled label not removed".
12		Busy. Rotating hourglass indicates that printer is busy. Such as, saving a format.

3.1.1 To navigate and select item within the Menu

When the menu displayed a list of selection, you may use arrow buttons or the numeric buttons to make selections.



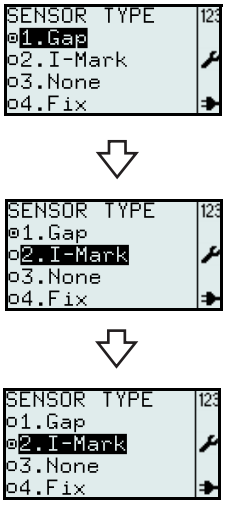
- **When using arrow buttons**
  Press the ▲, ▼ arrow buttons to scroll to the desired item. The solid bar with reverse text indicates the selected item. Press ↵ enter or ▶ arrow button to confirm the selection and the selected sub-menu will displayed.
  The display can only display four items at a time. Continually press the ▲, ▼ arrow buttons to display other items if any.
- **When using numeric buttons**
  Press the associated numeric buttons to select the desired item. The selected sub-menu will be displayed directly.

Notes:

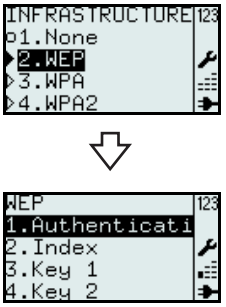
Press ⮌ page up or ◀ arrow button to return to the previous menu.

3.1 OPERATOR PANEL (Cont'd)

- **Sub menu with radio button icons**
  At the lowest level of the **SETUP** menu tree, the ○, ◎ radio button icons are displayed on the left of the selection.
  The ◉ "pressed" radio button icon represents the current selection of the printer. Press the ▲, ▼ arrow buttons or numeric button to select the desired new item, and then press the ↵ enter button to confirm the new selection. The ◎ "pressed" radio button icon is then displayed next to the new selection.



- **Sub menu with arrow icons**
  When the ▶, ▷ arrow icons are displayed beside the selection, the choice has one or more sub-menus below. The filled arrow ▶ icon represents the current selection of the printer. The rules for selecting the item are similar to those of the radio button icon.



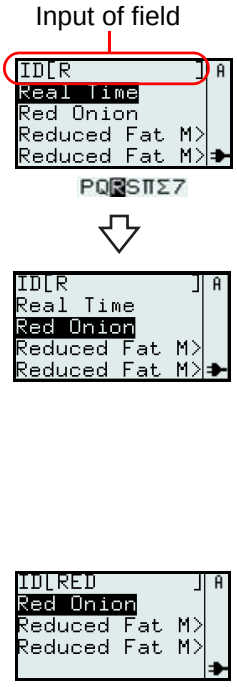
3.1.2 To input the field of the Menu

When the menu requires inputs, the square brackets [ ] will be displayed on the screen.

- **Search Field**
  During the process of printing or editing the Format or Table, the search field may display on the upper row of the screen. Alphabet search is case-insensitive.

  For example, to search for **Red Onion**.

  1. Press the **1/a/A** button to select alphabet input mode. The upper case, lower case or numeric alphabet can be toggle cyclically.
  2. Press the **7 PQRS** button three times to select **R**.
     The available characters for the pressed button is displayed on bottom line for just one second in order for entering the next character. Before the row of available characters disappears, keep pressing the button until the desired character is displayed.
     The printer will do a search according to the input character.
  3. Press the ▼ arrow button to choose **Red Onion** or narrow down the search with more characters entered.
  4. Press the ↵ enter button to confirm the selection.

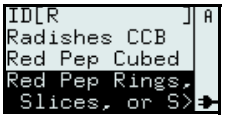


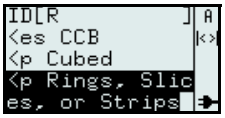
3.1 OPERATOR PANEL (Cont'd)

Multiple word Search
If you enter [**R F**] in the input field, a search for words starting with **R** and **F** will be done and the searched result is displayed.
For example, a search in the table used in the pre-defined demo will only find the rows **R**educed **F**at Mayo and **R**educed **F**at Mayo Tub.

Category Search
If you enter an ingredient name or category name, items containing the ingredient or belonging to that category will be listed, even if the input text does not appear at the beginning of an item name.
For example, enter **SAUCE** to the search field. Then press the ▼ arrow button to choose the desired item.

Viewing items with more characters
Some item names can be longer than the available display row.
An item with name longer than 14 characters is displayed using 2 rows. If 2 rows isn't enough the truncate symbol ">" is used.
Press **F2** button once and use the ◀, ▶ arrow buttons to scroll within the column, to view full name. The |‹ ›| icon will be displayed in the top right corner.
Press the ◀ or ▶ arrow button once to scroll one character at a time.
Press and hold the ◀ or ▶ arrow button to jump to the beginning or end of ID name in one step.

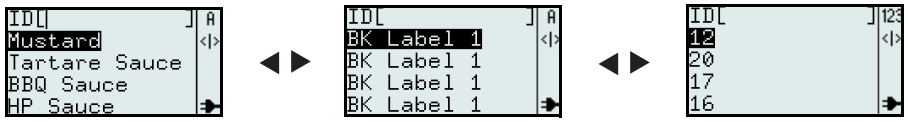




Press any button other than ◀, ▶ arrow buttons to make |‹ ›| icon disappear and disable scroll function.

Viewing and searching the item within the Table
The total information for an item is divided in different columns.
To be able to jump to another column in the table:

Press **F2** button twice to activate "jump" function. The ‹|› icon will be displayed.
Use the ◀ or ▶ arrow button to jump between the columns.



Note:
It is possible to do a numeric or alphabetic search in each column.
Jumping between columns and performing alpha-numeric searches in one column results in a changed item order in another column.

- **Input Field**
  During the process of creating the Format or Table, or setting the parameter of the label, the input field is displayed with the square brackets [ ] on the screen. The instructions for keying in the alphabetic or numeric characters to the input field is the same as those for the search function.

3.2 OPERATING MODES

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

1. PRINT menu
- **I---->1.Format**
  - I------> • FMT[ ]
- **I---->2.Table**
  - I------> • ID[ ]
- **I---->3.On-line**

2. MAIN menu
- **I---->1.Print**
- **I---->2.Settings**

3. SETTINGS menu
- **I---->1.Application**
  - I------> • 1.Edit
    - --> • 1.Format
    - --> • 2.Table
    - --> • 3.F1
  - I------> • 2.Mode
- **I---->2.Printer**
  - I------> • 1.Profile
    - --> • 1.Select
    - --> • 2.Create
    - --> • 3.Delete
    - --> • 4.Print
  - I------> • 2.Media
    - --> • 1.Size
    - --> • 2.Sensor Type
    - --> • 3.Calibrate
    - --> • 4.Max feed
  - I------> • 3.Print Ctrl
    - --> • 1.Speed
    - --> • 2.Darkness
    - --> • 3.Media Handl.
    - --> • 4.Backfeed Mod
    - --> • 5.Adjustment
    - --> • 6.Image
    - --> • 7.Head check
    - --> • 8.Auto Feed
  - I------> • 4.System
    - --> • 1.Display
    - --> • 2.Sound
    - --> • 3.Auto Off
    - --> • 4.Test
  - I------> • 5.Regional
    - --> • 1.Lamguage
    - --> • 2.Time
    - --> • 3.Date
    - --> • 4.Unit
  - I------> • 6.Network
    - --> • 1.LAN
    - --> • 2.WLAN

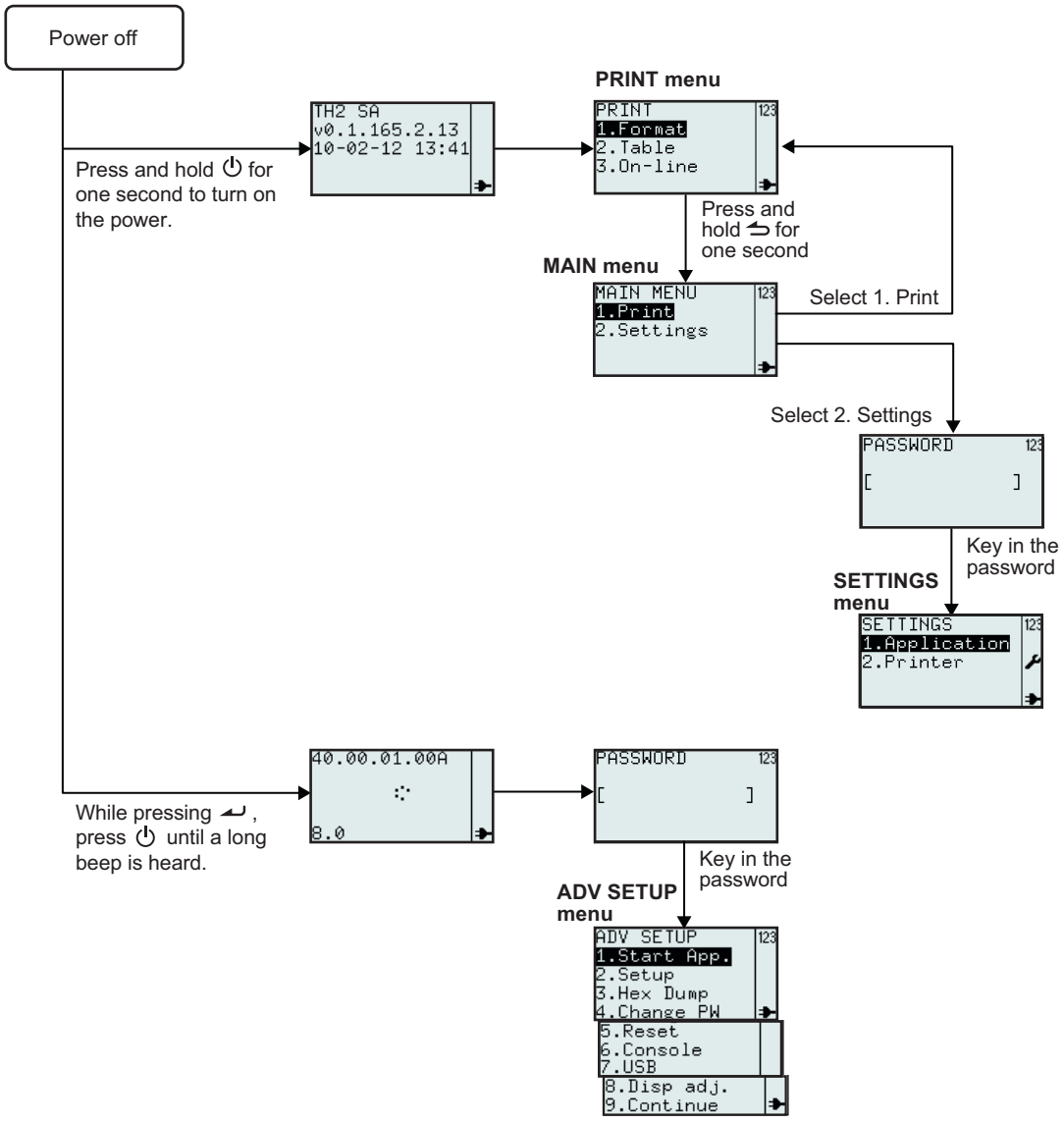
4. ADV SETUP (Advance Setup) menu:
- **I---->1.Start App.**
  - I------> • 1.Standard
- **I---->2.Setup**
  - I------> • 1.Profile
  - I------> • 2.Media
  - I------> • 3.Print Ctrl
  - I------> • 4.System
  - I------> • 5.Regional
  - I------> • 6.Network
- **I---->3.Hex Dump**
  - I------> • 1.Printout
  - I------> • 2.To File
- **I---->4.Change PW**
  - I------> • 1.admin
  - I------> • 2.manager
- **I---->5.Reset**
  - I------> • 1.Setup
  - I------> • 2.SD Card
- **I---->6.Console**
- **I---->7.USB**
  - I------> • 1.Number
- **I---->8.Disp adj./ Cutter adj.**
- **I---->9.Continue**
  - I------> • PRINT menu

<**F1** button shortcuts>

5. F1
- **I---->1.Print Copy**
- **I---->2.Symbols**
- **I---->3.Preview**
- **I---->4.Time Offset**
- **I---->5.Profiles**
- **I---->6.Setup/**
- **I---->7.Info**
- **I---->8.Backup**

3.2 OPERATING MODES (Cont'd)

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

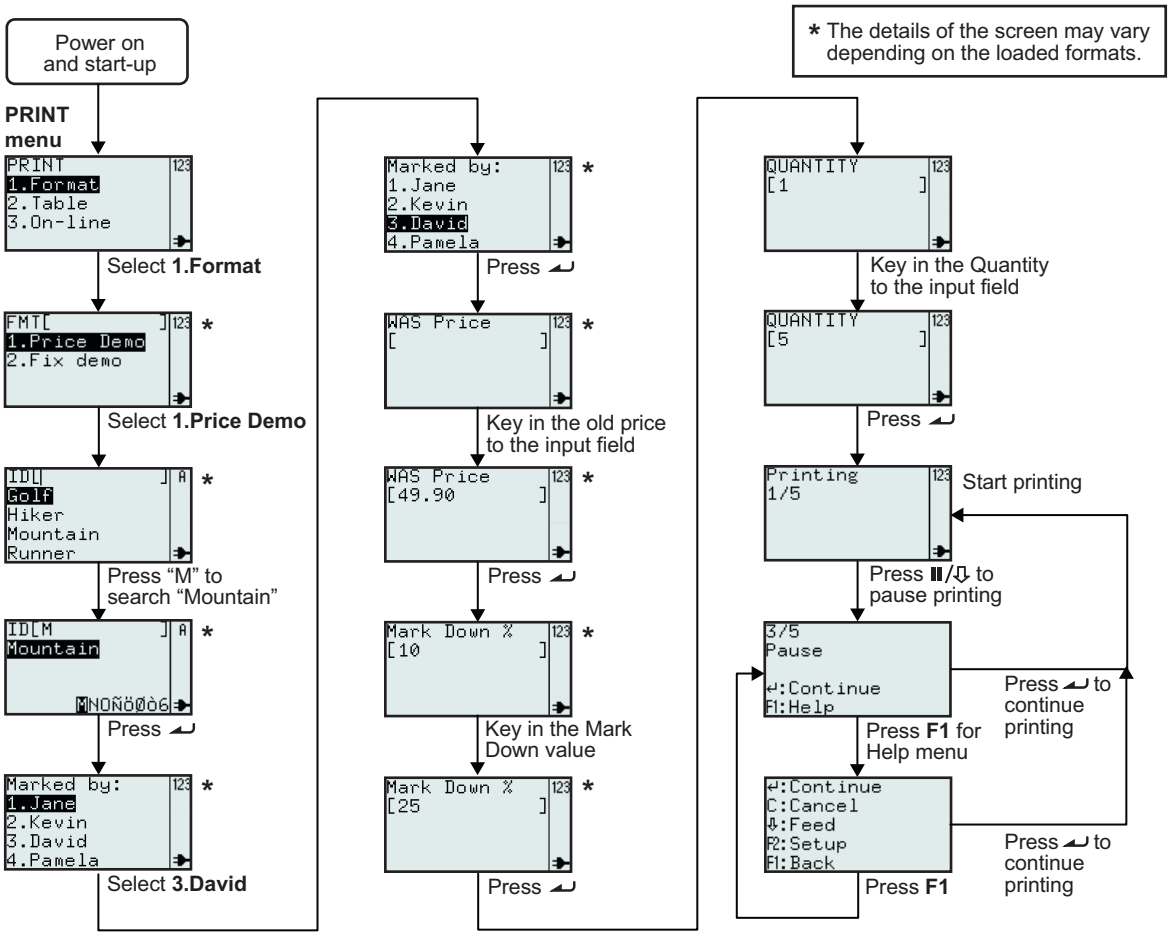


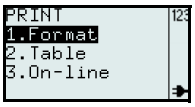
3.3 PRINT MENU

After pressing the ⏻ power button, the printer displays the **PRINT** menu after the start-up display. The **PRINT** menu allows the user to select the pre-loaded Formats or Tables for printing, or to enter the On-line mode to download data from connected host PC.

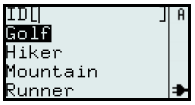
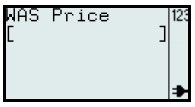
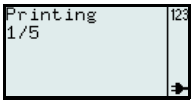
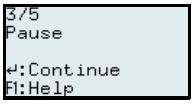
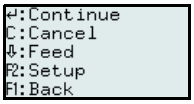
3.3.1 To make print-out from a pre-defined Format

The following flow shows the procedure for printing media from a demo format that was pre-defined in the factory.

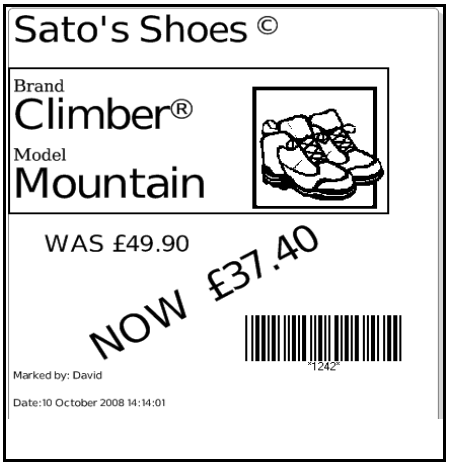


Menu	Description
	**PRINT** menu The contents of the **PRINT** menu can be edited. The three items, Format, Table and On-line, can be set to be shown or hidden on the display. Please refer to **Section 3.6.13 To set the PRINT menu appearance**, for details.
	Displays search field. Enables selection of format to print by entering characters in search field or by using the ▲, ▼ arrow buttons and ↵ enter button. **The contents of the display vary depending on the pre-loaded formats.*

3.3 PRINT MENU (Cont'd)

Menu	Description
	Displays a list of products for the selected formats and enables alphabetic search by input of character(s) in ID field or select from the list by using the ▲, ▼ arrow buttons and ↵ enter button. **The contents of the display vary depending on the pre-loaded formats.*
	Displays list of pre-defined names. **The contents of the display vary depending on the pre-loaded formats.*
	Displays WAS Price input field and enables new input. **The contents of the display vary depending on the pre-loaded formats.*
	Displays mark-down input field and enables new input. **The contents of the display vary depending on the pre-loaded formats.*
	Displays Quantity input field and enables new input.
	Displays number of printed labels and the total number of labels to print.
	If printing is paused: Displays number of printed labels and the total number of labels to print.
	Help menu if **F1** is pressed.

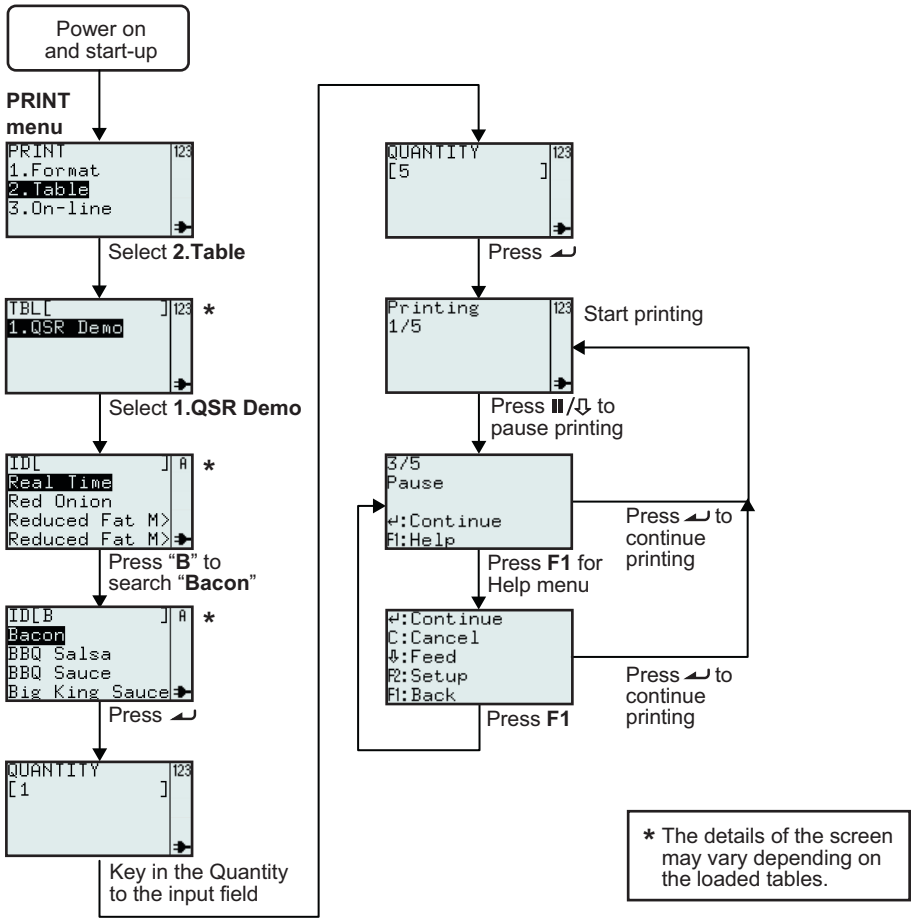
This is the printout when selecting product **ID** as **Mountain**, **Marked by:** as **David**, **WAS Price** as **49.90** and **Mark Down %** as **25**.

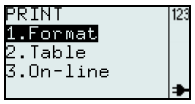
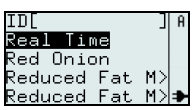


3.3 PRINT MENU (Cont'd)

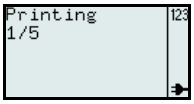
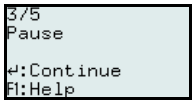
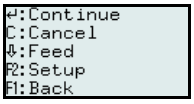
3.3.2 To make print-out from a pre-loaded Table

The following flow shows the procedure for printing media from a demo table format that was pre-loaded in the factory.

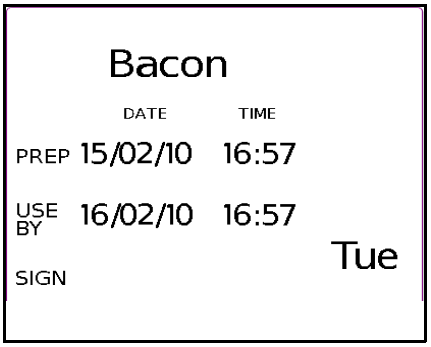


Menu	Description
	**PRINT** menu The contents of the **PRINT** menu can be edited. The three items, Format, Table and On-line, can be set to be shown or hidden on the display. Please refer to **Section 3.6.13 To set the PRINT menu appearance**, for details.
	Displays search field and enables selection of format to print by entering characters in search field or by using the ▲, ▼ arrow buttons and ↵ enter button. **Note:** If there is only one table in the printer, this screen will not be displayed. You will step directly to the sub content of the table as in the next display. **The contents of the display vary depending on the pre-loaded formats.*
	Displays list of pre-defined items and enables alphabetic search by input of character(s) in ID field or select from the list by using the ▲, ▼ arrow buttons and ↵ enter button. **The contents of the display vary depending on the pre-loaded formats.*

3.3 PRINT MENU (Cont'd)

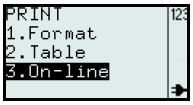
Menu	Description
	Displays Quantity input field and enables new input.
	Displays number of printed labels and total number of labels to print.
	If printing is paused: Displays number of printed labels and total number of labels to print.
	Help menu if **F1** is pressed.

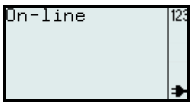
This is the print-out of the above example.



3.3.3 To set the printer to On-line mode

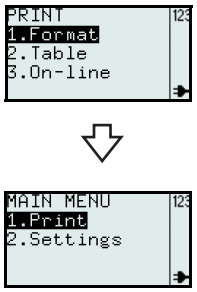
From the **PRINT** menu, the user can set the printer to **On-line** mode.
In On-line mode, formats can be printed directly from the connected host PC.
Press **3** button or use the ▲, ▼ arrow buttons and ↵ enter button to select **On-line**.





3.4 MAIN MENU

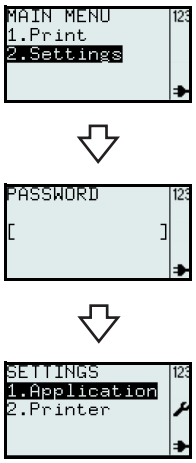
After pressing the ⏻ power button, the printer enters the **PRINT** menu or Format search, Table search or On-line menu, depending on the settings of the **MODE** menu. Then press and hold ⮌ button for more than one second to enter the **MAIN** menu.
From the **MAIN** menu, you may go to **PRINT** menu or **SETTINGS** menu.



3.5 SETTINGS MENU

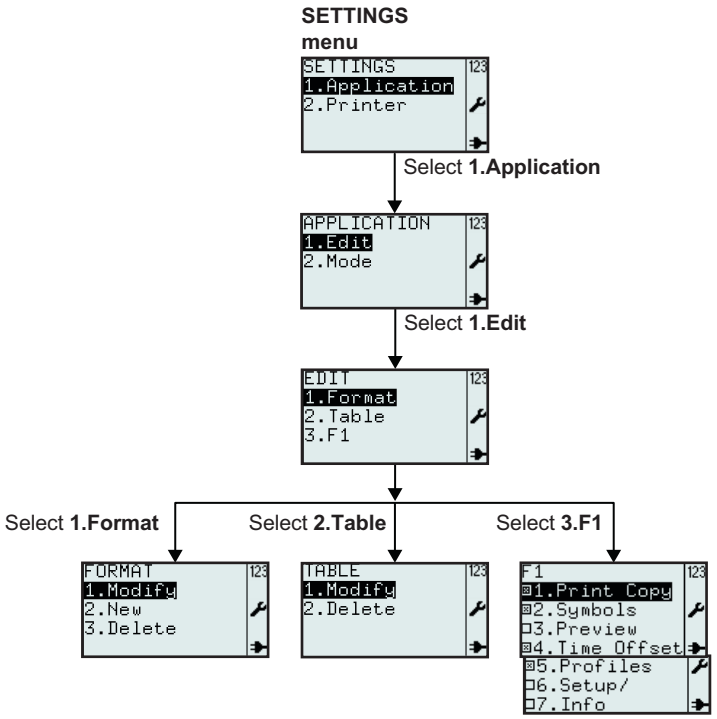
TH2 Series printer has two selections of settings. **Application** setting allows user to add new, edit or delete the loaded formats while **Printer** setting allows the user to configure the printer. Please note that all the changes done in Application Setting menu are temporary saved in the printer. You cannot upload them back to the host PC.

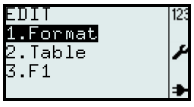
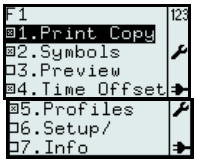
1. When the **MAIN MENU** is displayed, press the "**2**" button or press ▼ arrow button and then ↵ button to select Settings menu.
2. A password is required before entering **SETTINGS** menu. **PASSWORD** input screen is displayed.
   The default passwords are 6677 (MANAGER) and 96726 (ADMIN). These two passwords can be changed in the Advance Setup mode.
   Key in the password with the numeric buttons and then press ↵ button.
3. The **SETTINGS** menu is displayed.
   You can select **Application** settings or **Printer** settings.



3.6 APPLICATION MENU

In the **APPLICATION** menu of the **SETTINGS** mode, the user can edit the pre-loaded formats or tables, or set the functions of the **F1** button in **Edit** selection. User can also set the appearance of the **PRINT** menu in **Mode** selection.

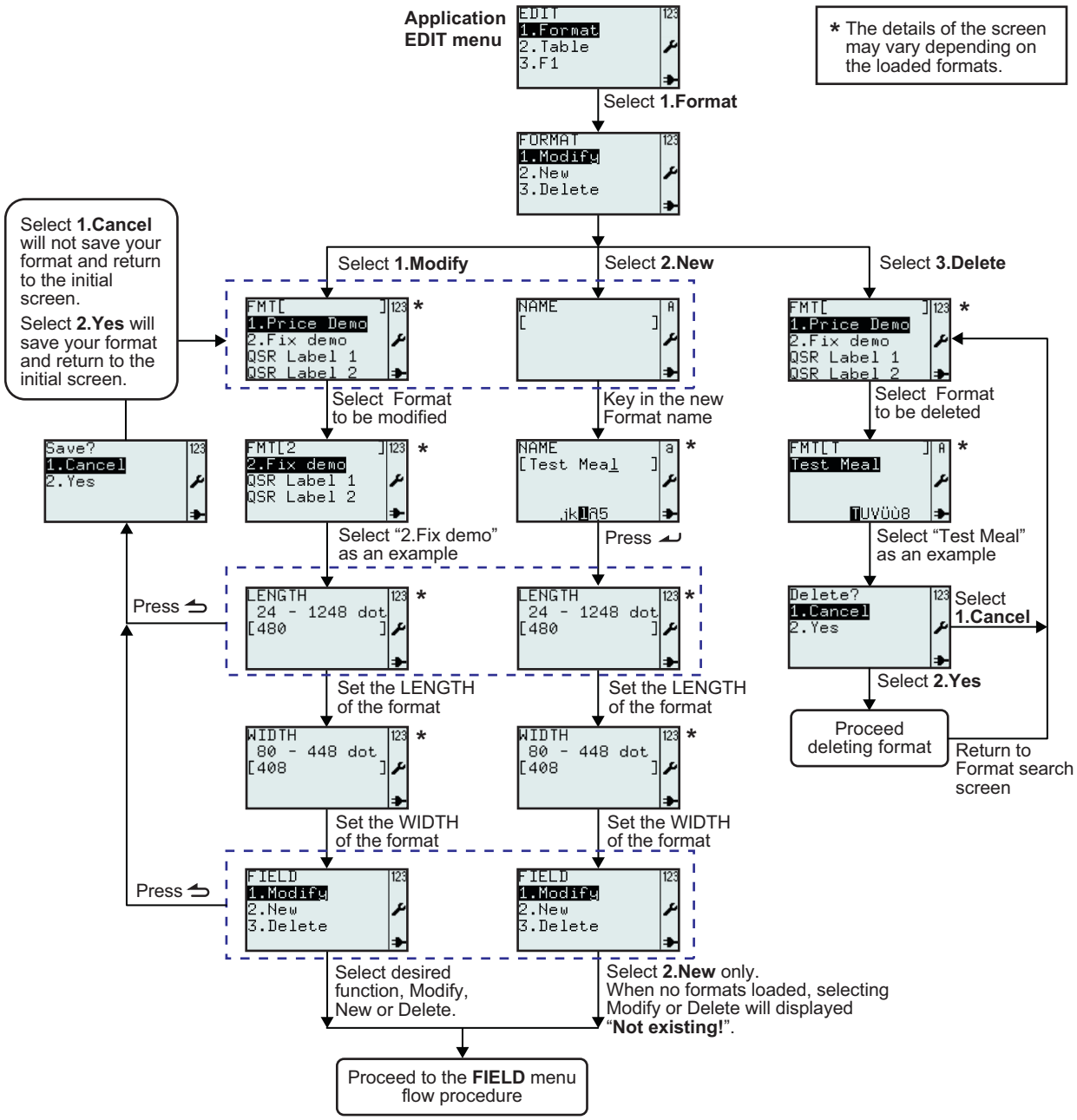


Menu	Description
	**APPLICATION** menu. Enables the selection of **Edit** or **Mode**.
	Enables selection of **Format**, **Table** or **F1** from **EDIT** menu.
  	**FORMAT**, **TABLE** or **F1** menu will be displayed, depending on the selection done on the **EDIT** menu. The details of each selection are explained in the following pages.

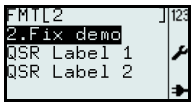
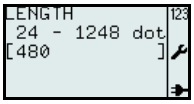
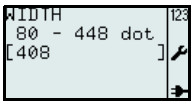
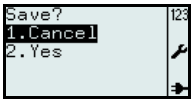
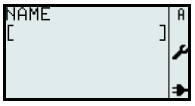
3.6 APPLICATION MENU (Cont'd)

3.6.1 To edit the pre-loaded format

Formats pre-loaded in the printer can be modified, or a new format can be created and stored in the printer. Unwanted formats can be also deleted from the printer to increase memory space. The following flow summarizes the sequence for editing the format.



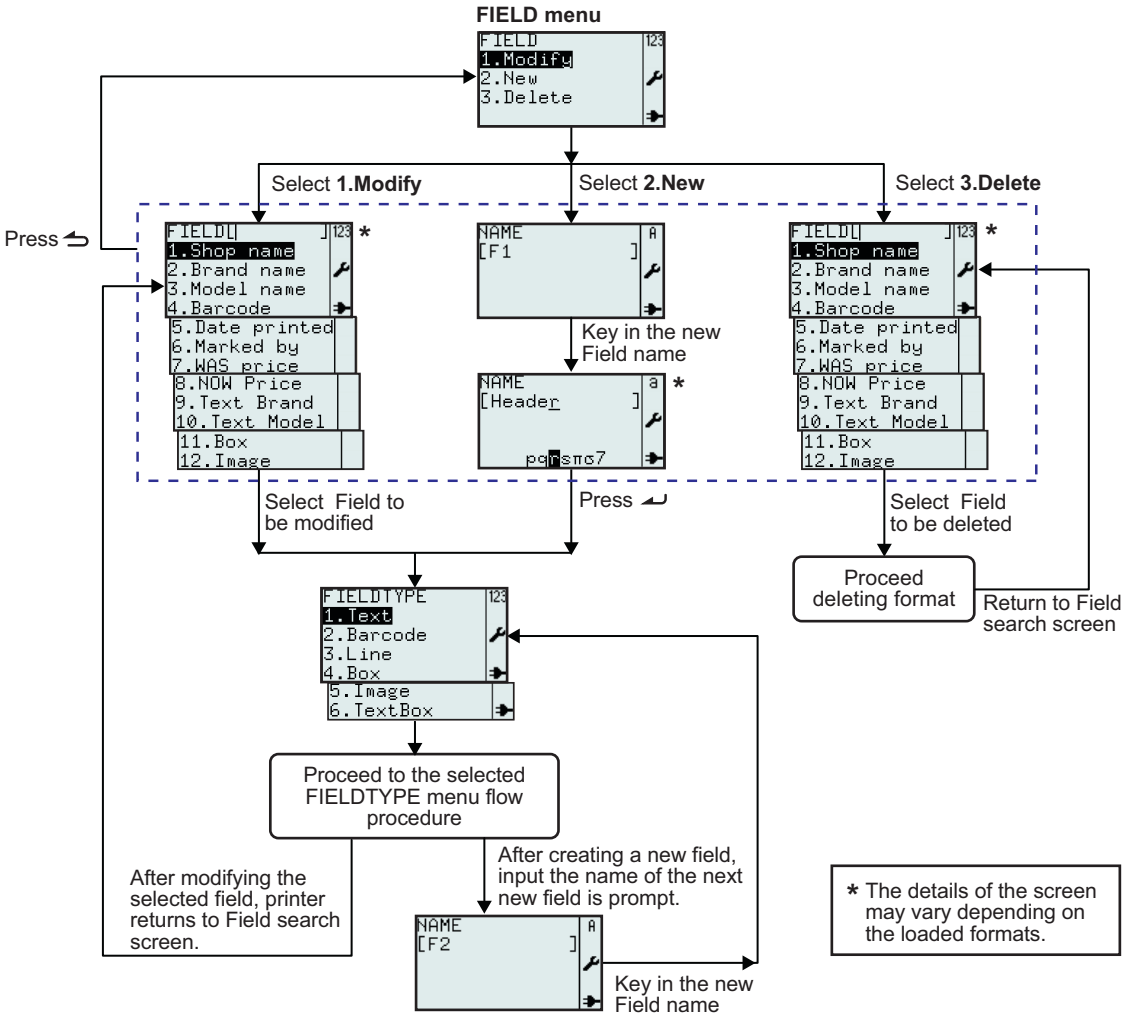
3.6 APPLICATION MENU (Cont'd)

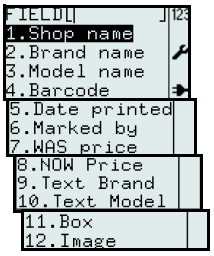
Menu	Description
	Enables selection of **Modify**, **New** or **Delete** from **FORMAT** menu.
 	Displays a search field and a list of formats to modify or delete. Enables search for existing format to modify or delete by scrolling with the ▲, ▼ arrow buttons and ↵ enter button or input in search field. **The contents of the display vary depending on the pre-loaded formats.*
	Displays input range, existing format **LENGTH** and unit. Enables input of new value. **Note:** If the value is outside the allowed range, **Invalid** will be displayed. If the input field is left blank or if 0 is input, the value from printer set up will be used.
	Displays input range, existing format **WIDTH** and unit. Enables input of new value. **Note:** If the value is outside the allowed range, **Invalid** will be displayed. If the input field is left blank or if 0 is input, the value from printer set up will be used.
	**FIELD** menu. Enables selection of **Modify**, **New** or **Delete** from **FIELD** menu. The next following pages show further explanation on editing the Field.
	If Menu/Page up ⮌ button is pressed on **FIELD** menu of **LENGTH** setting screen, the printer prompts to save the modified or new format. Selecting **1.Cancel** will not save your format. Selecting **2.Yes** will save your format. A time-glass icon is rotating while printer is saving your work.
 	Displays input field for new format. Enables creation of new format, starting with input of format name. **Note:** If the chosen format name already exists, **Invalid** will be displayed. The input field is case sensitive. **The contents of the display vary depending on the pre-loaded formats.*
	If **1.Cancel** is selected, the format will not be deleted. The format list will be displayed. Select **2.Yes** to delete. A rotating hourglass icon is visible in the upper right corner while printer is busy deleting your format.

3.6 APPLICATION MENU (Cont'd)

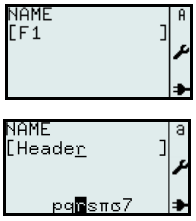
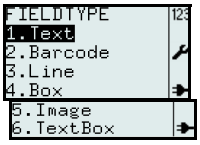
3.6.2 To edit the FIELD menu

The following flow summarizes the sequence for editing the field while creating a new format or modify an existing format.



Menu	Description
	**FIELD** menu. Enables selection of **Modify**, **New** or **Delete** from **FIELD** menu. The next following pages show further explanation on editing the Field.
	Displays search field and a list of existing fields associated with the selected format. Enables selection of field(s) to modify or delete by scrolling with the ▲, ▼ arrow buttons and ↵ enter button or input the respective number directly. **The contents of the display vary depending on the pre-loaded formats.*

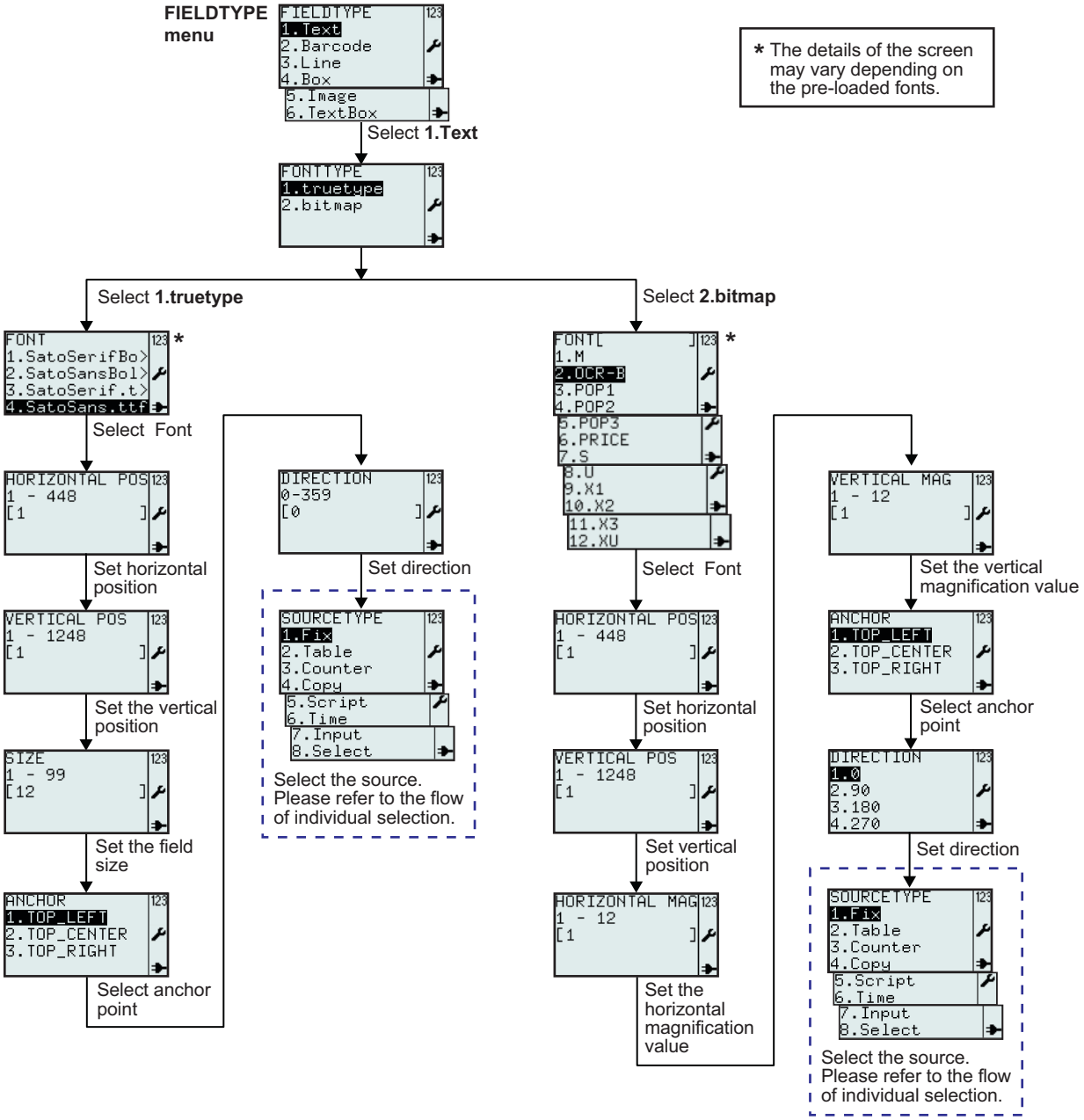
3.6 APPLICATION MENU (Cont'd)

Menu	Description
 	Displays an input field. Enables the creation of new field, starting with input of field name. A suggestion to field name is given as **[F1]**. For an example, change the field name to **Header.** **The contents of the display vary depending on the pre-loaded formats.*
	Enables selection of suitable **FIELDTYPE** for the new field. **Text**, **Barcode**, **Line**, **Box**, **Image** or **Text Box** can be selected.

3.6 APPLICATION MENU (Cont'd)

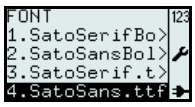
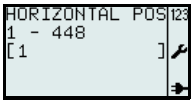
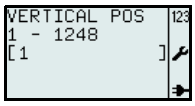
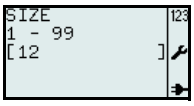
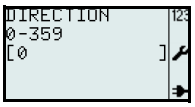
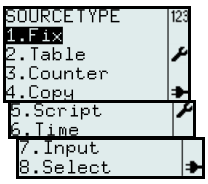
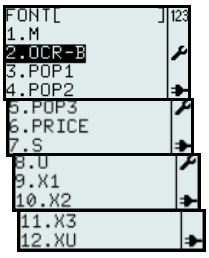
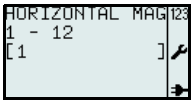
3.6.3 When Text is selected in the FIELDTYPE menu

The following flow summarizes the sequence for defining the field type while editing the field of the format.

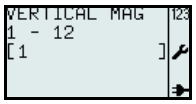
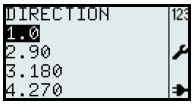


Menu	Description
	**FONTTYPE** menu. Enables selection of **true type** font or **bitmap** font from **FONTTYPE** menu.

3.6 APPLICATION MENU (Cont'd)

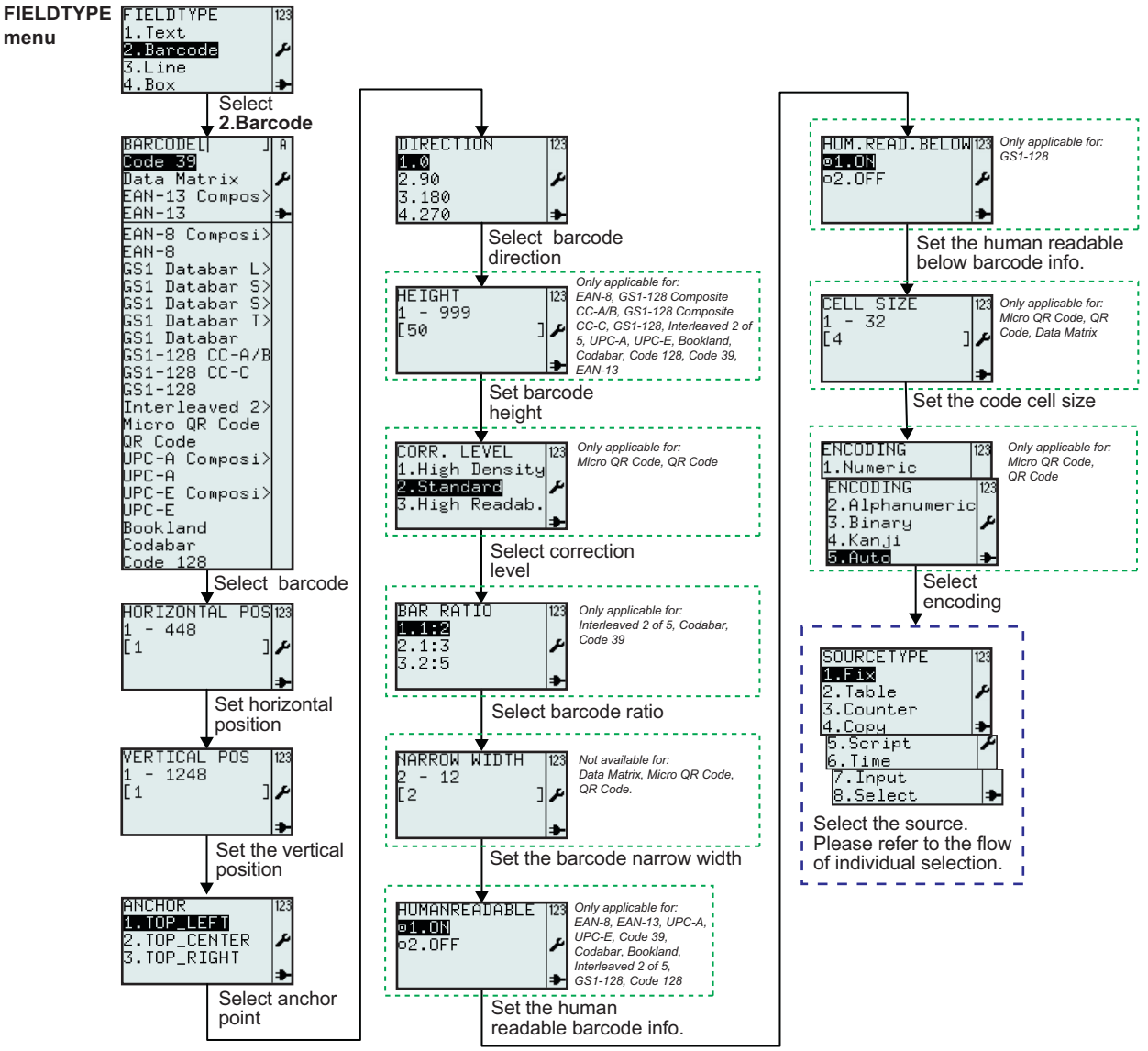
Menu	Description
	Displays a list of true type **FONT** available for the printer. **Your list of fonts may be different from this example depending on the fonts downloaded to your printer.* Select the font according to your preference.
	Displays input range and input field. Enables input of text field horizontal position. **Note:** If the value is outside the allowed range, **Invalid** will be displayed.
	Displays input range and input field. Enables input of text field vertical position. **Note:** If the value is outside the allowed range, **Invalid** will be displayed.
	Displays input range and default field size. Enables input the size of text field. **Note:** If the value is outside the allowed range, **Invalid** will be displayed.
	Enables the selection of anchor point of the text field. **TOP_LEFT**, **TOP_CENTER**, **TOP_RIGHT** can be selected.
	Displays input range and input field. Enables setting of text field direction. The direction can be set in 360 steps (0 - 359; describing the degrees of rotation). **Note:** If the value is outside the allowed range, **Invalid** will be displayed.
	Enables selection of **SOURCETYPE** for the new field. **Fix**, **Table**, **Counter**, **Copy**, **Script**, **Time**, **Input** or **Select** can be selected.
	Displays a list of bitmap **FONT** available for the printer. ** Your list of fonts may be different from this example depending on the fonts downloaded to your printer.* Select the font according to your preference.
	Displays input range and input field. Enables input of text field horizontal magnification. **Note:** If the value is outside the allowed range, **Invalid** will be displayed.

3.6 APPLICATION MENU (Cont'd)

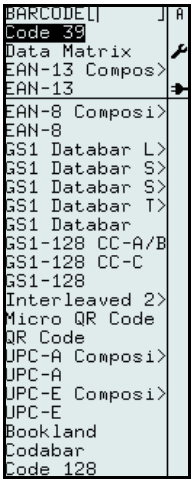
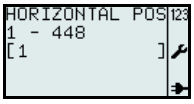
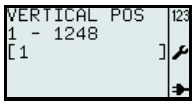
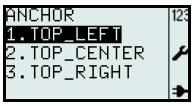
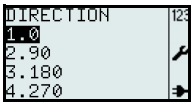
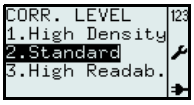
Menu	Description
	Displays input range and input field. Enables input of text field vertical magnification. **Note:** If the value is outside the allowed range, **Invalid** will be displayed.
	Enables setting of text field direction in 4 angles; **0**, **90**, **180** or **270** degree.

3.6.4 When Barcode is selected in the FIELDTYPE menu

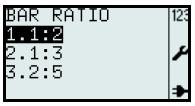
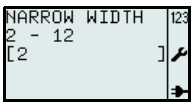
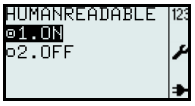
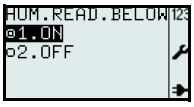
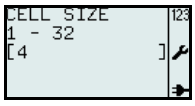
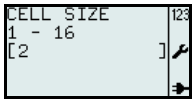
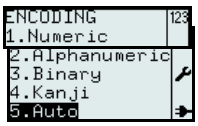
The following flow summarizes the sequence for defining the field type while editing the field of the format.



3.6 APPLICATION MENU (Cont'd)

Menu	Description
	Displays search field and a list of barcodes available in the printer. Enables selection of barcodes using input in search field or scrolling with the ▲, ▼ arrow buttons and ↵ enter button. ** Your list of barcodes may be different from this example depending on the printer firmware version used.* Select the font according to your preference. Default barcode is **Code 39**.
	Displays input range and input field. Enables input of barcode horizontal position. **Note:** If the value is outside the allowed range, **Invalid** will be displayed.
	Displays input range and input field. Enables input of barcode vertical position. **Note:** If the value is outside the allowed range, **Invalid** will be displayed.
	Enables the selection of anchor point of the barcode field. **TOP_LEFT**, **TOP_CENTER**, **TOP_RIGHT** can be selected.
	Enables setting of barcode field direction in 4 angles; **0**, **90**, **180** or **270** degree.
	Displays input range and input field with default height. Enables input of new barcode height. **Note:** If the value is outside the allowed range, **Invalid** will be displayed. **Only applicable for:** EAN-8, GS1-128 Composite CC-A/B, GS1-128 Composite CC-C, GS1-128 Interleaved 2 of 5, UPC-A, UPC-E, Bookland, Codabar, Code 128, Code 39, EAN-13
	Enables selection of correction level. Default selection is **2.Standard** **Only applicable for:** Micro QR Code, QR Code

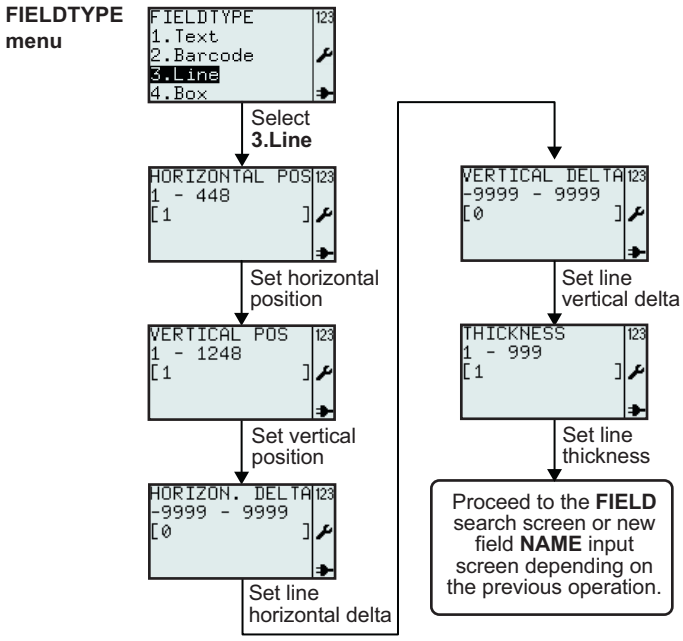
3.6 APPLICATION MENU (Cont'd)

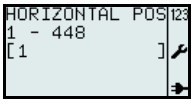
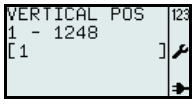
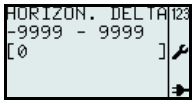
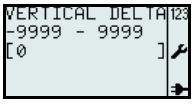
Menu	Description
	Enables selection of barcode ratio. **Only applicable for:** Interleaved 2 of 5, Codabar, Code 39
	Displays input range and input field with default value. Enables input of barcode narrow width. **Not available for:** Data Matrix, Micro QR Code, QR Code **Note:** If the value is outside the allowed range, **Invalid** will be displayed.
	Enables the selection of human readable barcode info. **Only applicable for:** EAN-8, EAN-13, UPC-A, UPC-E, Code 39, Codabar, Bookland, Interleaved 2 of 5, GS1-128, Code 128
	Enables selection of human readable below barcode info. **Only applicable for:** GS1-128
 	Displays input range and input field with default value. Enables input of barcode cell size. **Note:** If the value is outside the allowed range, **Invalid** will be displayed. **Only applicable for:** Micro QR Code, QR Code, Data Matrix Default cell size of Micro QR Code and QR Code is **4** and the range is **1 - 32** Default cell size of Data Matrix is **2** and the range is **1 - 16**
	Enables selection from encoding menu. Default selection is **5.Auto** **Only applicable for:** Micro QR Code, QR Code

3.6 APPLICATION MENU (Cont'd)

3.6.5 When Line is selected in the FIELDTYPE menu

The following flow summarizes the sequence for defining the field type while editing the field of the format.

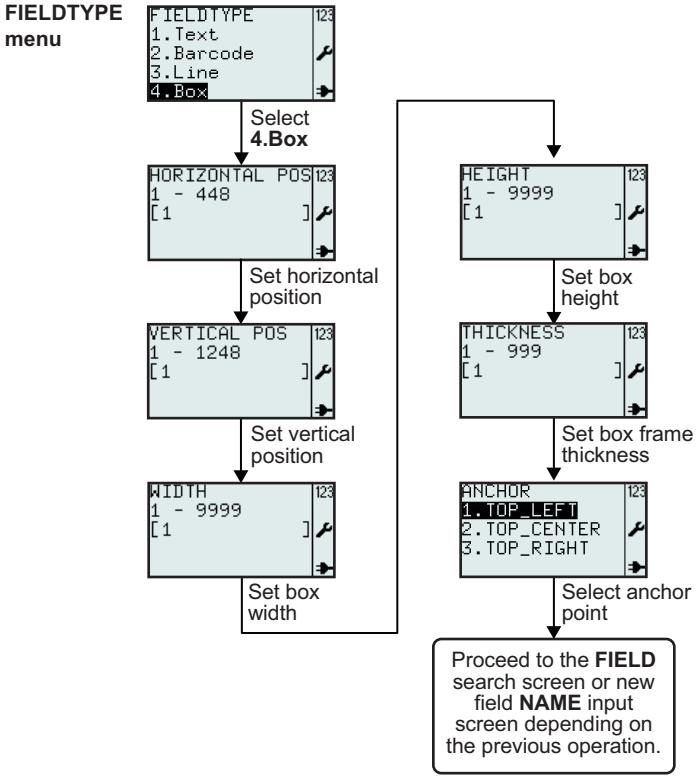


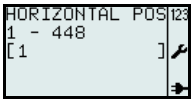
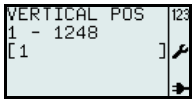
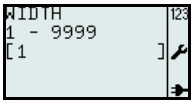
Menu	Description
	Displays input range and input field. Enables input of line horizontal position. **Note:** If the value is outside the allowed range, **Invalid** will be displayed.
	Displays input range and input field. Enables input of line vertical position. **Note:** If the value is outside the allowed range, **Invalid** will be displayed.
	Displays input range and input field with default value. Enables input of line horizontal delta. **Note:** If the value is outside the allowed range, **Invalid** will be displayed.
	Displays input range and input field with default value. Enables input of line vertical delta. **Note:** If the value is outside the allowed range, **Invalid** will be displayed.
	Displays input range and input field with default value. Enables input of line thickness. **Note:** If the value is outside the allowed range, **Invalid** will be displayed.

3.6 APPLICATION MENU (Cont'd)

3.6.7 When Box is selected in the FIELDTYPE menu

The following flow summarizes the sequence for defining the field type while editing the field of the format.



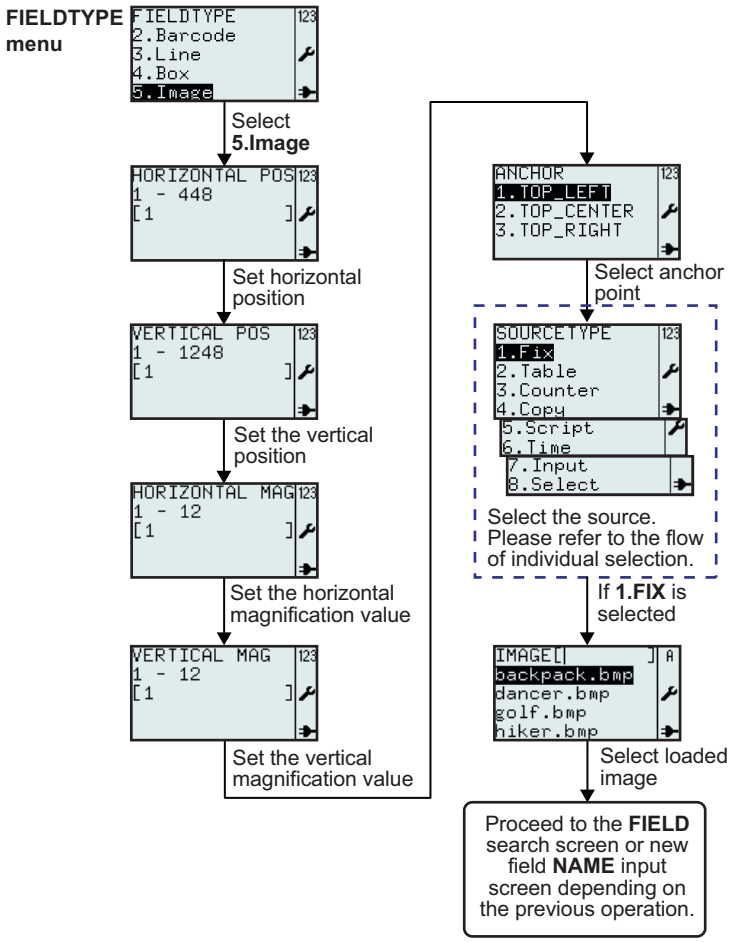
Menu	Description
	Displays input range and input field. Enables input of box horizontal position. **Note:** If the value is outside the allowed range, **Invalid** will be displayed.
	Displays input range and input field. Enables input of box vertical position. **Note:** If the value is outside the allowed range, **Invalid** will be displayed.
	Displays input range and input field with default value. Enables input of box width. **Note:** If the value is outside the allowed range, **Invalid** will be displayed.
	Displays input range and input field with default value. Enables input of box height. **Note:** If the value is outside the allowed range, **Invalid** will be displayed.

3.6 APPLICATION MENU (Cont'd)

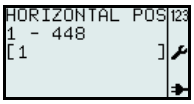
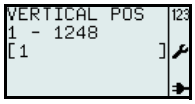
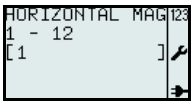
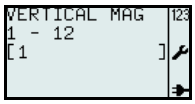
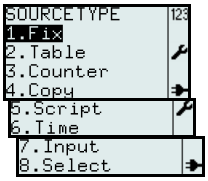
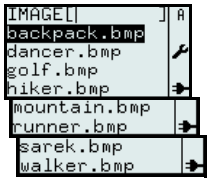
Menu	Description
	Displays input range and input field with default value. Enables input of box frame thickness. **Note:** If the value is outside the allowed range, **Invalid** will be displayed.
	Enables the selection of anchor point of the box field. **TOP_LEFT**, **TOP_CENTER**, **TOP_RIGHT** can be selected. Anchor Point is a field co-ordinate representing the field regarding positioning and rotation.

3.6.8 When Image is selected in the FIELDTYPE menu

The following flow summarizes the sequence for defining the field type while editing the field of the format.



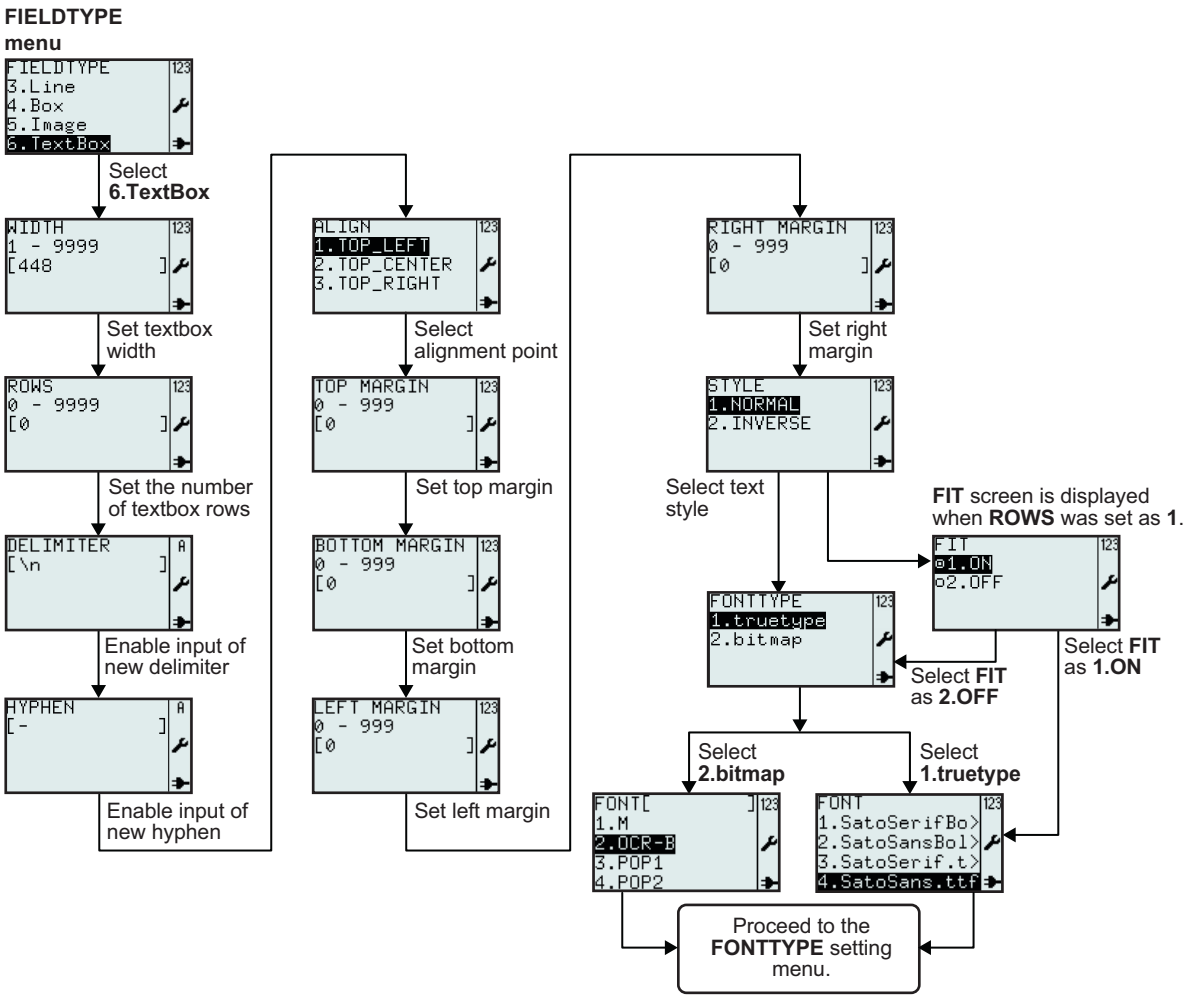
3.6 APPLICATION MENU (Cont'd)

Menu	Description
	Displays input range and input field. Enables input of image horizontal position. **Note:** If the value is outside the allowed range, **Invalid** will be displayed.
	Displays input range and input field. Enables input of image vertical position. **Note:** If the value is outside the allowed range, **Invalid** will be displayed.
	Displays input range and input field. Enables input of image field horizontal magnification. **Note:** If the value is outside the allowed range, **Invalid** will be displayed.
	Displays input range and input field. Enables input of image field vertical magnification. **Note:** If the value is outside the allowed range, **Invalid** will be displayed.
	Enables the selection of anchor point of the image field. **TOP_LEFT**, **TOP_CENTER**, **TOP_RIGHT** can be selected.
	Enables selection of **SOURCETYPE** for the new field. **Fix**, **Table**, **Counter**, **Copy**, **Script**, **Time**, **Input** or **Select** can be selected.
	Displays search field and a list of images available in the printer. Enables selection of images using input in search field or scrolling with the ▲, ▼ arrow buttons and ↵ enter button. Existing images are pre-loaded and can be used in formats. The ones listed are for demo formats. New images can be loaded from a host or AEP Works.

3.6 APPLICATION MENU (Cont'd)

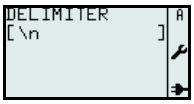
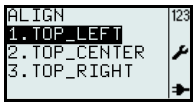
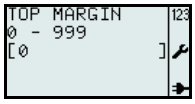
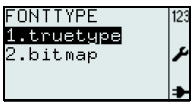
3.6.9 When TextBox is selected in the FIELDTYPE menu

The following flow summarizes the sequence for defining the field type while editing the field of the format.



Menu	Description
	Displays text box width input range and input field with default value. Enables input of new text box width value. **Note:** If the value is outside the allowed range, **Invalid** will be displayed.
	Displays number of text box rows input range and input field. Enables input of new number of rows. **Notes:** • When "0" is set, the textbox will resize to as many rows needed depending on its data. • If the value is outside the allowed range, **Invalid** will be displayed.

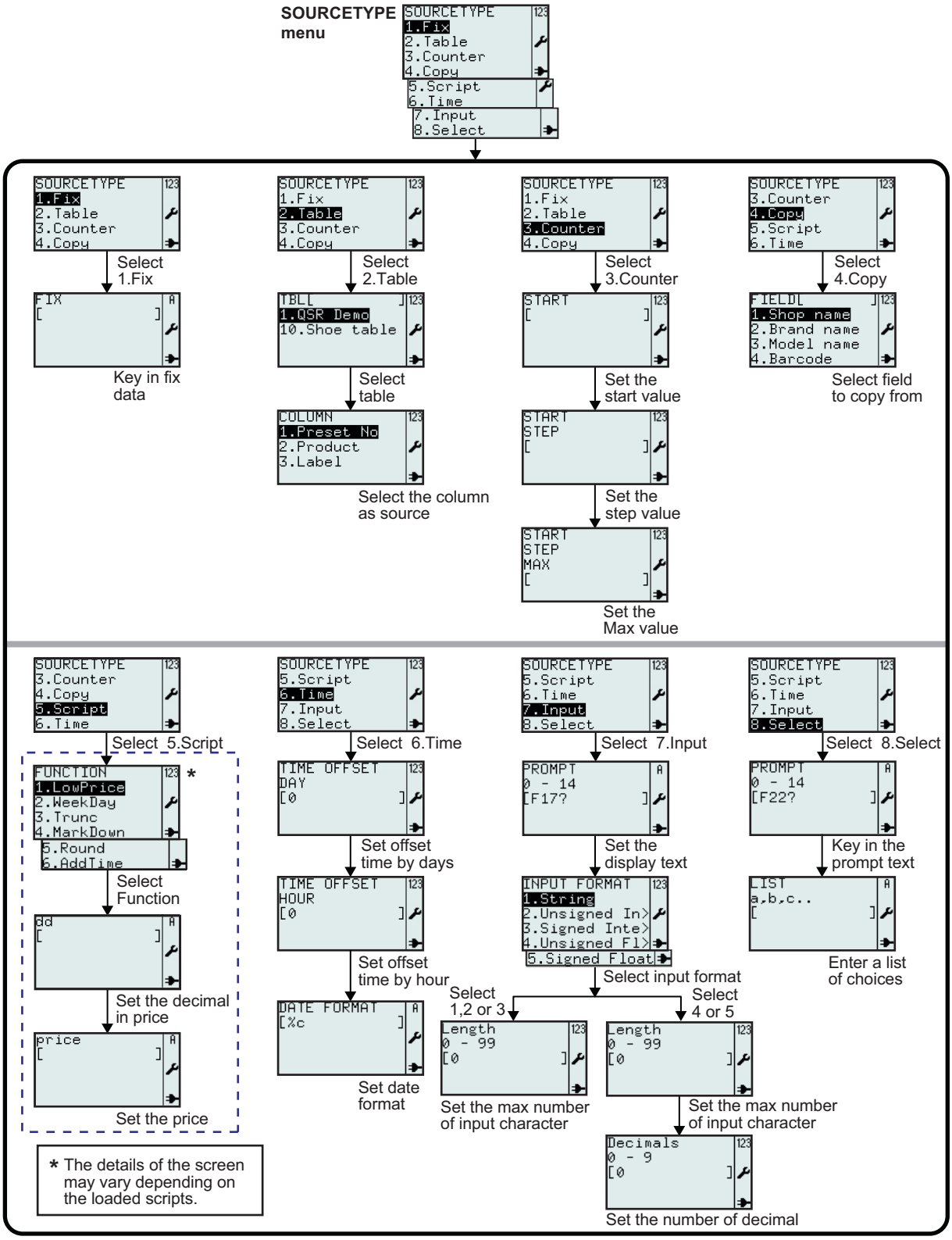
3.6 APPLICATION MENU (Cont'd)

Menu	Description
	Displays delimiter input field and enables input of new delimiter. Delimiter is a forced wrap point. The delimiter character is not printed. Default delimiter is space.
	Displays hyphen input field and enables input of new hyphen. Hyphen is used when a word is longer than the text box. Hyphen is a wrap point sign showing that the rest of the word is printed on the next line.
	Enables the selection of alignment point. **TOP_LEFT**, **TOP_CENTER**, **TOP_RIGHT** can be selected.
	Displays top margin range and input field. Enables input of new margin value. **Note:** If the value is outside the allowed range, **Invalid** will be displayed.
	Displays bottom margin range and input field. Enables input of new margin value. **Note:** If the value is outside the allowed range, **Invalid** will be displayed.
	Displays left margin range and input field. Enables input of new margin value. **Note:** If the value is outside the allowed range, **Invalid** will be displayed.
	Displays right margin range and input field. Enables input of new margin value. **Note:** If the value is outside the allowed range, **Invalid** will be displayed.
	Enables selection of text style. **1.NORMAL** or **2.INVERSE** can be selected.
	**FIT** menu will only appear if **ROWS** is set to 1 as mentioned above. Enables selection of **FIT** function. Selecting **1.ON** will scale the text to fit in the entire box width. **FIT** is only applicable on true type fonts. If **1.ON** is selected, the **FONTTYPE** menu will not be displayed. You will step directly to true type **FONT** menu.
	**FONTTYPE** menu. Enables selection of **true type** font or **bitmap** font from **FONTTYPE** menu.

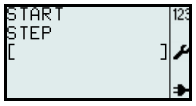
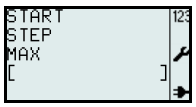
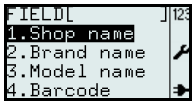
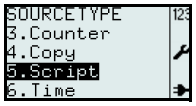
3.6 APPLICATION MENU (Cont'd)

3.6.10 About SOURCETYPE menu selection

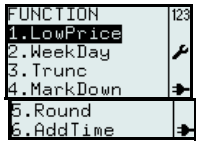
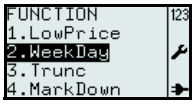
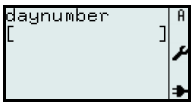
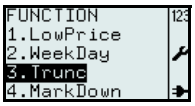
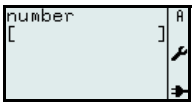
The following flow summarizes the sequence for selecting the source type while creating a new field or modify an existing field.



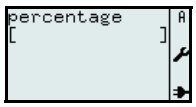
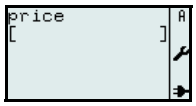
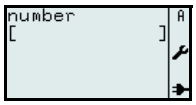
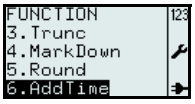
3.6 APPLICATION MENU (Cont'd)

Menu		Description
Fix		**Fix**: Source data for the field is fixed and defined once and is always the same for a field. Displays input field. Enables input of fix data, text or number.
Table		**Table**: source data for the field is taken from a table that has been imported to the printer. A table is the "database" of the printer. Displays search field, TBL[ ] and a list of tables available in the printer. Enables selection of tables using input in search field or scrolling with the ▲, ▼ arrow buttons and ↵ enter button. Select one of the data tables from the list. In this case the QSR demo table is selected.
		The different columns in the table are listed. Select the column that will be the source to the field.
Counter		**Counter**: the source data for the field is a counter. Displays input field. Enables input of counter **START** value.
		Displays input field. Enables input of counter **STEP** value.
		Displays input field. Enables input of counter **MAX** value.
Copy		**Copy**: source data for the field is copied from another field. Displays input field. Enables selection of field to copy from the selected format. **The contents of the display vary depending on the pre-loaded formats.*
Script		**Script**: source data for a field is the output from a script. A script is a small Lua program. This list contains functions that can be called from the script. Functions often have arguments for input values. These arguments can either be fix values like 12.34 or a variable that holds the price like the piped value variable Value.

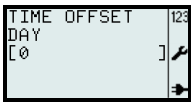
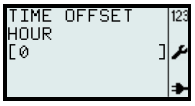
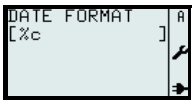
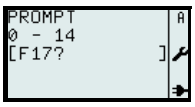
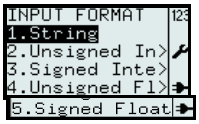
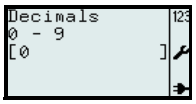
3.6 APPLICATION MENU (Cont'd)

Menu		Description
Script -- LowPrice		A list of available functions is displayed. The names of these functions can vary between applications and may not correspond to this screen shot. **LowPrice** is a function that is used when decimals in a price must be set to a fix value.
		Argument #1, dd. Input number(s) to replace existing decimals in price; 1 or 2 digits.
		Argument #2, price. Input price or reference to price.
Script -- WeekDay		**WeekDay** is a function that is used for fields that should only be visible for certain weekdays.
		Argument #1, daynumber. Input 1-7.
		Argument #2, value. Input actual daynumber or reference to it.
		Argument #3, data. Input the formatted value Data.
Script -- Truc		**Trunc** is a function that truncates a number to **n** decimals.
		Argument #1, n. Input number of decimals.
		Argument #2, number. Input price or reference to price.

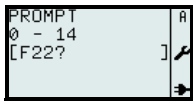
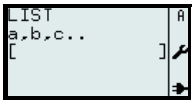
3.6 APPLICATION MENU (Cont'd)

Menu		Description
Script -- MarkDown		**MarkDown** is a function that calculates a price reduced by percentage.
		Argument #1, percentage. Input 0-99.
		Argument #2, price. Input price or reference to price.
Script -- Round		**Round** is a function that round a number to n decimals.
		Argument #1, n. Input number of decimals.
		Argument #2, number. Input number (price) or reference to price.
Script -- AddTime		**AddTime** is a function that adds time.
		Argument #1, d. Input days.
		Argument #2, h. Input hours.
		Argument #3, m. Input minutes.
		Argument #4, value is time in seconds. This value is normally calculated when sourcetype time is used. The reference to it is the variable Value

3.6 APPLICATION MENU (Cont'd)

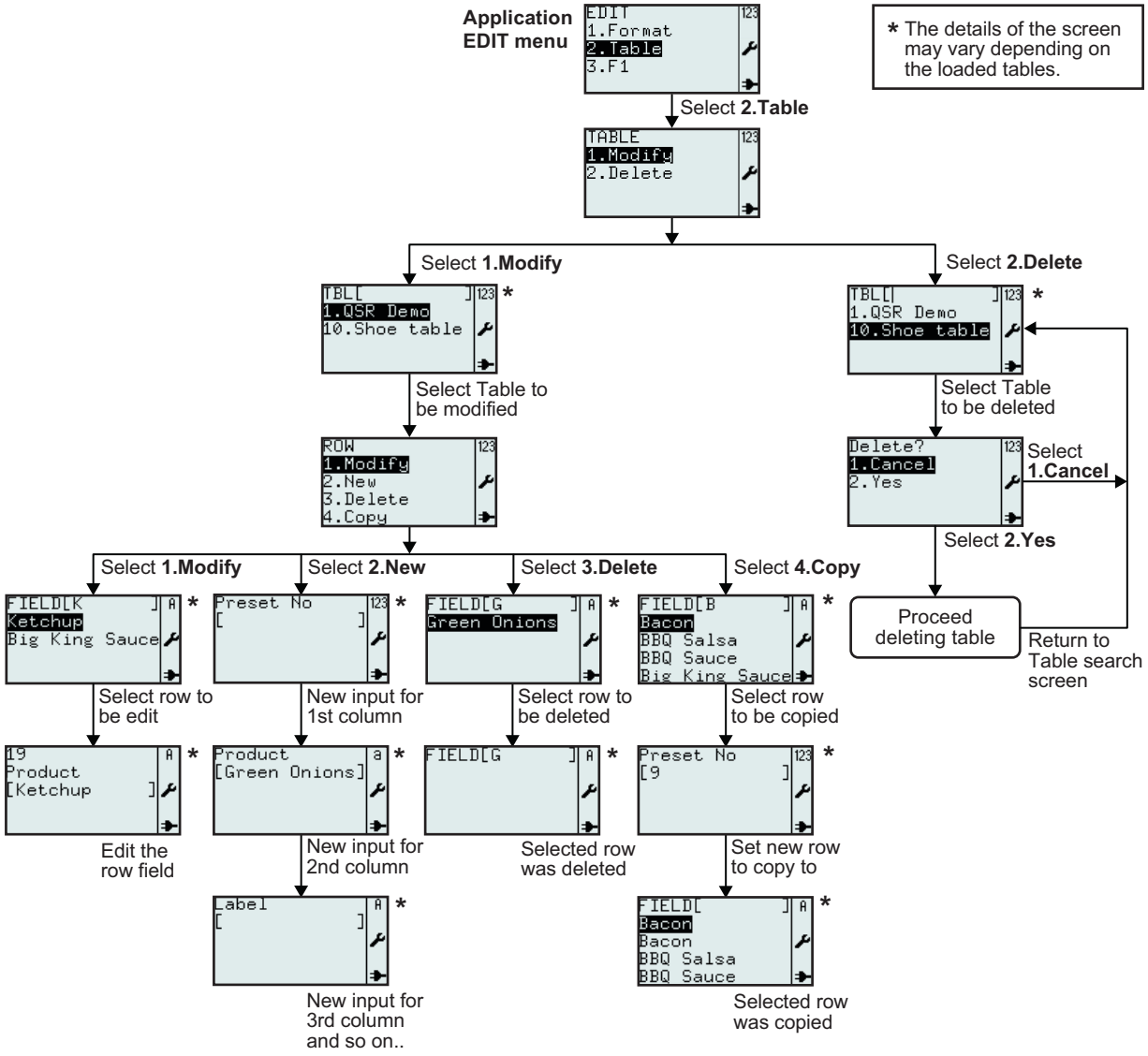
Menu		Description
Time		**Time**: source data for the field is coming from the real-time clock of the printer. Select which offset in number of days that shall be added to the current time. Can be a positive or negative offset. Zero offset will not add any days to the clock.
		Select which offset in number of hours that shall be added to the current time. Can be a positive or negative offset. Zero offset will not add any hours to the clock.
		Type in date format attribute. The date can be printed according to a specific format. In this case, %c is in seconds. For example, %D will print the date as month/day/year. The different format attributes are describes under "formatter" in XML specification STB00102. Please contact SATO representative for more details.
Input		**Input**: source data for the field is coming from input data from the key-board of the printer, an external PS/2 keyboard or a scanner. Input display text that shall be prompted in the display before an input value. Range: 0 - 14 0 = unlimited number of characters.
		Enables to select from **INPUT FORMAT** menu. **1.String**: Input format shall be a string value. A string is an alphanumeric value. **2.Unsigned integer**: Input format shall be an unsigned numeric integer value. **3.Signed integer**: Input format shall be a signed integer numeric value. **4.Unsigned Float**: Input format shall be an unsigned float numeric value. **5.Signed Float**: Input format shall be a signed float numeric value.
		Input the maximum number of characters allowed for the input field. Input 0 is unlimited length.
		Input the number of decimals for the numeric input value allowed for the input field. Input 0 is 2 decimals (default).

3.6 APPLICATION MENU (Cont'd)

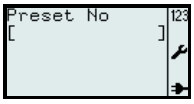
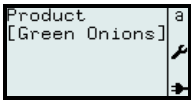
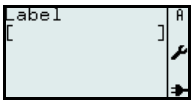
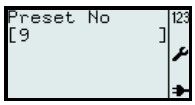
Menu		Description
Select		**Select**: data for the field is coming from a list of choices in a menu. Write the prompt text for the input field.
		Write in a list of choices. Separate with comma sign. For example, E. Jane, Kevin, etc.

3.6.11 To edit the pre-loaded table

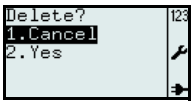
Tables pre-loaded in the printer can be modified, or unwanted tables can be also deleted from the printer to increase more memory space. The following flow summarizes the sequence for editing the tables.



3.6 APPLICATION MENU (Cont'd)

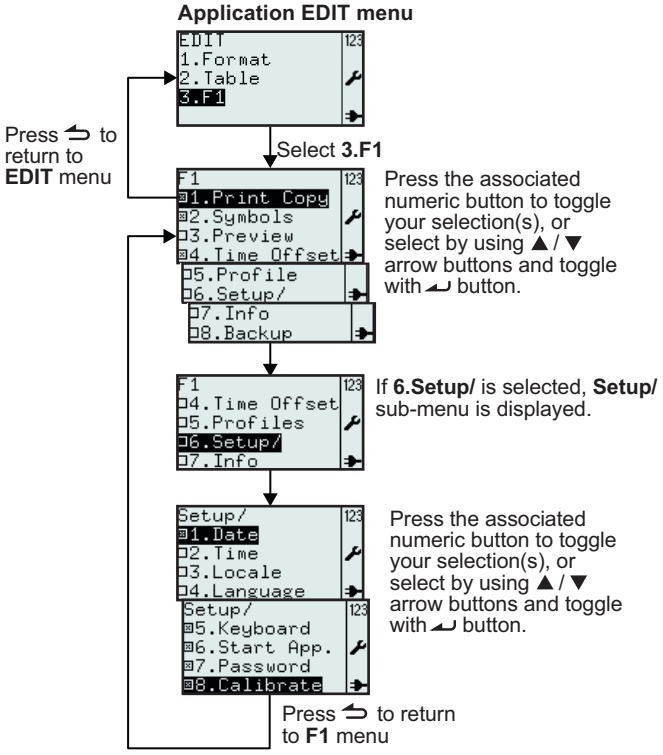
Menu	Description
	Enables selection of **Modify** or **Delete** from **TABLE** menu.
	Displays a search field and a list of tables to modify or delete. Enables search for existing table to modify or delete by scrolling with the ▲, ▼ arrow buttons and ↵ enter button or input in search field. **The contents of the display vary depending on the pre-loaded tables.*
	Enables selection of **Modify**, **New**, **Delete** or **Copy** from **ROW** menu.
	Displays a search field and a list of rows to modify, delete or copy. Enables search for existing row to modify, delete or copy by scrolling with the ▲, ▼ arrow buttons and ↵ enter button or input in search field. **The contents of the display vary depending on the pre-loaded tables.*
	Enables modification of selected row name. **The contents of the display vary depending on the pre-loaded tables.*
  	After selection of creating a **New ROW**, the printer will request data input for the new row. **The contents of the display vary depending on the pre-loaded tables.* Specific first column of the table chosen for edit. In this example, the printer enables input of **Preset No.** for new row. Specific second column of the table chosen for edit. In this example, the printer enables input of **Product** name for new table row. Specific third column of the table chosen for edit. In this example, the printer enables input of **Label**. It is the format name to use for the data in this row.
 	After selection the field to be copied, the printer will request to enter a new entries for the copied data to be save as. In this example, the printer enables input of **Preset No.** for the new copied row. **The contents of the display vary depending on the pre-loaded tables.* In this example, **Bacon** is now copied. **The contents of the display vary depending on the pre-loaded tables.*

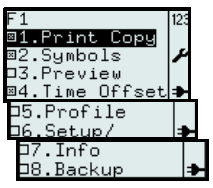
3.6 APPLICATION MENU (Cont'd)

Menu	Description
	If **1.Cancel** is selected, the table will not be deleted. The table list will be displayed. Select **2.Yes** to delete. A rotating time-glass icon is visible in the upper right corner while printer is busy deleting your table.
	If **2.Yes** is selected and confirmed, the selected table **10.Shoe table** (in this example) will be deleted from table list. **The contents of the display vary depending on the pre-loaded tables.*

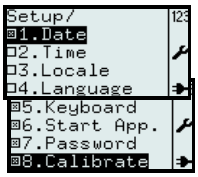
3.6.12 To edit the F1 menu

The selection of pre-defined functions that appear in **F1** menu can be set to displayed or not to. The following flow summarizes the sequence of setting the **F1** menu.



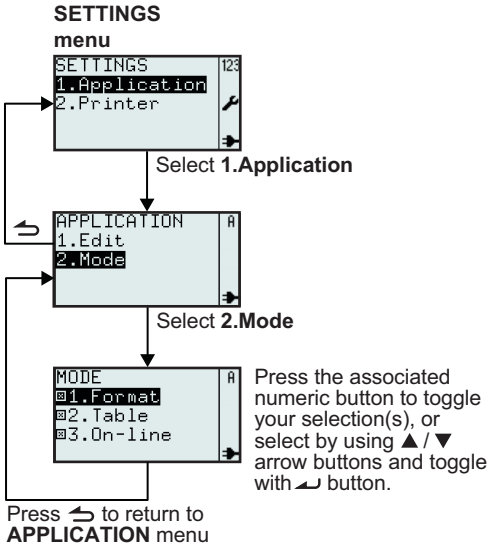
Menu	Description
	Displays **F1** menu and enables selection of pre-defined functions linked to **F1** button. Toggle your selection(s) by pressing associated numbered button(s), or select by using the ▲, ▼ arrow buttons and toggle with ↵ enter button. **Notes:** All selections can be set at the same time. **6.Setup/** can only be selected if one or more sub-menus are selected.

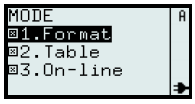
3.6 APPLICATION MENU (Cont'd)

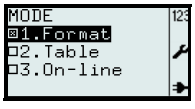
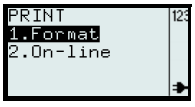
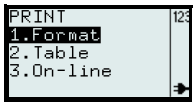
Menu	Description
	Displays **F1 Setup/** menu and enables selection of pre-defined shortcuts to printer set up menu by **F1** button. Toggle your selection(s) by pressing associated numbered button(s), or select by using the ▲, ▼ arrow buttons and toggle with ↵ enter button. **Note:** All selections can be set at the same time. Press ⮌ Menu/page-up button to return to **F1** menu.

3.6.13 To set the PRINT menu appearance

You can set the appearance of **PRINT** menu in **2.Mode** selection of **APPLICATION** menu. **Format**, **Table** or **On-line** options can be set to displayed or not to appear in **PRINT** menu. The following flow summarizes the sequence of setting the **MODE** menu.



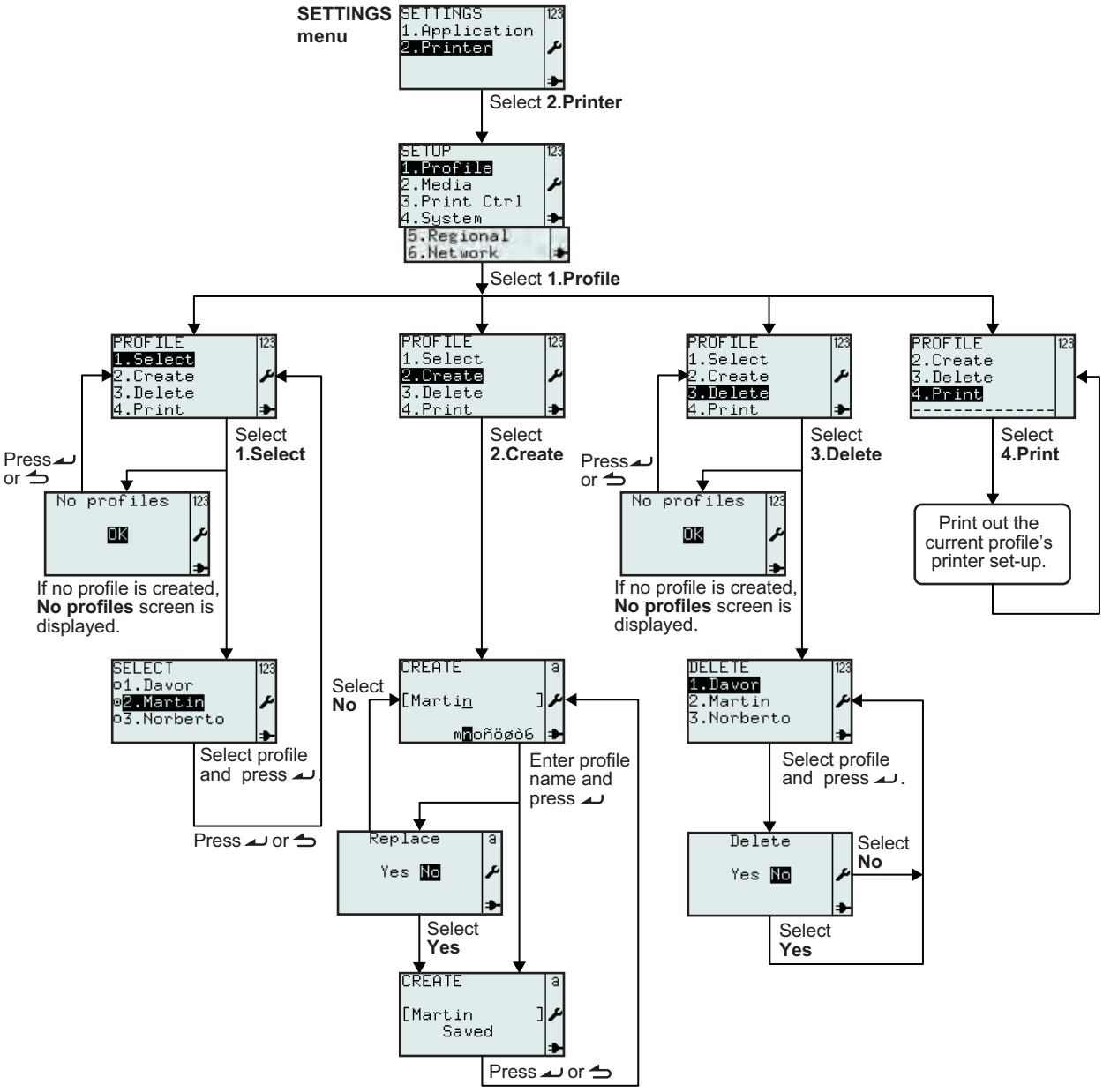
Menu	Description
	Enables selection of print mode. Toggle your selection(s) by pressing associated numbered button(s), or select by using the ▲, ▼ arrow buttons and toggle with ↵ enter button. **Notes:** All selections can be set at the same time and are selected as default. If nothing else is selected, **1.Format** is automatically selected.

MODE setting			
The appearance of PRINT menu based on the MODE settings.			

3.7 PRINTER SETUP MENU

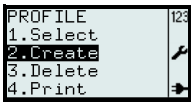
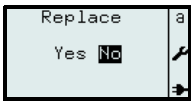
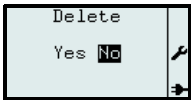
When **2.Printer** is selected in **SETTINGS** menu, **SETUP** menu will be displayed on the printer. User can perform general settings of the printer.

3.7.1 When Profile is selected in the SETUP menu



Menu	Description
SETUP 1.Profile 2.Media 3.Print Ctrl 4.System 5.Regional 6.Network	**Printer SETUP** menu. Enables the selection of **1.Profile**, **2.Media**, **3.Print Ctrl**, **System**, **Regional** or **6.Network** **Note: 6.Network** will only appear if LAN/WLAN board is installed.

3.7 PRINTER SETUP MENU (Cont'd)

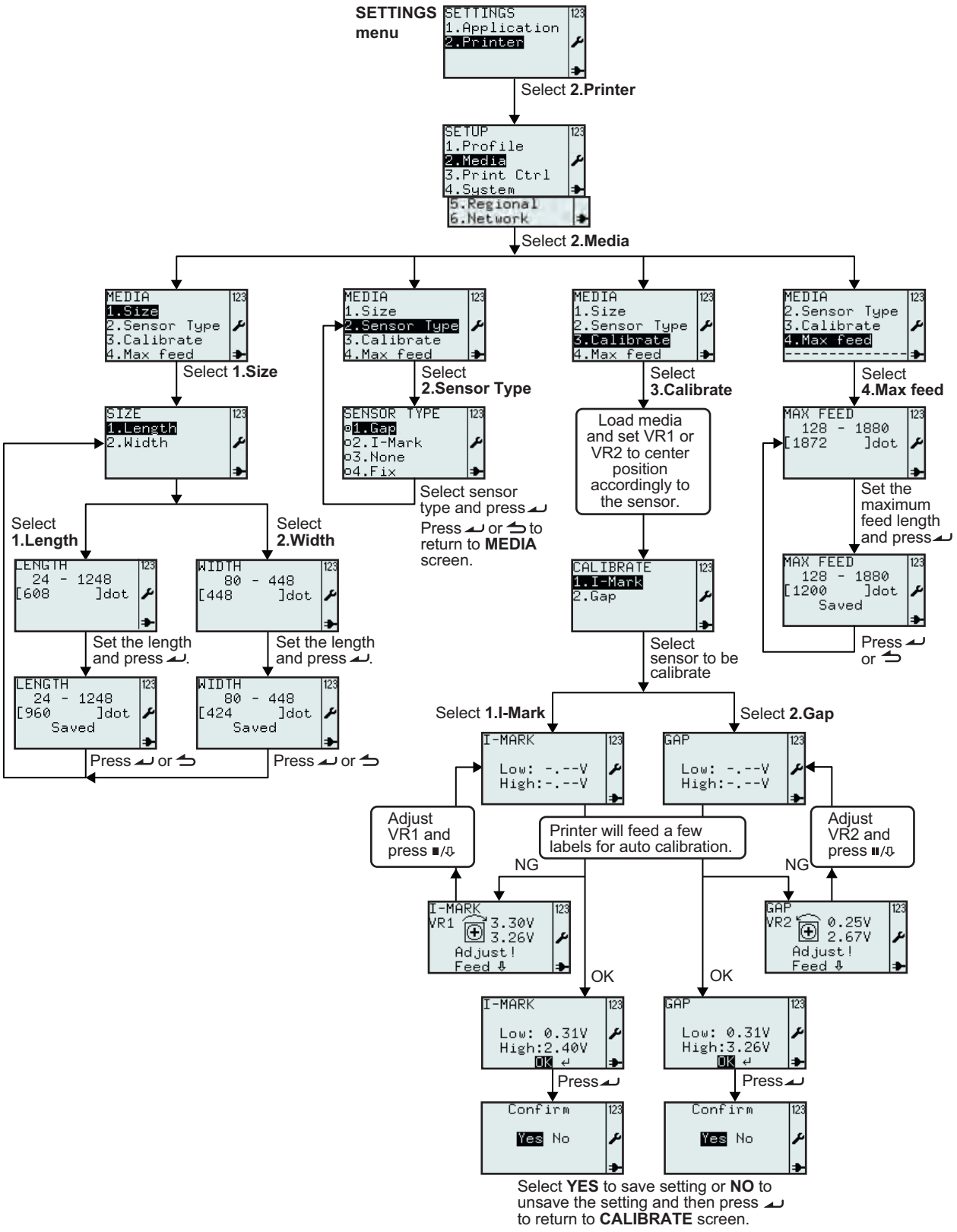
Menu	Description
 	Enables selection of **1.Select**, **2.Create**, **3.Delete** or **4.Print** from **PROFILE** menu. The **PROFILE** menu enables different users to create their personal printer set up. **Note**: If no profiles are created, **1.Select** can not be selected. **No profiles** will be displayed instead.
	Enables selection of user profile. When a personal user profile is selected, the printer set up is changed according to the selected profile. The profile names are listed alphabetically. **The contents of the display vary depending on the profiles saved.*
	Select **2.Create** from **PROFILE** menu. Enables user to save a printer set up with a unique name that can be selected in **SELECT** menu. To make a user profile; first set up the printer as preferred, then select **2.Save** and save the set up with a unique name.
 	Displays **CREATE** input field and enables input of personal user profile name of maximum 8 characters. **Note:** only letters and numbers are allowed. The user profile is connected to the printer set up. Each user can make his or her personal user profile. Saved user profiles are listed under **1.Select**.
	If the chosen profile name already exists, you will be prompted to select **Replace** or not.
 	Select **3.Delete** from **PROFILE** menu. **Note**: If no profiles are created, **3.Delete** can not be selected. **No profiles** will be displayed instead.
	Displays list of existing user profiles and enables selection of user profile to delete from list. **The contents of the display vary depending on the profiles saved.*
	Delete confirmation screen is displayed. Select Yes to delete. The selected profile to be deleted will disappear from the user profile list.

3.7 PRINTER SETUP MENU (Cont'd)

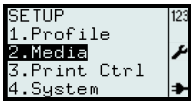
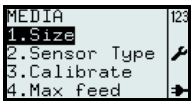
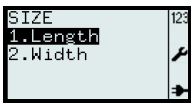
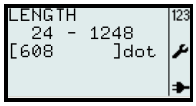
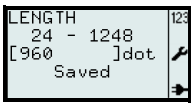
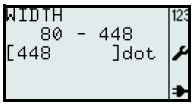
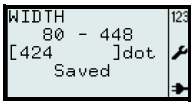
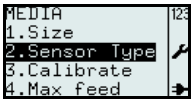
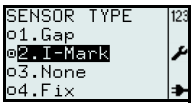
Menu	Description
	Select **3.Delete** from **PROFILE** menu. A label with the current selected user profile printer set up will be printed. **Note**: If no user profiles are saved, the actual printer set up will be printed. profile.select = "Martin" startApp = "/rom/standalone/sa.lua" network.active = true network.lan.gateway = "000.000.000.000" network.lan.mode = "DHCP" network.lan.netmask = "000.000.000.000" network.lan.ip = "000.000.000.000" media.sensorType = "I-MARK" media.size.width = 448 media.size.length = 800 regional.language.locale = "/rom/locales/en.all/" regional.language.messages = Prints out a label with printer settings for the selected profile. The name of the selected profile is printed at the top of the label. During printing no buttons are valid.

3.7 PRINTER SETUP MENU (Cont'd)

3.7.2 When Media is selected in the SETUP menu



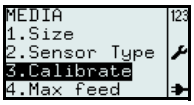
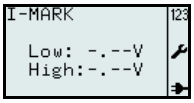
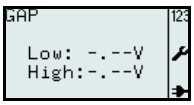
3.7 PRINTER SETUP MENU (Cont'd)

Menu	Description
	**Printer SETUP** menu. Enables the selection of **1.Profile**, **2.Media**, **3.Print Ctrl**, **System**, **Regional** or **6.Network** Select **2.Media** for series of media settings.
	**MEDIA** menu. Enables the selection of **1.Size**, **2.Sensor Type**, **3.Calibrate** or **4.Max feed.** Select **1.Size** to set media size.
	Enables selection of **1.Length** or **2.Width** from media **SIZE** menu. The value can be expressed in inches, millimeters or dots depending on selection in **UNIT** menu. Default unit is in **dot**.
	Displays the media length range and input field with existing media length and its unit. Enables input of new media length. **Note:** If the value is outside the allowed range, **Invalid** will be displayed.
	If the value is acceptable, **Saved** will be displayed when ↵ enter button is pressed.
	Displays the media width range and input field with existing media width and its unit. Enables input of new media width. **Note:** If the value is outside the allowed range, **Invalid** will be displayed.
	If the value is acceptable, **Saved** will be displayed when ↵ enter button is pressed.
	**MEDIA** menu. Enables the selection of **1.Size**, **2.Sensor Type**, **3.Calibrate** or **4.Max feed.** Select **2.Sensor Type** to set media sensor.
	Displays existing **SENSOR TYPE** selection and enables new selection. The default is set at **2.I-Mark** The ◉ "pressed radio button" indicates the current selection until the new selection is chosen and ↵ enter button is pressed. When selecting **3.None**, the label length will be equal to the length of the printed format. When selecting **4.Fix**, the label length will be equal to the media set up length +2 mm even if the format is shorter. **Note:** The view of the sensor type menu is depended of the Media Handling selection.

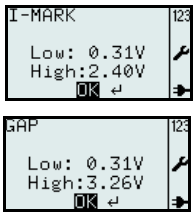
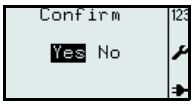
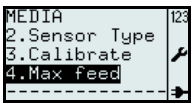
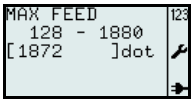
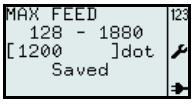
3.7 PRINTER SETUP MENU (Cont'd)

Below is a table listed the availability of the sensor type selection based on the Media Handling selection.

		MEDIA HANDLING					
		Tear Off	Continuous	Peel Off	Cutter	LL Tear Off	LL Cutter
SENSOR TYPE	**Gap**	❍	❍	❍	❍		❍
	I-Mark	❍	❍	❍	❍	❍	❍
	None	❍	❍		❍		❍
	Fix	❍	❍		❍		❍

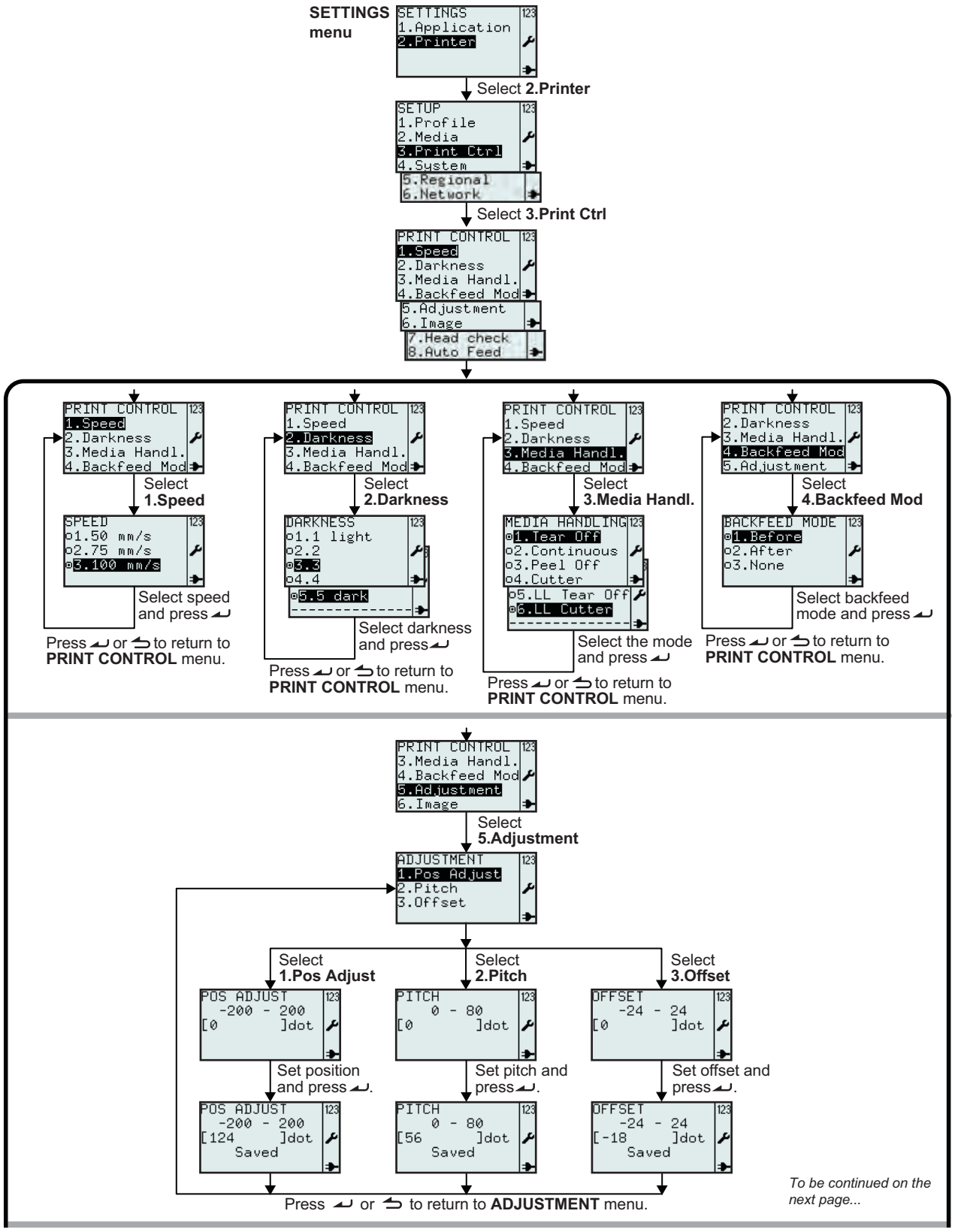
Menu	Description
	**MEDIA** menu. Enables the selection of **1.Size**, **2.Sensor Type**, **3.Calibrate** or **4.Max feed.** Select **3.Calibrate** to calibrate media sensor to its best performance with the loaded media. **Note:** During calibration, the "Auto feed on error" is neglected even when it was enabled in Print control set up. If "Auto feed on error" is active, there is a risk of entering a never ending loop if the calibration for some reason is aborted or un-successful. When calibration is done, "Auto feed on error" returns to active if it was enabled in Print control set up.
	Enables the selection of **1.I-Mark** or **2.Gap** for calibration. The printer sensors are factory calibrated. If media that is significantly different from standard is used, a sensor calibration might be necessary. **1.** Load the printer with media intended for use. **2.** Start with the **VR1** in center position for calibrating I-Mark sensor, or set the **VR2** to center position for calibrating Gap sensor. **3.** Select **1.I-Mark** or **2.Gap** in **CALIBRATE** menu accordingly.
 	**4.** When ↵ enter is pressed, the printer will feed a few labels. The printer will start auto calibration on the selected media sensor.
 	**5.** If calibration was not successful, you will be recommended to re-adjust **VR1** or **VR2** manually. **6.** Press ⏸/⇩ pause/feed button to check if new sensor level is OK. This procedure may need to be repeated to obtain successful calibration result.

3.7 PRINTER SETUP MENU (Cont'd)

Menu	Description
	**7.** If calibration is successful, the screen on the left is displayed, press ↵ enter button to proceed.
	**8.** Select **Yes** to confirm calibration result and save the sensor values. Select **No** to regret calibration result. The sensor values will not be saved.
	**MEDIA** menu. Enables the selection of **1.Size**, **2.Sensor Type**, **3.Calibrate** or **4.Max feed.** Select **4.Max feed**. **MAX FEED** sets the maximum feed length to feed before generating "Gap not found" or "I-mark not found". Normally, the default value can be used for all media and format sizes. In certain applications, it is important to be notified about label detection problems as soon as possible. Then **MAX FEED** should be set to the physical label length. **MAX FEED** must always be at least as long as the physical media length.
	Displays the media **MAX FEED** range and input field with existing value and unit. Enables input of new media **MAX FEED** length. Setting range is between **128** and **1880**, and the default value is **1872 dot**. **Note:** If the value is outside the allowed range, **Invalid** will be displayed.
	If the value is acceptable, **Saved** will be displayed when ↵ enter button is pressed.

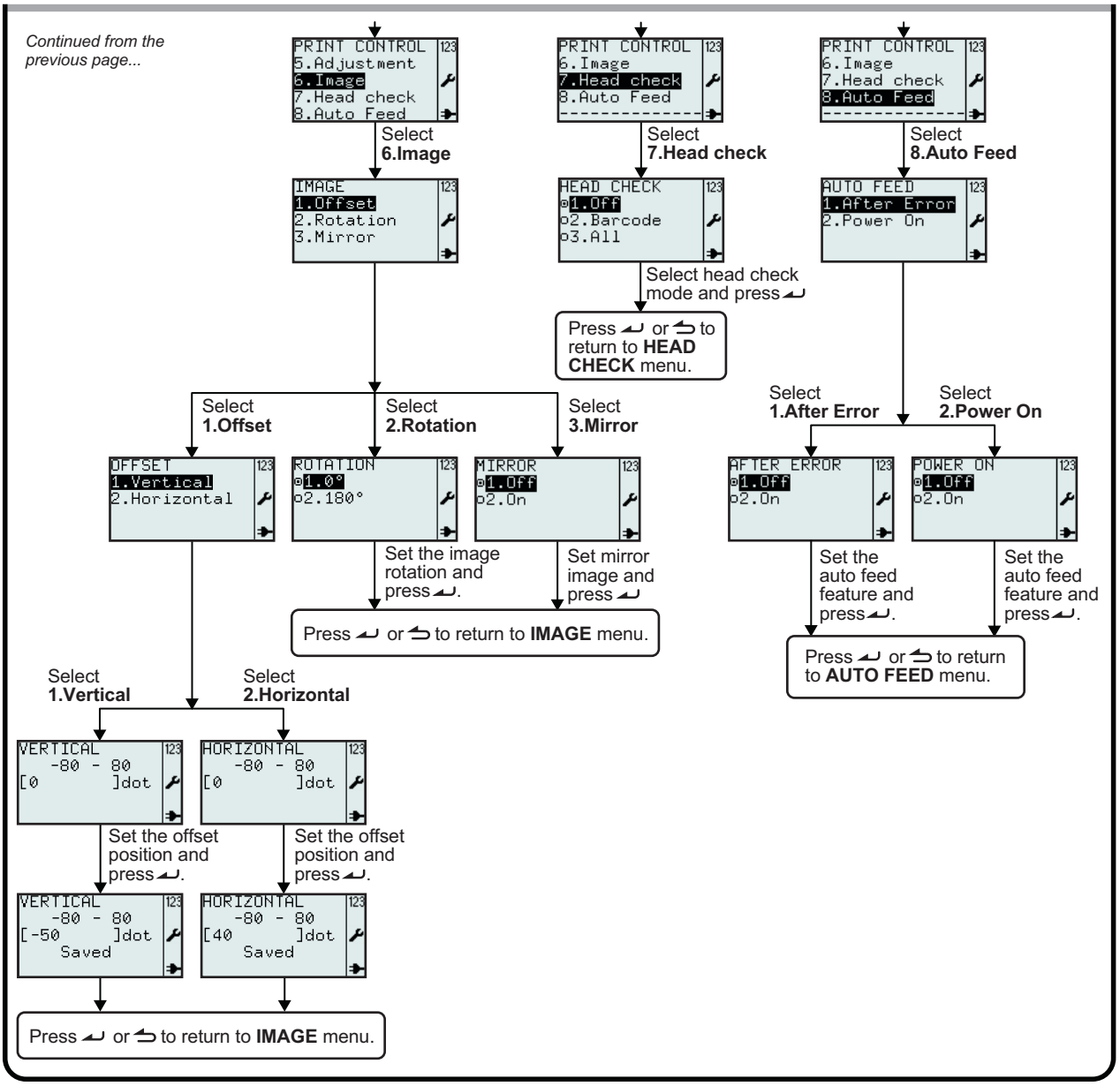
3.7 PRINTER SETUP MENU (Cont'd)

3.7.3 When Print Ctrl is selected in the SETUP menu



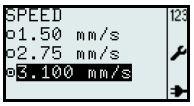
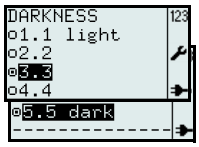
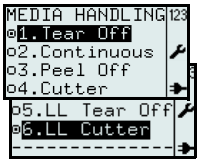
3.7 PRINTER SETUP MENU (Cont'd)

3.7.3 When Print Ctrl is selected in the SETUP menu (Cont'd)



Menu	Description
SETUP 1.Profile 2.Media 3.Print Ctrl 4.System	**Printer SETUP** menu. Enables the selection of **1.Profile**, **2.Media**, **3.Print Ctrl**, **4.System**, **5.Regional** or **6.Network** Select **3.Print Ctrl** for printer settings.
PRINT CONTROL 1.Speed 2.Darkness 3.Media Handl. 4.Backfeed Mod 5.Adjustment 6.Image 7.Head check 8.Auto Feed	**PRINT CONTROL** menu. Enables the selection of **1.Speed**, **2.Darkness**, **3.Media Handl.**, **4.Backfeed Mode**, **5.Adjustment**, **6.Image**, **7.Head check** or **8.Auto Feed**.

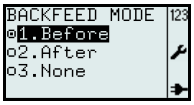
3.7 PRINTER SETUP MENU (Cont'd)

Menu	Description
	**SPEED** setting controls the speed of the media during printing and feeding. Displays existing **SPEED** selection and enables new selection. The default speed is **100 mm/s**. The ◉ "pressed radio button" indicates the current selection until the new selection is chosen and ↵ enter button is pressed. When ↵ enter button is pressed, the new selection is saved and the related "radio button" is shown as pressed.
	**DARKNESS** setting controls the energy to the print head that affects the print darkness of the print-out. Displays existing **DARKNESS** selection and enables new selection. The default Darkness setting is **3**. The ◉ "pressed radio button" indicates the current selection until the new selection is chosen and ↵ enter button is pressed. When ↵ enter button is pressed, the new selection is saved and the related "radio button" is shown as pressed. **Note**: It is not advisable to set the print darkness to the higher position as a darker print-out requires the print head to operate in a higher temperature. Operating in high temperature may damage the print head in a long run.
	**MEDIA HANDLING** controls the media motion and media stop position. Displays existing **MEDIA HANDLING** selection and enables new selection. The default Media Handling setting is **Tear Off**. After changing mode, the first label will be incorrectly positioned. To avoid this, press ⏸/⇩ pause/feed button in order to let the media positioning correctly before printing.

MEDIA HANDLING	Description
Tear Off	Gap media will stop with centre of a 3mm (0.12") gap at tear off edge. First label in a batch will start with a backfeed.
Continuous	Media will only move forward. Media will stop as soon as printed. 1st feed will move printed area in front of tear off edge to avoid tear-off in text. After 1st feed, next session will start with a backfeed. 2nd feed will feed an entire format length.
Peel Off	Label will stop a few millimeters before tear off position to avoid falling out. A dispensing sensor is enabled to prevent issuing next label before previous has been removed.
Cutter	The label will stop with centre of a 3mm (0.12") gap at cut position.
LL Tear Off	(Linerless label Tear Off)* Same behavior as Tear Off but with Peel Sensor enabled. Each label will start with a backfeed.
LL Cutter	(Linerless label Cutter)* Will cut just in front of I-Mark.

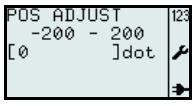
* The availability of linerless option is subject to future development. For more information, you may contact to SATO sales representatives.

3.7 PRINTER SETUP MENU (Cont'd)

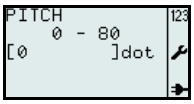
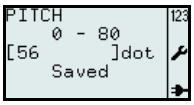
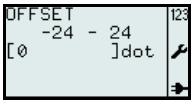
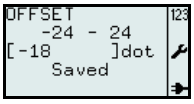
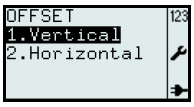
Menu	Description
	**BACKFEED MODE** setting controls the media backward motion. Displays existing **BACKFEED MODE** selection and enables new selection. The default Backfeed Mode is set at **1.Before** The ◉ "pressed radio button" indicates the current selection until the new selection is chosen and ↵ enter button is pressed. **Note:** The view of the Backfeed Mode menu is depended of the Media Handling selection. After changing Backfeed Mode, the first label will be incorrectly positioned. To avoid this, press ⏸/⇩ pause/feed button in order to let the media positioning correctly before printing.

Below is a table listed the availability of the Backfeed Mode selection based on the Media Handling selection.

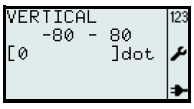
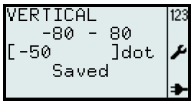
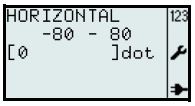
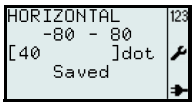
		MEDIA HANDLING					
		Tear Off	Continuous	Peel Off	Cutter	LL Tear Off	LL Cutter
BACKFEED MODE	**Before**	❍		❍	❍	❍	❍
	After			❍	❍		
	None		❍		❍		❍

Menu	Description
	**ADJUSTMENT** menu. Media **ADJUSTMENT** handles the formats positioning and appearance on the media. Enables the selection of **1.Pos Adjust**, **2.Pitch** or **3.Offset**.
	The **POS ADJUST** (Position Adjustment) enables tuning the media stop position. It is very useful if the I-Mark is not located according to media specification. The value can be expressed in inches, millimeters or dots depending on selection in **UNIT** menu. Displays the Position Adjustment range and input field with existing media length and its unit. Enables input of new media length. Setting range is between **-200** and **200**, and the default value is **0 dot**. **Note:** If the value is outside the allowed range, **Invalid** will be displayed.
	If the value is acceptable, **Saved** will be displayed when ↵ enter button is pressed.

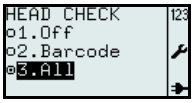
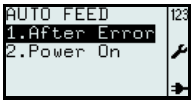
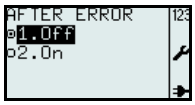
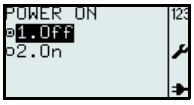
3.7 PRINTER SETUP MENU (Cont'd)

Menu	Description
	The **PITCH** enables fine tuning of the formats vertical position on the media. The value can be expressed in inches, millimeters or dots depending on selection in **UNIT** menu. Displays the Pitch range and input field with existing Pitch value and its unit. Enables input of new Pitch value. Setting range is between **0** and **80**, and the default value is **0 dot**. **Note:** If the value is outside the allowed range, **Invalid** will be displayed.
	If the value is acceptable, **Saved** will be displayed when ↵ enter button is pressed.
	The **OFFSET** enables fine tuning of the pre-defined media stop positions. The value can be expressed in inches, millimeters or dots depending on selection in **UNIT** menu. Displays the Offset range and input field with existing Offset value and its unit. Enables input of new Offset value. Setting range is between **-24** and **24**, and the default value is **0 dot**. **Notes:** • If the value is outside the allowed range, **Invalid** will be displayed. • When adjusting the Offset value, the first following format will be printed on a faulty position since a "new" print position is printed on an "old" stop position. Next prints will be correct.
	If the value is acceptable, **Saved** will be displayed when ↵ enter button is pressed.
	**IMAGE** menu. **IMAGE** handles the formats positioning and appearance on the media. Enables the selection of **1.Offset**, **2.Rotation** or **3.Mirror**.
	**OFFSET** menu. **OFFSET** enables fine tuning of formats.on the media. Enables the selection of **1.Vertica** or **2.Horizontal**.

3.7 PRINTER SETUP MENU (Cont'd)

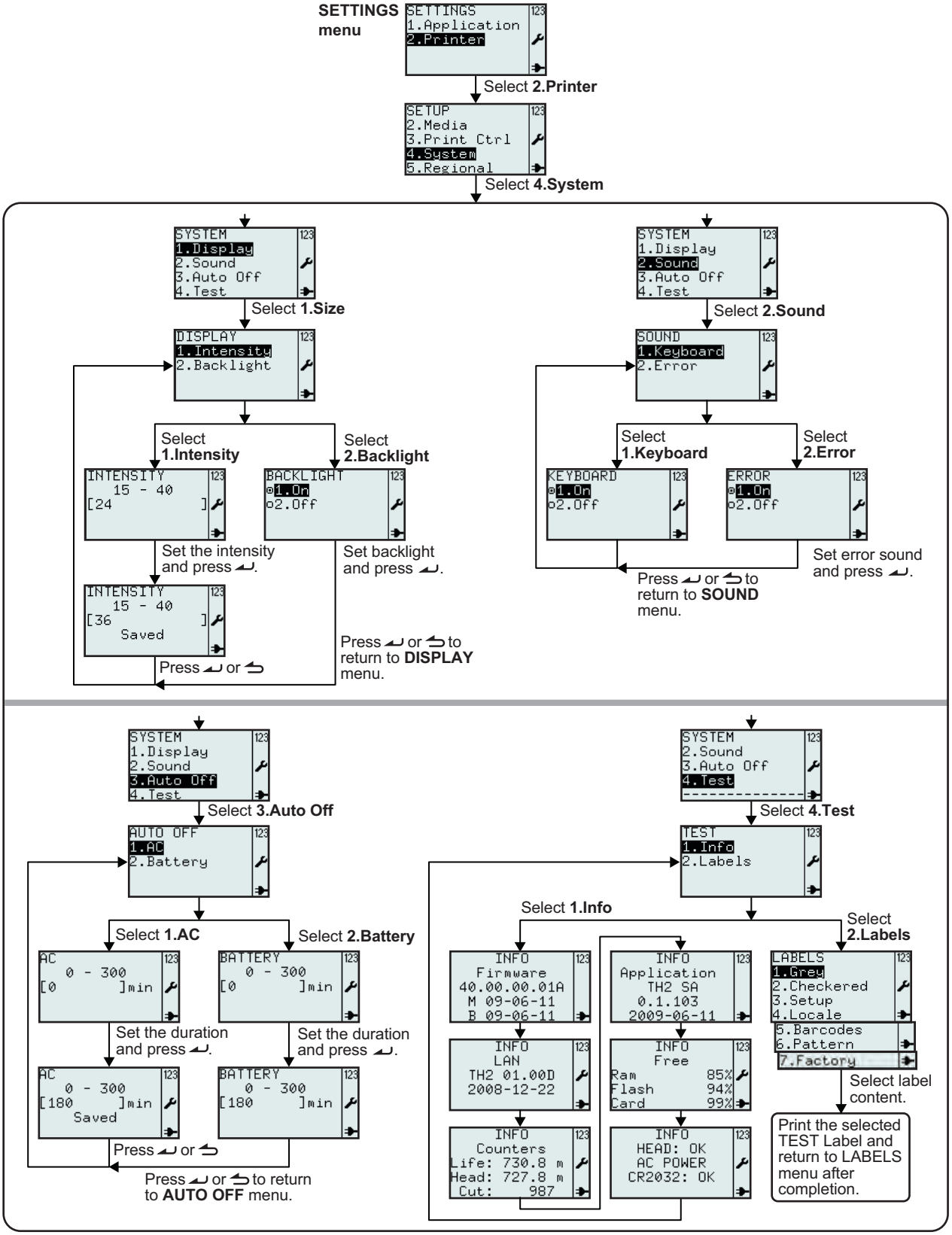
Menu	Description
	**VERTICAL** Offset enables fine tuning of the formats vertical position on the media. The value can be expressed in inches, millimeters or dots depending on selection in **UNIT** menu. Displays the Vertical Offset range and input field with existing image vertical offset and its unit. Enables input of new value. Setting range is between **-80** and **80**, and the default value is **0 dot**. **Note:** If the value is outside the allowed range, **Invalid** will be displayed.
	If the value is acceptable, **Saved** will be displayed when ↵ enter button is pressed.
	**HORIZONTAL** Offset enables fine tuning of the formats horizontal position on the media. The value can be expressed in inches, millimeters or dots depending on selection in **UNIT** menu. Displays the Horizontal Offset range and input field with existing image horizontal offset and its unit. Enables input of new value. Setting range is between **-80** and **80**, and the default value is **0 dot**. **Note:** If the value is outside the allowed range, **Invalid** will be displayed.
	If the value is acceptable, **Saved** will be displayed when ↵ enter button is pressed.
	**ROTATION** setting controls the rotation angles of the Image formats on the media. Displays existing **ROTATION** setting and enables new selection. The default rotation angle is **0°**. The ◉ "pressed radio button" indicates the current selection until the new selection is chosen and ↵ enter button is pressed. When ↵ enter button is pressed, the new selection is saved and the related "radio button" is shown as pressed. **Note:** Selecting **2.180°** will print the total format upside down at the same label area as if **1.0°** was selected.
	**MIRROR** setting enables the formats on the media, flip to opposite image. Displays existing **MIRROR** setting and enables new selection. The default setting is **Off**. The ◉ "pressed radio button" indicates the current selection until the new selection is chosen and ↵ enter button is pressed. When ↵ enter button is pressed, the new selection is saved and the related "radio button" is shown as pressed.

3.7 PRINTER SETUP MENU (Cont'd)

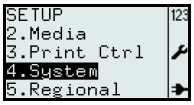
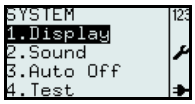
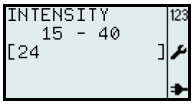
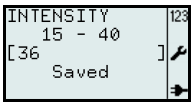
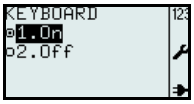
Menu	Description
	With **HEAD CHECK** activated, the printer gives a warning if one or more dots are broken. Displays existing **HEAD CHECK** setting and enables new selection. The default setting is **Off**. The ◉ "pressed radio button" indicates the current selection until the new selection is chosen and ↵ enter button is pressed. When ↵ enter button is pressed, the new selection is saved and the related "radio button" is shown as pressed. **Note:** If not printing barcodes, head error may not be considered serious. Turn off **HEAD CHECK** to avoid un-necessary reminders.
	**AUTO FEED** menu. Enables the selection of **1.After Error** or **2.Power On**.
	**AUTO FEED/AFTER ERROR** enables automatic feed after error in order to ensure that media has the correct stop position before next print session. Displays existing **AFTER ERROR** selection and enables new selection. The default setting is **Off**. The ◉ "pressed radio button" indicates the current selection until the new selection is chosen and ↵ enter button is pressed. When ↵ enter button is pressed, the new selection is saved and the related "radio button" is shown as pressed.
	**AUTO FEED/POWER ON** enables automatic feed after Power On in order to ensure that media has the correct rest position before print session. Displays existing **POWER ON** selection and enables new selection. The default setting is **Off**. The ◉ "pressed radio button" indicates the current selection until the new selection is chosen and ↵ enter button is pressed. When ↵ enter button is pressed, the new selection is saved and the related "radio button" is shown as pressed.

3.7 PRINTER SETUP MENU (Cont'd)

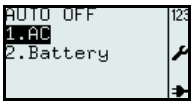
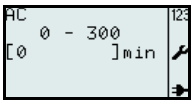
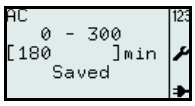
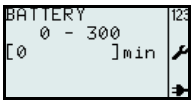
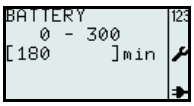
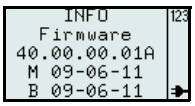
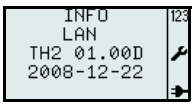
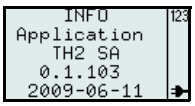
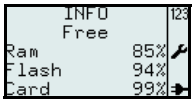
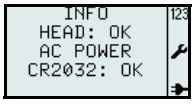
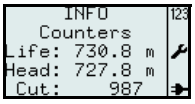
3.7.4 When System is selected in the SETUP menu



3.7 PRINTER SETUP MENU (Cont'd)

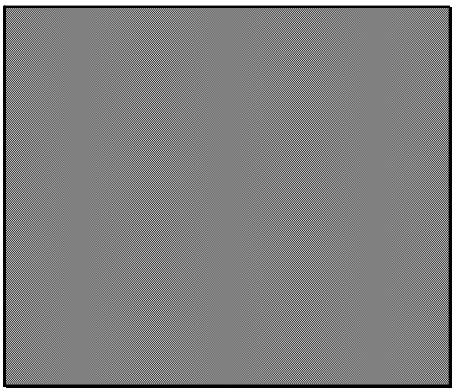
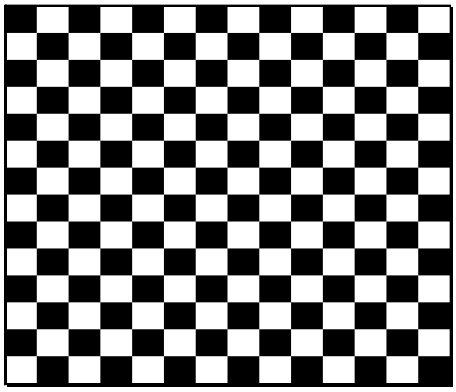
Menu	Description
	**Printer SETUP** menu. Enables the selection of **1.Profile**, **2.Media**, **3.Print Ctrl**, **4.System**, **5.Regional** or **6.Network** Select **4.System** for system settings.
	**SYSTEM** menu. Enables the selection of **1.Display**, **2.Sound**, **3.Auto Off** or **4.Test**.
	**DISPLAY** menu. Enables the selection of **1.Intensity** or **2.Backlight**.
	The **INTENSITY** of the display can be adjusted in this menu according to your preference. Displays the **INTENSITY** range and input field with existing value. Setting range is between **15** and **40**, and the default value is **24**. **Note:** If the value is outside the allowed range, **Invalid** will be displayed.
	If the value is acceptable, **Saved** will be displayed when ↵ enter button is pressed.
	With **BACKLIGHT** setting, the display backlight can be turned on or off. Displays existing **BACKLIGHT** setting and enables new selection. The default setting is **On**. The ⊙ "pressed radio button" indicates the current selection until the new selection is chosen and ↵ enter button is pressed. When ↵ enter button is pressed, the new selection is saved and the related "radio button" is shown as pressed.
	**SOUND** menu. Enables the selection of **1.Keyboard** or **2.Error**.
	The **KEYBOARD SOUND** menu can set the beep sound to be turned on or off whenever the button is pressed. Displays existing **KEYBOARD SOUND** setting and enables new selection. The default setting is **On**. The ⊙ "pressed radio button" indicates the current selection until the new selection is chosen and ↵ enter button is pressed. When ↵ enter button is pressed, the new selection is saved and the related "radio button" is shown as pressed.

3.7 PRINTER SETUP MENU (Cont'd)

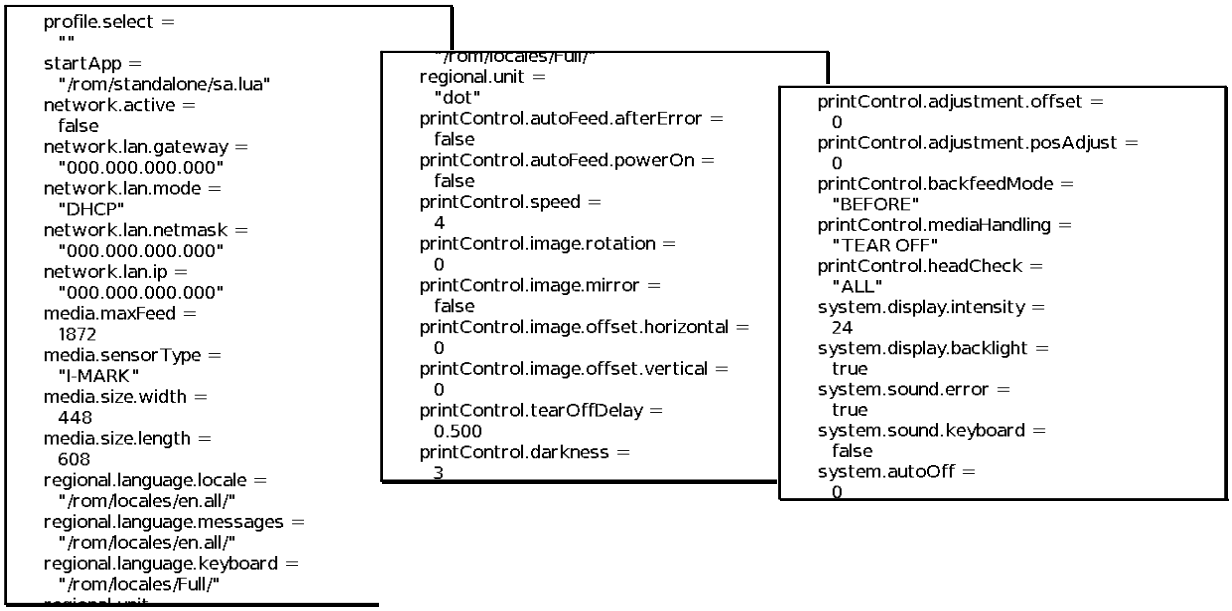
Menu	Description
	The **ERROR SOUND** menu can set the beep sound to be turned on or off whenever error occurred. Displays existing **ERROR SOUND** setting and enables new selection. The default setting is **On**. The ◉ "pressed radio button" indicates the existing setting until the new selection is chosen and ↵ enter button is pressed. When ↵ enter button is pressed, the new selection is saved and the related "radio button" is shown as pressed.
	**AUTO OFF** menu. Enables the selection of **1.AC** or **2.Battery**.
	The **AUTO OFF AC** menu enables user to set the time after when the printer automatically shuts down in AC mode. Displays the **AUTO OFF AC** range and input field with existing value. Setting range is between **0** and **300 min**, and the default value is **0 min**. **Note:** If the value is outside the allowed range, **Invalid** will be displayed.
	If the value is acceptable, **Saved** will be displayed when ↵ enter button is pressed.
	The **AUTO OFF BATTERY** menu enables user to set the time after when the printer automatically shuts down in battery mode. Displays the **AUTO OFF BATTERY** range and input field with existing value. Setting range is between **0** and **300 min**, and the default value is **0 min**. **Note:** If the value is outside the allowed range, **Invalid** will be displayed.
	If the value is acceptable, **Saved** will be displayed when ↵ enter button is pressed.
	**TEST** menu. Enables the selection of **1.Info** or **2.Labels**.
When **TEST INFO** is selected, the printer displays a series of printer information and status.       INFO LAN/WLAN is displayed only if LAN/WLAN is installed. All buttons except Page up and Power will display next info screen. After the last info screen the **TEST** menu is displayed.	

3.7 PRINTER SETUP MENU (Cont'd)

Menu	Description
	**LABELS** menu. Enables the selection of pre-defined **TEST LABELS**, **1.Grey**, **2.Checkered**, **3.Setup**, **4.Locale**, **5.Barcodes**, **6.Pattern** or **7.Factory**. **Note:** Some of the test labels have very high density resulting in a temporary low battery. When printing test labels on battery power, the "Battery low" message will not be displayed.

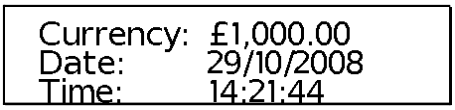
TEST LABELS - Grey	TEST LABELS - Checkered
	

TEST LABELS - Setup

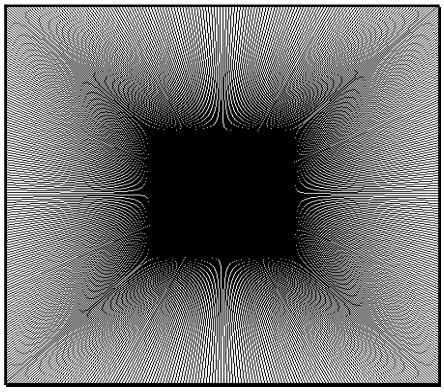


3.7 PRINTER SETUP MENU (Cont'd)

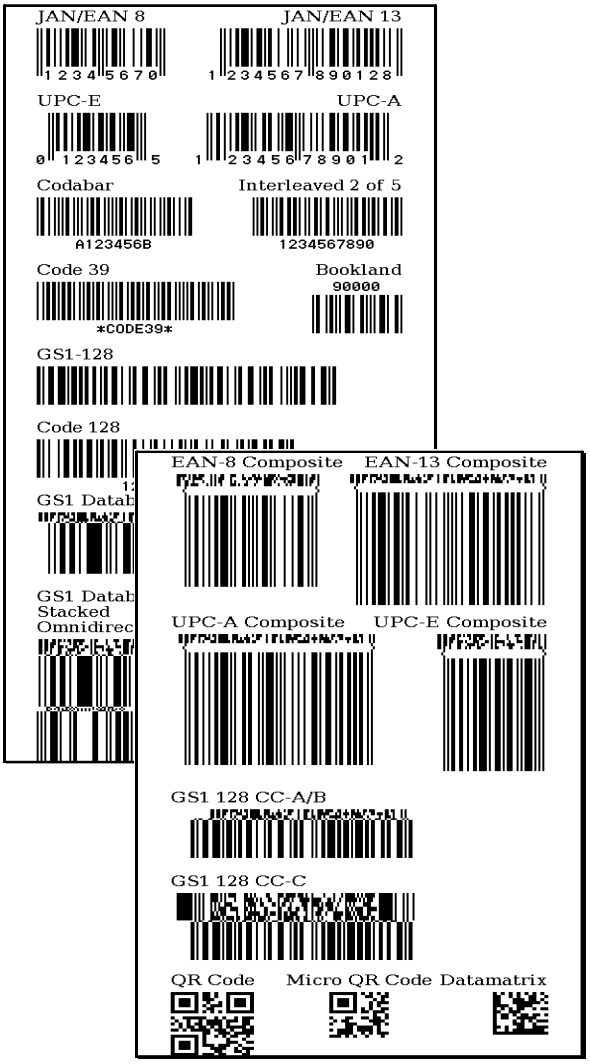
TEST LABELS - Locale



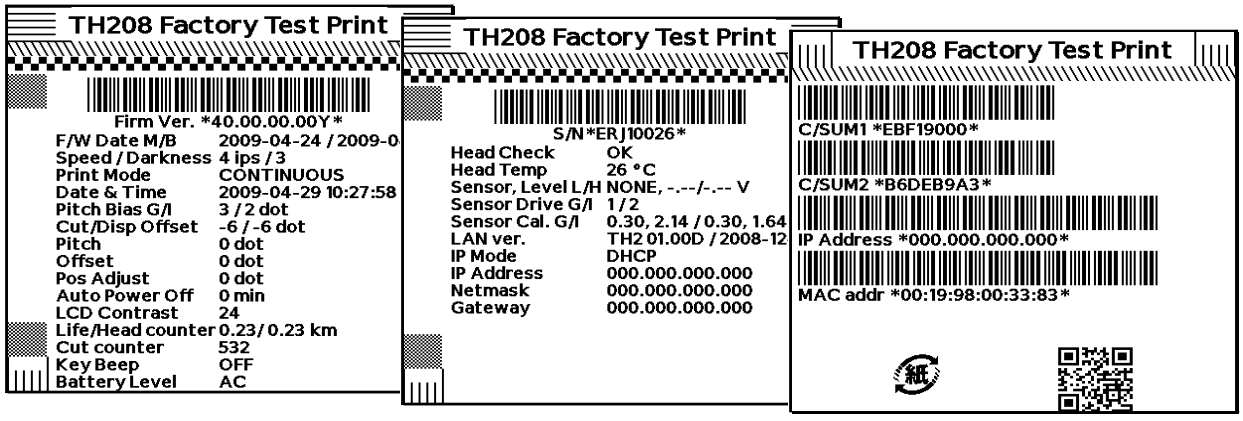
TEST LABELS - Pattern



TEST LABELS - Barcodes

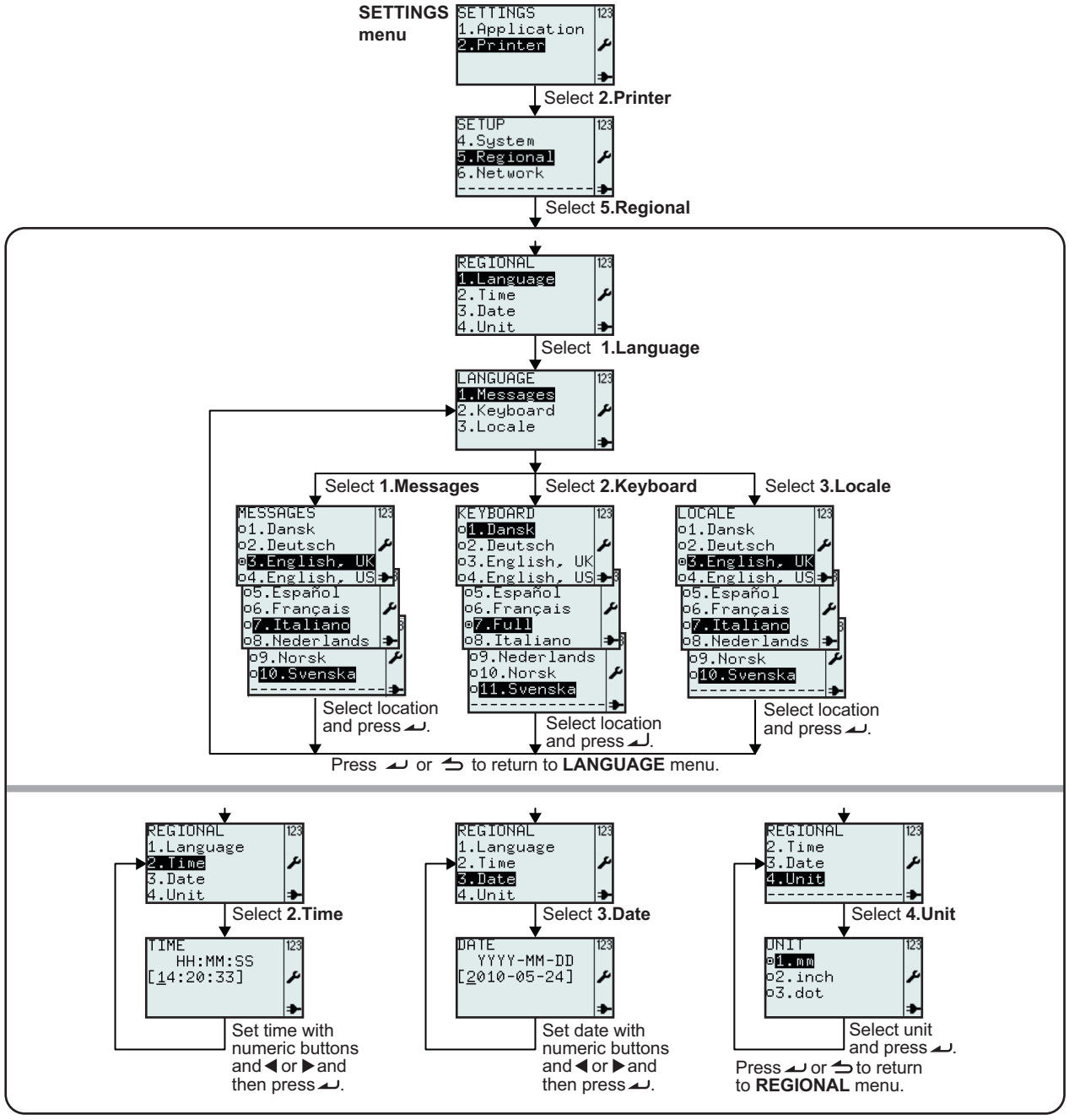


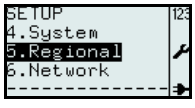
TEST LABELS - Factory



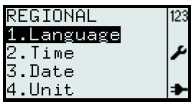
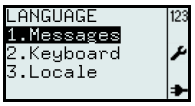
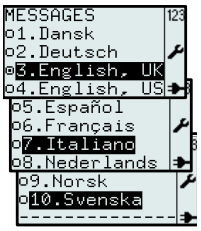
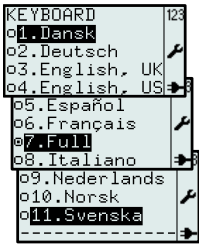
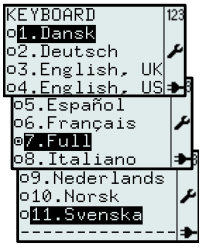
3.7 PRINTER SETUP MENU (Cont'd)

3.7.5 When Regional is selected in the SETUP menu

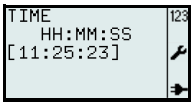
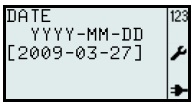


Menu	Description
	**Printer SETUP** menu. Enables the selection of **1.Profile**, **2.Media**, **3.Print Ctrl**, **4.System**, **5.Regional** or **6.Network** Select **5.Regional** for regional standard settings.

3.7 PRINTER SETUP MENU (Cont'd)

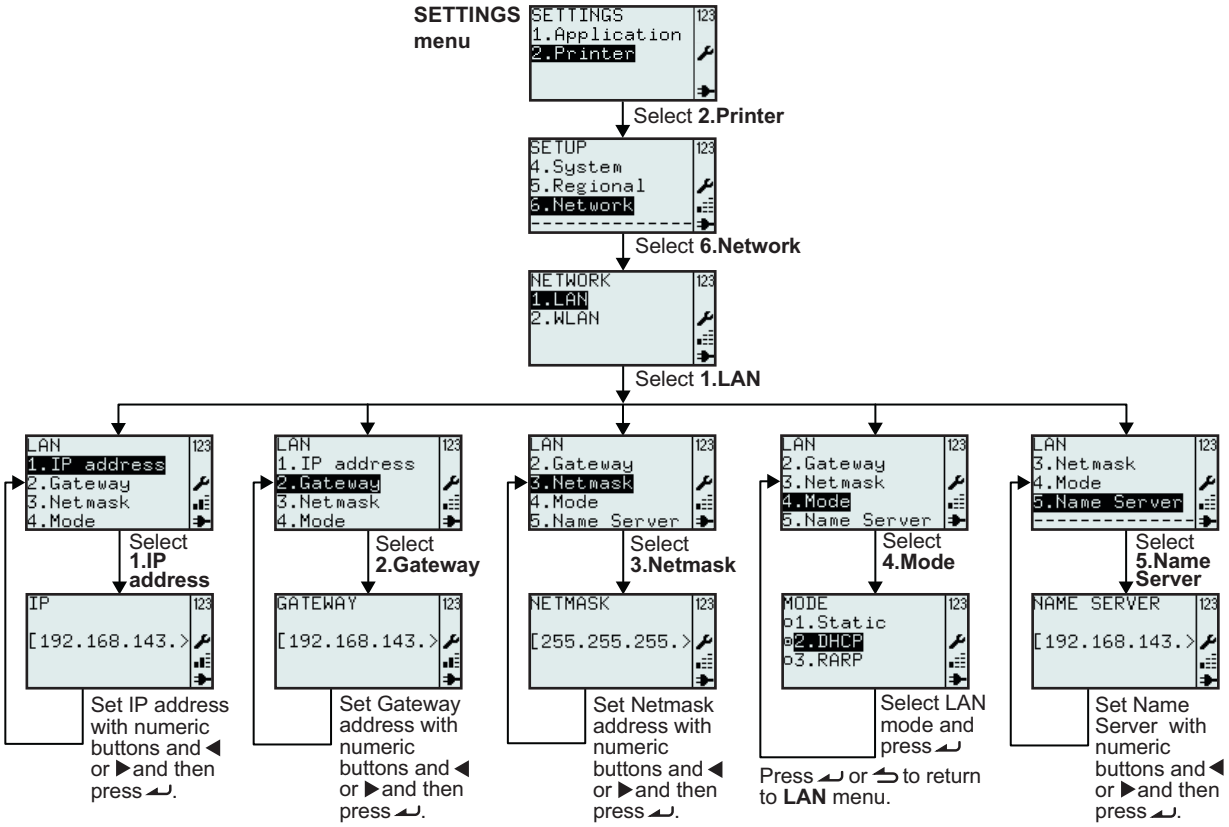
Menu	Description
	**REGIONAL** menu. Enables the selection of **1.Language**, **2.Time**, **3.Date** or **4.Unit**.
	**LANGUAGE** menu. Enables the selection of **1.Messages**, **2.Keyboard** or **3.Locale**.
	With **MESSAGES LANGUAGE** setting, the menu text and display messages can be displayed according to the your preference language. Displays existing **MESSAGES LANGUAGE** setting and enables new selection. The default setting is **English, UK**. The ◎ "pressed radio button" indicates the current selection until the new selection is chosen and ↵ enter button is pressed. When ↵ enter button is pressed, the new selection is saved and the related "radio button" is shown as pressed. Press Menu/Page Up to leave the menu. **Note:** The header **MESSAGES** will be displayed in the chosen language. All menus will now be displayed in the chosen language.
	With **KEYBOARD LANGUAGE** setting, the character group available at each ten alpha-numeric buttons can be selected according to the your preference language. Displays existing **KEYBOARD LANGUAGE** setting and enables new selection. The default setting is **Full**. The ◎ "pressed radio button" indicates the current selection until the new selection is chosen and ↵ enter button is pressed. When ↵ enter button is pressed, the new selection is saved and the related "radio button" is shown as pressed. Press Menu/Page Up to leave the menu. **Note:** The language menu has a selection called **Full**. Selecting **Full** will enable all groups of characters at ten alpha-numeric buttons.
	With **LOCALE** setting, the national or regional currency, time and date formats can be selected according to the your preference language. Displays existing **LOCALE** setting and enables new selection. The default setting is **English, UK**. The ◎ "pressed radio button" indicates the current selection until the new selection is chosen and ↵ enter button is pressed. When ↵ enter button is pressed, the new selection is saved and the related "radio button" is shown as pressed. Press ↩ Menu/page-up button to leave the menu.

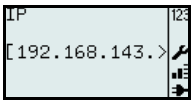
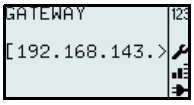
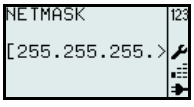
3.7 PRINTER SETUP MENU (Cont'd)

Menu	Description
	Displays **TIME** setting. Enables correction of time. The input field is guided: Hours/ Minutes/ Seconds Press ↵ enter button to save the setting. **Note:** If the value is outside the allowed range, **Invalid** will be displayed.
	Displays **DATE** setting. Enables correction of date. The input field is guided: Year/ Month/ Day Press ↵ enter button to save the setting. **Note:** If the value is outside the allowed range, **Invalid** will be displayed.
	All **UNIT** quantified printer and media related values will be displayed according to the **UNIT** selected in this menu. Displays existing **UNIT** setting and enables new selection. The default setting is **dot**. The ◉ "pressed radio button" indicates the current selection until the new selection is chosen and ↵ enter button is pressed. When ↵ enter button is pressed, the new selection is saved and the related "radio button" is shown as pressed. **Note:** If **UNIT** selection is **3.dot**, **SPEED** will be displayed in ips. (inches pr second)

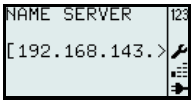
3.7 PRINTER SETUP MENU (Cont'd)

3.7.6 When Network is selected in the SETUP menu (LAN)

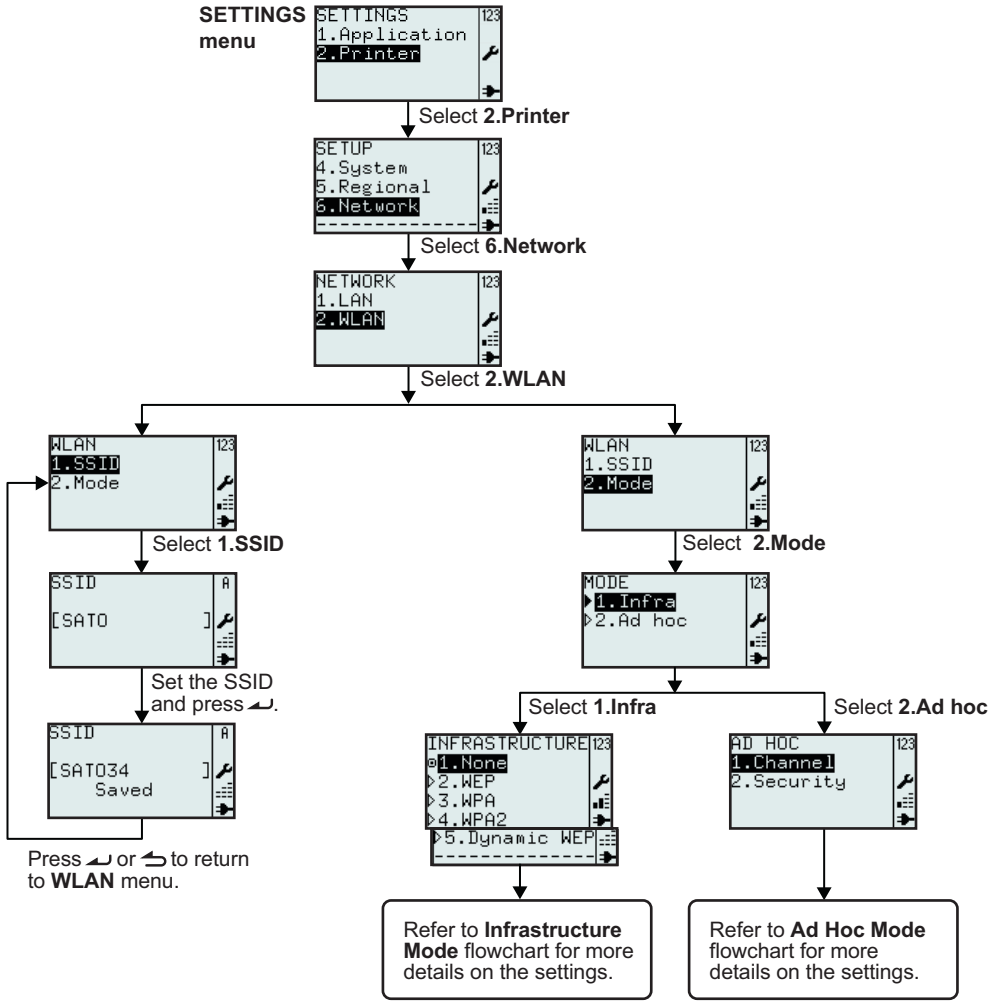


Menu	Description
	**NETWORK** menu. Enables the selection of **1.LAN** or **2.WLAN**. **Note: 6.Network** will only appear if LAN board is installed.
	**LAN** menu. Enables the selection of **1.IP address**, **2.Gateway**, **3.Netmask**, **4.Mode** or **5.Name Server**.
	Displays input field with existing **IP** address and enables input of the new **IP** address.
	Displays input field with existing **GATEWAY** address and enables input of the new **GATEWAY** address.
	Displays input field with existing **NETMASK** address and enables input of the new **NETMASK** address.

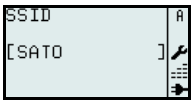
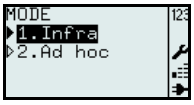
3.7 PRINTER SETUP MENU (Cont'd)

Menu	Description
	**MODE** menu. Enables the selection of **1.Static**, **2.DHCP** or **3.RARP**. Displays existing **MODE** setting and enables new selection. The default setting is **DHCP**. The ◉ "pressed radio button" indicates the current selection until the new selection is chosen and ↵ enter button is pressed. When ↵ enter button is pressed, the new selection is saved and the related "radio button" is shown as pressed.
	Displays input field with existing **NAME SERVER** address and enables input of the new **NAME SERVER** address.

3.7.7 When Network is selected in the SETUP menu (Wireless LAN)

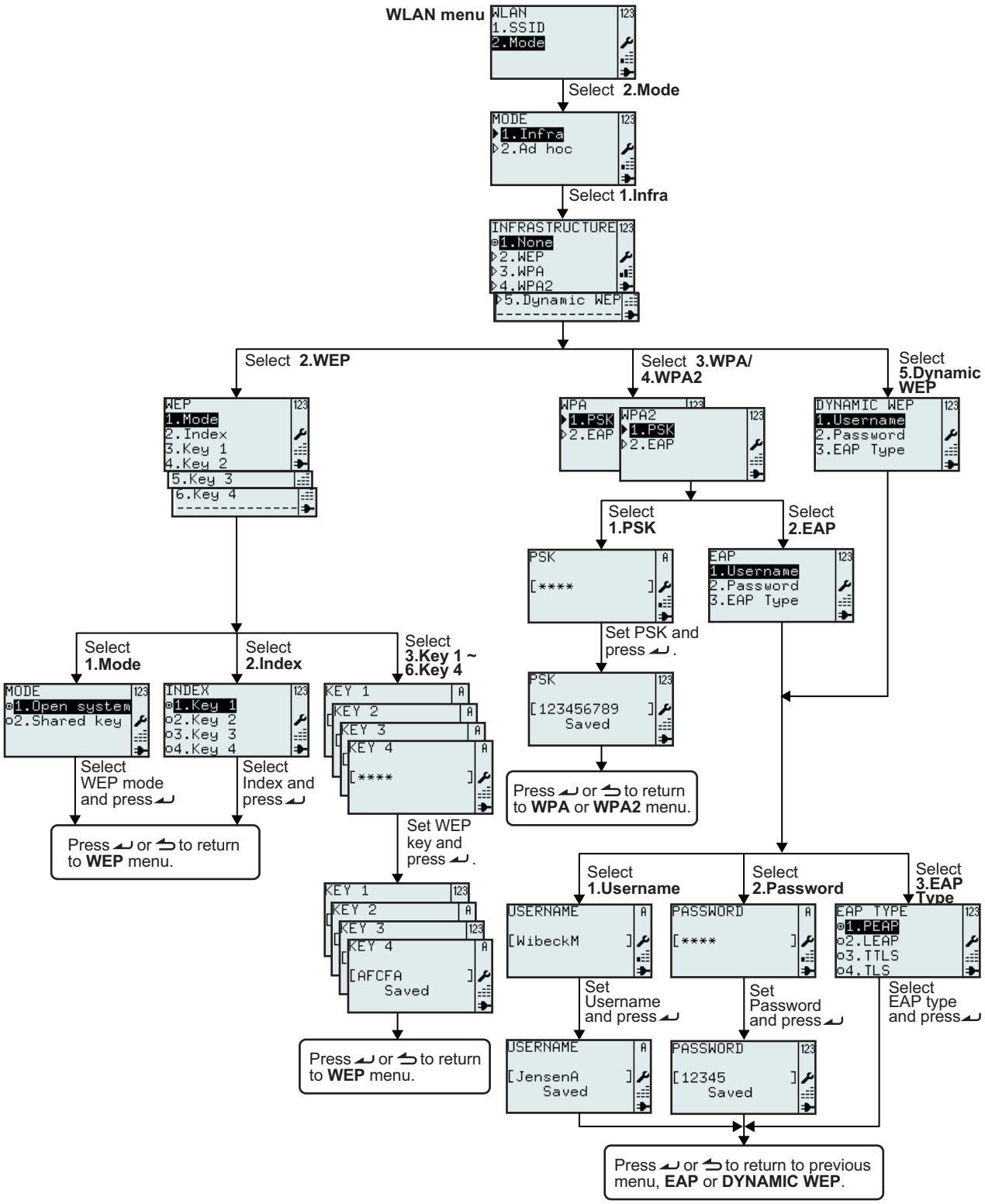


3.7 PRINTER SETUP MENU (Cont'd)

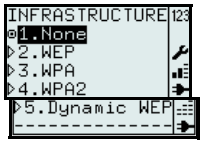
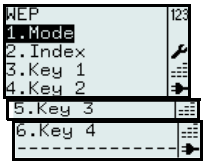
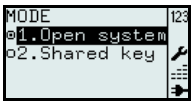
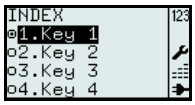
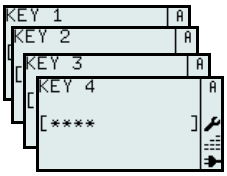
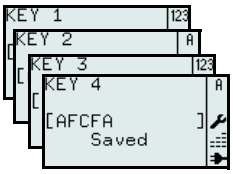
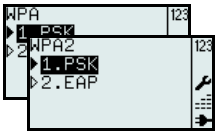
Menu	Description
	**NETWORK** menu. Enables the selection of **1.LAN** or **2.WLAN**. Select **2.WLAN**. **Note:** Field Strength icon will only appear if WLAN is installed.
	**WLAN** menu. Enables the selection of **1.SSID** or **2.Mode**.
 	**SSID**, (**S**ervice **S**et **ID**entifier), is a name that identifies a particular 802.11 wireless LAN. Displays input field with existing **SSID** and enables input of the new **SSID**. The default **SSID** is **SATO**. Allowed input: 0 to 32 character string. Input of more than 32 characters is not possible. **Notes:** • If the input field is left empty, **Invalid** will be displayed. • If the value is acceptable, **Saved** will be displayed when enter button is pressed.
	**MODE** menu. Enables the selection of **1.Infra** or **2.Ad hoc**. The default selection is **2.Ad hoc**.

3.7 PRINTER SETUP MENU (Cont'd)

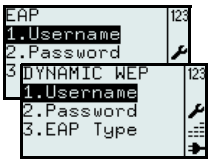
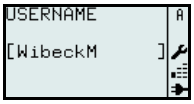
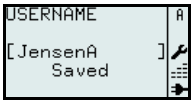
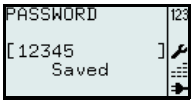
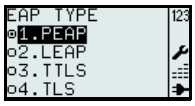
3.7.8 Setting of Wireless LAN Infrastructure Mode



3.7 PRINTER SETUP MENU (Cont'd)

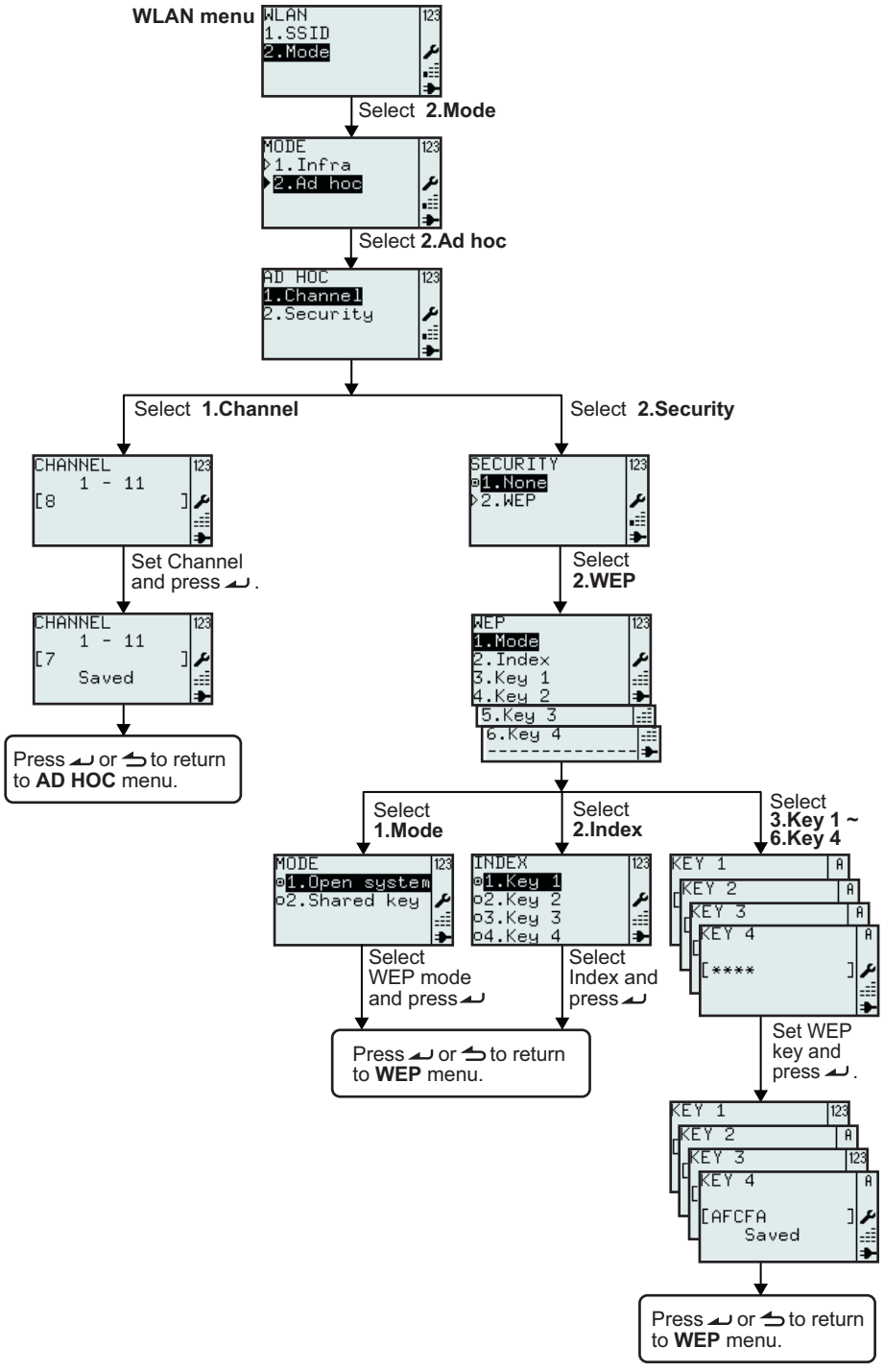
Menu	Description
	**INFRASTRUCTURE** menu. Enables the selection of **1.None**, **2.WEP**, **3.WPA**, **4.WPA2** or **5.Dynamic WEP**. The default selection is **1.None**.
	**WEP** menu. Enables the selection of **1.Mode**, **2.Index**, **3.Key 1**, **4.Key 2**, **5.Key 3** or **6.Key 4**.
	Displays existing **MODE** setting and enables new selection. Enables the selection of **1.Open system** or **2.Shared key**. The ◉ "pressed radio button" indicates the current selection until the new selection is chosen and ↵ enter button is pressed. When ↵ enter button is pressed, the new selection is saved and the related "radio button" is shown as pressed.
	Displays existing **INDEX** setting and enables new selection. Enables the selection of **1.Key 1**, **2.Key 2**, **3.Key 3** or **4.Key 4**. The ◉ "pressed radio button" indicates the current selection until the new selection is chosen and ↵ enter button is pressed. When ↵ enter button is pressed, the new selection is saved and the related "radio button" is shown as pressed.
	Displays input field and enables input of **WEP KEY 1**. Allowed input: 5 or 13 character string alternate 10 or 26 digit hexadecimal. Empty field is valid. **Note:** If the value is outside the allowed limits, **Invalid** will be displayed.
	If the value is acceptable, **Saved** will be displayed when ↵ enter button is pressed. **Note:** The password is readable as long as you stay inside the **NETWORK** menu. When leaving and re-entering the menu the key is symbolized by 4 stars **** regardless of its length.
	**WPA** or **WPA2** menu. Enables the selection of **1.PSK** or **2.EAP**.
	**PSK** (**P**re-**S**hared **K**ey) menu. Displays input field and enables input of **PSK**. Allowed input: 8 to 63 character string. **Note:** If the value is outside the allowed limits, **Invalid** will be displayed.

3.7 PRINTER SETUP MENU (Cont'd)

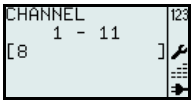
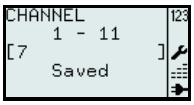
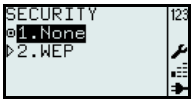
Menu	Description
	If the value is acceptable, **Saved** will be displayed when ↵ enter button is pressed. **Note:** The password is readable as long as you stay inside the **NETWORK** menu. When leaving and re-entering the menu the PSK is symbolized by 4 stars **** regardless of its length.
	**EAP** or **DYNAMIC WEP** menu. Enables the selection of **1.Username**, **2.Password** or **3.EAP Type**.
	**Username** is the username used in the EAP/ Dynamic WEP authentication process. Displays input field and enables input of **Username**. Allowed input: 1 to 63 character string. **Note:** If the input field is left empty, **Invalid** will be displayed.
	If the value is acceptable, **Saved** will be displayed when ↵ enter button is pressed. Press ↵ enter button again to leave the menu.
	**PASSWORD** is the password used in the EAP/ Dynamic WEP authentication process. Displays input field and enables input of **PASSWORD**. Allowed input: 0 to 32 character string. **Note:** If the value is outside the allowed limits, **Invalid** will be displayed.
	If the value is outside the allowed limits, **Saved** will be displayed when ↵ enter button is pressed. Press ↵ enter button again to leave the menu. **Note:** The password is readable as long as you stay inside the **NETWORK** menu. When leaving and re-entering the menu the password is symbolized by 4 stars **** regardless of its length.
	Displays existing **EAP TYPE** selection and enables new selection. Enables the selection of **1.PEAP**, **2.LEAP**, **3.TTLS** or **4.TLS**. The ◉ "pressed radio button" indicates the current selection until the new selection is chosen and ↵ enter button is pressed. When ↵ enter button is pressed, the new selection is saved and the related "radio button" is shown as pressed.

3.7 PRINTER SETUP MENU (Cont'd)

3.7.9 Setting of Wireless LAN Ad hoc Mode



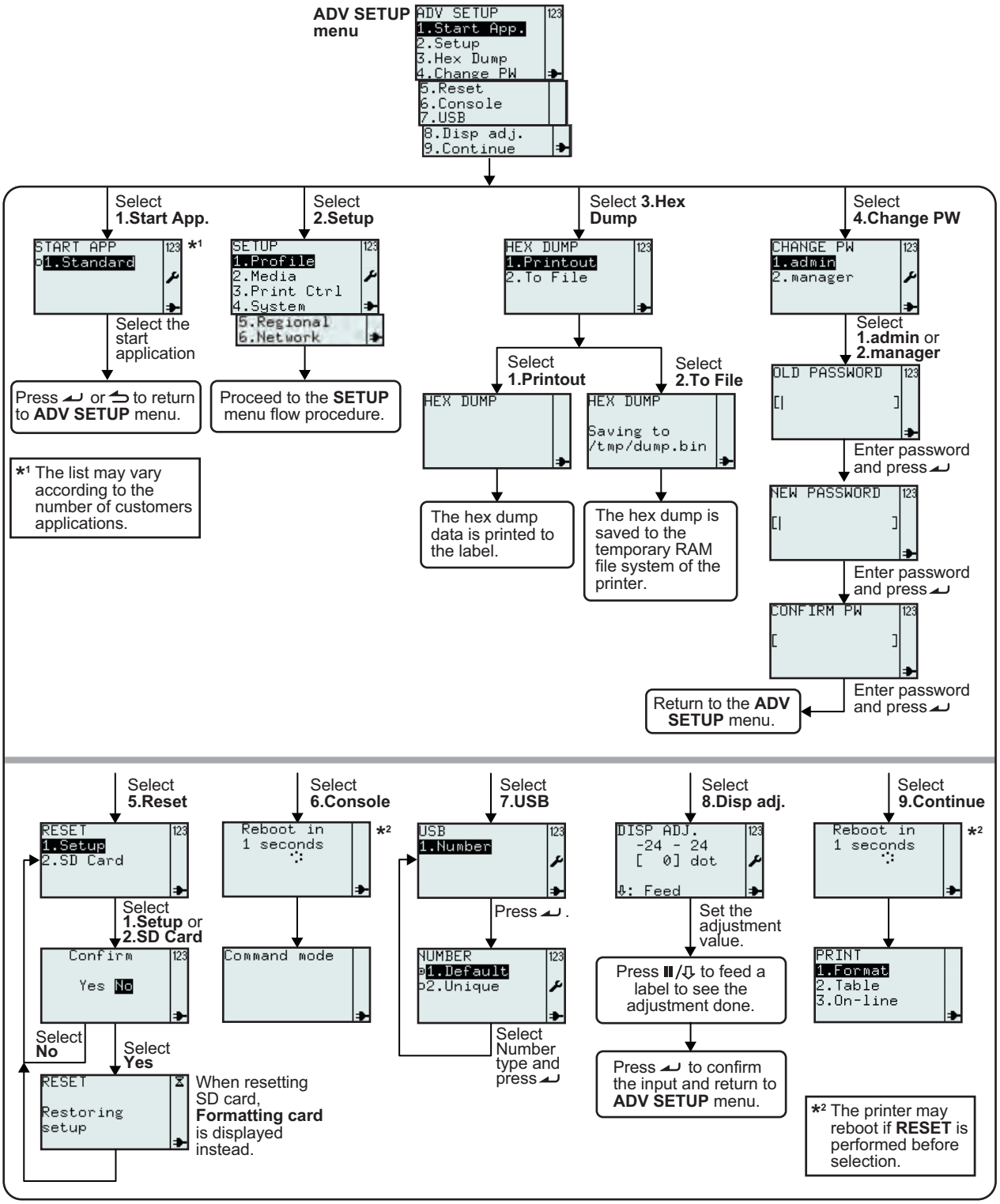
3.7 PRINTER SETUP MENU (Cont'd)

Menu	Description
	**AD HOC** menu. Enables the selection of **1.Channel** or **2.Security**.
	Displays the **CHANNEL** range, selected **CHANNEL** and enables input of new **CHANNEL**. Setting **CHANNEL** range is between **1** and **11**. **Note:** If the value is outside the allowed range, **Invalid** will be displayed.
	If the value is acceptable, **Saved** will be displayed when ↵ enter button is pressed.
	**SECURITY** menu. Enables the selection of **1.None** or **2.WEP**.

3.8 ADVANCED SETUP MENU

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

Overview of Advanced Setup menu configurations



3.8 ADVANCED SETUP MENU (Cont'd)

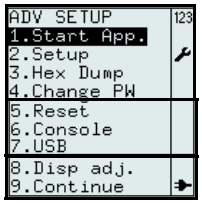
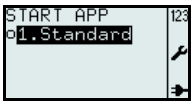
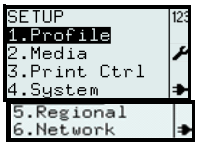
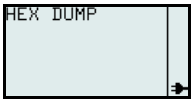
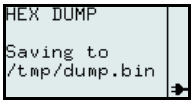
1. Make sure the power of the printer is turned off.

2. Press and hold the ↵ enter button and then press the ⏻ power button to turn on the printer. Release the ↵ enter button only when a long beep sound is heard.

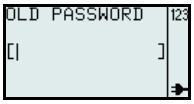
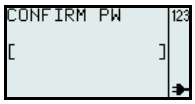
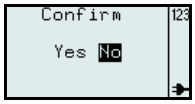
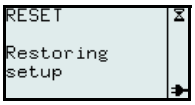
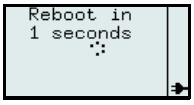
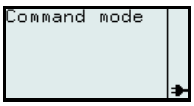
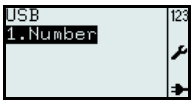
3. Password is required before entering to **ADV SETUP** menu. **PASSWORD** input screen is displayed. The default passwords are 6677 (MANAGER) and 96726 (ADMIN). These two passwords can be changed in the later procedure.

Enter the password with the numeric buttons and then press ↵ button.

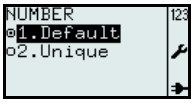
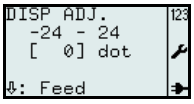
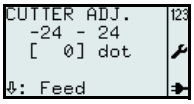
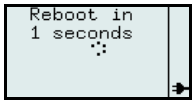
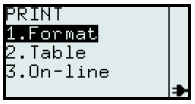
4. **ADV SETUP** menu is displayed, select the desired option from the list.

Menu	Description
	**ADV SETUP** menu. Enables the selection of **1.Start App., 2.Setup, 3.Hex Dump, 4.Change PW, 5.Reset, 6.Console, 7.USB, 8.Disp adj. (Cutter adj.)** or **9.Continue**. **Note**: If a cutter is installed, the menu choice #8 will be **8. Cutter adj**.
	**START APP** menu. Enables selection from a list of customer applications to choose as start-up applications. The list may vary according to the number of customers applications. This display shows the selection of **1.Standard** as general.
	Enables access to **Printer SETUP** menu. Please refer to **Section 3.7 Printer Setup Menu** for details.
	**Hex Dump** menu. The printer will output hexadecimal values of data that is sent from a host computer over USB, LAN or WLAN. Output can be to a printed label or to a file that is stored in the temporary RAM file system of the printer. Enables the selection of **1.Printout** or **2.To File**.
	When **1.Printout** is selected, the printer will output hexadecimal values of the data that is sent from a host computer over USB, LAN or WLAN. The HEX Dump output will be printed on the label.
	When **2.To File** is selected, the hex dump is saved to the temporary RAM file system of the printer. The file path is /tmp/dump.bin. Dump.bin is the binary file name.
	**CHANGE PW** menu. Enables the selection of **1.admin** or **2.manager**.

3.8 ADVANCED SETUP MENU (Cont'd)

Menu	Description
	Input old password and press ↵ enter button.
	Input new password and press ↵ enter button.
	Confirm new password and press ↵ enter button.
	**RESET** menu. Enables the selection of **1.Setup** or **2.SD Card**. Select **1.Setup** to reset the printer Setup to factory default. Select **2.SD Card** to format the installed SD Card.
	Confirm **RESET**. If **No** is selected printer, returns to **RESET** menu. If **Yes** is selected, printer Setup will be reset to factory default or printer SD Card will be formatted.
	The printer will take a few seconds to restore printer factory default Setup or formatting the SD card. The screen will show **Formatting card** when resetting the SD Card.
  	When selecting **6.Console** from **ADV SETUP** menu, **Command mode** is displayed on the screen. If **RESET** is performed before selecting and confirming Console, the printer will reboot. This is the mode used only by application developers when developing applications. In this mode standard Lua commands and SATO's developed Lua API commands can be sent to the printer via USB, LAN or WLAN forming an application. Only ⏻ power button can be activated to leave the mode.
	**USB** menu. Enables the selection of **1.Number** from **USB** menu.

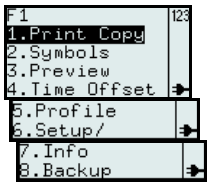
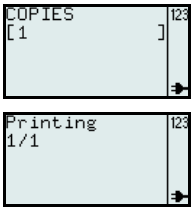
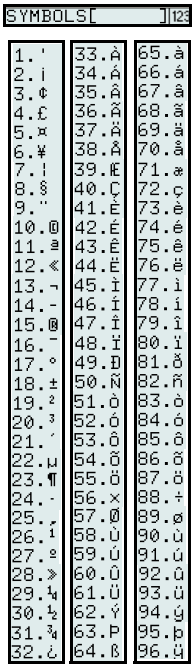
3.8 ADVANCED SETUP MENU (Cont'd)

Menu	Description
	Displays existing **USB NUMBER** selection and enables new selection. **1.Default** If **Default** is selected, all printers will appear at the same Comm.Port at the PC Host. **2.Unique** At PCB manufacturing, the main PCB is given a serial number. This number is stored in the printer and will be used as a USB serial number if **Unique** is selected.
 	Enables the selection of **8.Disp adj. / Cutter adj.** from **ADV SETUP** menu. The printer will enable adjusting of the TPH to dispensing plate (tear edge) distance. **Note**: If a cutter is installed, the menu choice will be **8.Cutter adj**.
 	Input correct adjustment value based on the stop and/or cut position. **Note**: For input of negative value; input the numbers first and then the minus-sign. Feed a label to see where the selected setting stops it. The default settings is **0**.
  	When selecting **9.Continue** from **ADV SETUP** menu, the printer will exit the Advanced Setup menu and continue start up and proceed to PRINT menu. If **RESET** is performed before selecting and confirming Continue, the printer will reboot.

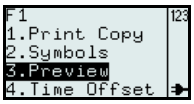
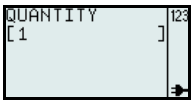
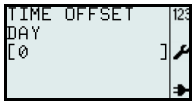
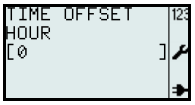
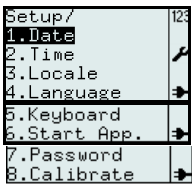
3.9 F1 SHORTCUTS MENU

F1 is a function button that enables shortcuts to parts of the printer set up and other functions.
The **F1** functions are selectable from a pre-defined list accessible from the **EDIT** menu. You may refer to **Section 3.6.12 To edit the F1 menu**, for more details.

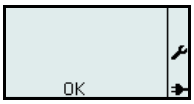
Note: **F1** shortcut function is invalid if the printer is in Printer set up mode, Advanced set up mode or Online mode.

Menu	Description
	The **F1** menu is shown as if all functions are selected in **F1** screen of **EDIT** menu.
1.Print Copy	
	Print Copy enables to print a number of copies of the recent printed label. **Note**: If no label is recently printed, the message "**Not existing!**" will be displayed until any button is pressed.
2.Symbols	
	When the printer is in input field mode, select **2.Symbols** to enable input of a symbol or special character from a list. The screen displays a search field and a list of 96 symbols and special characters to select from for use in input fields. **Note**: When the printer is not in input field mode, **Invalid** will be displayed at the bottom of the screen if **2.Symbols** is selected.

3.9 F1 SHORTCUTS MENU (Cont'd)

Menu	Description
3.Preview	
  	This function can be used prior to printing a label to view the fields that shall be printed. Press **F1** button and then select **3.Preview**. The screen to the left is displayed showing the different fields to be printed. Use ▲, ▼ arrow buttons to scroll down through the fields, key in a field number using the ten-buttons. Press ↵ enter button or ↩ Menu/page-up button to go back to the previous screen, in this case the **QUANTITY** screen. For example, select format **1.Price Demo** and hit ↵ enter button until screen **QUANTITY [1]** is displayed.
4.Time Offset	
 	Add a temporary offset in number of days to the date that has been set in the Real-Time-Clock. This offset will be cleared when powering off the printer. Add a temporary offset in number of hours to the time that has been set in the Real-Time-Clock. This offset will be cleared when powering off the printer.
5.Profile	
 	**5.Profile** gives access to select the saved **Profile**. The detailed description of the **PROFILE** menu is explained on **Section 3.7.1 When Profile is selected in the SETUP menu**. **Note**: If no profiles are created, **No profiles** will be displayed instead.
6.Setup/	
 	**6.Setup/** gives access to **SETUP** menu. **Notes:** • **6.Setup/** is selectable only if one or more of its sub-menus are selected. • The sub-menus to **6.Setup/** are shortcuts to the printer set up menu. The detailed description for each sub-menu were explained on **Section 3.7.2 When Media is selected in the SETUP menu**, **Section 3.7.5 When Regional is selected in the SETUP menu** and **Section 3.8 Advanced Setup Menu**.

3.9 F1 SHORTCUTS MENU (Cont'd)

Menu	Description
7.Info	
	When **7.Info** is selected, the printer displays a series of printer information and status. The detailed displays are shown on **Section 3.7.4 When System is selected in the SETUP menu**.
8.Backup	
 	Select **8.Backup** to copy the content of SA (formats and tables) to inserted SD card. Files copied to SD card will be named with maximum 8 uppercase characters with .XML extension. If original file name is longer than 8 characters, only the first 8 will appear in the SD card file name. If different files have identical first 8 characters the files will overwrite each other and only 1 file will be present on the SD card. In order to preserve all files, make the name distinction within the first 8 characters. **OK** will be displayed when backup is successfully performed.

4

CLEANING AND MAINTENANCE

This section provides information on user maintenance for the TH2 Series printer.

The following information is covered here:

- 4.1 Cleaning 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

- When cleaning the print head, bear in mind that the print head and its surroundings may be hot. Wait until the printer cools down before proceeding to clean the printer.
- Be sure to turn off the power before cleaning.
- The suggested cleaning schedules here are just guidelines. If necessary, clean as appropriate, depending on the degree of contamination.
- Use a cleaning pen, cotton swab or cotton cloth, from an approved cleaning kit, to clean the printer units.
- Use only soft, lint-free materials for cleaning. Avoid using hard objects for the cleaning process, as they will damage the components.

4.1 CLEANING 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 in spite of the dirt and adhesive that constantly accumulates on its print surface. Furthermore, dirt can accumulated along the label path, affecting parts like sensors and guides, and reducing their performance.

Therefore, it is important to clean these important components periodically. The printer cleaning kit and cleaning sheets can be purchased from your authorised SATO representative.

When to clean with a cleaning kit

♦ For the print head, platen roller, paper sensor, and media guide: clean after using up every other roll of media.

♦ For other parts: clean after finishing every six rolls of media.

When to clean with the cleaning sheet

♦ For print head: clean after using every six rolls of media, or when you find any burned glaze on the surface of the print head.

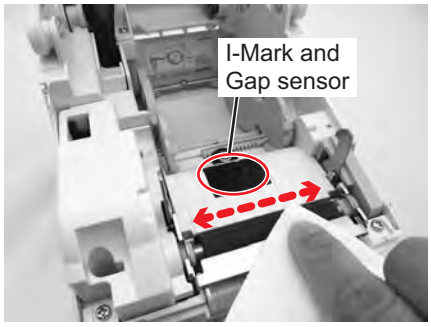
4.2 HOW TO CLEAN THE PRINTER (CLEANING KIT)

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

1. Before starting, get ready an approved cleaning kit from your SATO representative.
2. Make sure the printer is powered off, and disconnect the power cable. If the optional battery pack is installed, remove it as well.
3. Lift the **Top Cover**.
4. Remove the media.

Cleaning the Print Head

5. Apply **Thermal Print Head Cleaner** to a cotton swab.
6. Locate the **Print Head Assembly** which is mounted under the Top cover. The **Print Head** faces downward along the front edge of the assembly.
   Press the end of the dampened swab along the entire width of the **Print Head**.
7. Check for any black coloring or adhesive on the swab after cleaning. Discard the dirty swabs.
8. Repeat, if necessary, until the swab is clean after it is pressed over the print head.



Cleaning the platen roller, sensor and label guide

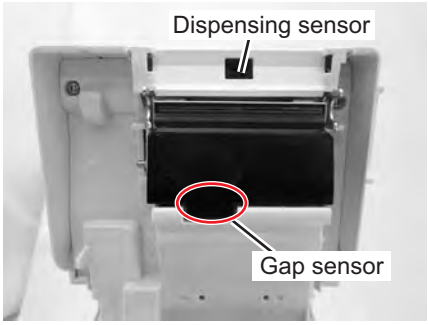
9. The **platen roller** is the black rubber roller near the front panel. Wet some cotton swabs or cotton cloth with cleaning solution. While rotating the **platen roller**, clean the entire length of the roller using one or more cotton swabs. Wipe any dirt or accumulated adhesive off the **platen roller**.

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

10. Locate the **I-Mark sensor** and the **Gap sensor** in the middle of media path and near the **print head**. (See figures to the right and on the previous page).

11. Dab a cotton cloth with the same cleaning solution. Clean any foreign matter from the exposed surface of the media path and sensor.

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



4.3 HOW TO CLEAN THE PRINTER (CLEANING SHEET)

If certain stains on the print head cannot be removed easily with cotton swabs dabbed in cleaning solution, use the cleaning sheet to clean or to clear such stubborn debris.

1. Make sure the printer is powered off and disconnect the power cable. If the optional battery pack is installed, remove it as well.

2. Lift the **Top Cover**.

3. Remove the media.

4. Place the head **cleaning sheet** between the **print head** and the **platen roller**. The coarse side of the **cleaning sheet** should face the surface of the **print head** with its exposed elements.

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

6. Using both hands, slowly pull the exposed **cleaning sheet** outwards. This will remove any dirt stuck to the **print head**.

7. When the **cleaning sheet** has been removed, perform steps 2 to 6 to repeat the cleaning procedure one or two more times.

8. When no more additional dirt appears on the **cleaning sheet** after it has been pulled out, you can stop cleaning with the sheet.

9. 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**.

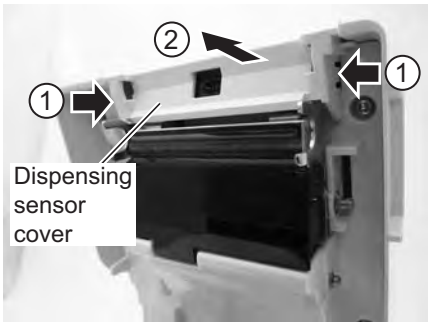
4.4 EASY REPLACEMENT OF PARTS

It is easy to replace the print head of the TH2 Series printer.
The tool-less print head release mechanism enables the print head to be quickly and easily replaced.

4.4.1 Releasing and Replacing the Print Head

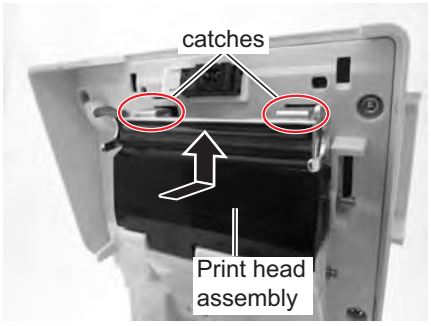
The print head on the printer is a user-replaceable item. If it becomes damaged for any reason, it can be easily removed and replaced. Contact your local SATO representative for information on obtaining a new print head.

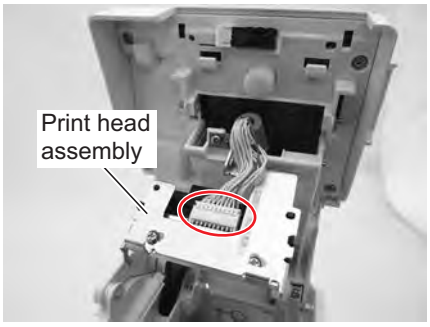
1. Make sure the printer is turned off, and disconnect the power cable. If the optional battery pack is installed, remove it as well.
2. Lift the **Top Cover**.
3. Press and release the **side tab** (see arrow (1)) on both sides of the **dispensing sensor cover**. Remove the cover and set it aside.

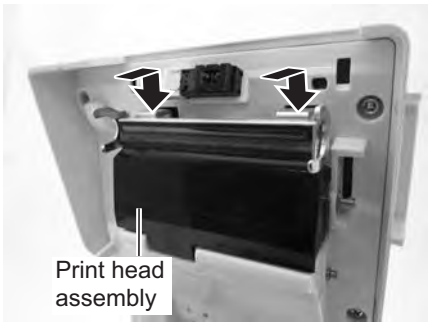


4. Press and push up the **print head assembly** to release it from the catches.
5. The **cable connector** (circled) at the rear of the **print head assembly** is now exposed. Gently disconnect the **print head** from the cable connector.
6. Carefully attach a replacement **print head assembly** to the **cable connector**. The connector is keyed so that it 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!
7. Reinsert the new **print head assembly** into the printer, making sure that the **hooks** at the back of the **print head assembly** fit on the **catches** of the printer.
8. Fix the **dispensing sensor cover** back to its position and push lightly until it locks with a click sound.
9. Close the **Top Cover**.
10. Restore power, reload media, reset the head counter and perform a test print to ensure that the **print head** is connected properly.



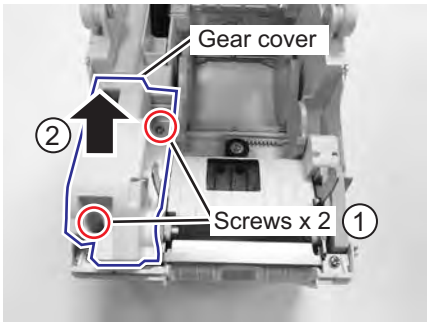




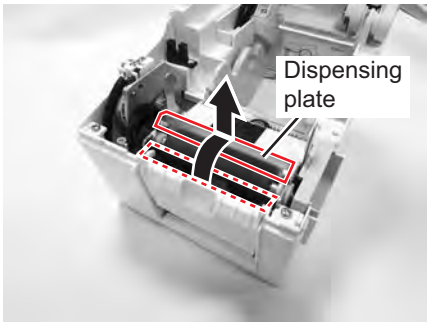
4.4 EASY REPLACEMENT OF PARTS (Cont'd)

4.4.2 Releasing/ Replacing the Platen roller

1. Make sure the printer is powered off and disconnect the power cable. If the optional battery pack is installed, remove it as well.
2. Lift the **Top Cover**.
3. Unfasten the **two screws** attaching the **gear cover** as shown. Remove the screws and cover, and set them aside.
4. Flip the **dispensing plate** upwards to a vertical position. A click sound is heard.



5. Lift up the defective **platen roller** assembly with the **dispensing plate** and replace it with a new one.
6. Follow the above steps, in reverse sequence, to reassemble the parts. Make sure that the **dispensing plate** snaps back into position.
   Perform a label feed to ensure that the **platen roller** is correctly assembled.



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.

When evaluating and adjusting the printer for optimum print quality, a barcode verifier system is highly recommended for evaluating the printouts. The human eye is a poor judge of the relative widths of the bars in a symbol, a characteristic that is extremely important for good barcode quality.

Print Darkness
This adjustment allows the user to control (within a specified range) the amount of power that is used to activate the print head heating elements. It is important to find a proper print darkness level based on your particular label. The printed images should not be too light, nor should the edges of text or graphics be smudged. Instead, the edges of each image should be crisp and well-defined. The adjustment can be made via the **PRINTER SETTING** menu.

Print Speed
The other method of controlling print quality is by controlling the speed at which the label is printed. It is especially critical when printing *ladder* barcodes (barcodes printed with the bars parallel to the print line). When printing a *ladder* barcode, it is important to allow the head to cool sufficiently before stepping to the next position. If it does not have sufficient time to cool, the bar will be smeared on the trailing edge. The adjustment can be made via the **PRINTER SETTING** menu. For more information, please refer to **Section 3.7.3 When Print Ctrl is selected in the SETUP menu**.

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5

TROUBLESHOOTING

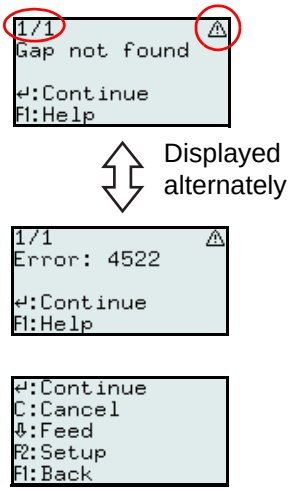
If you are unable to produce printouts on the TH2 series printer, use this section to make sure the basics have been checked, before deciding you are unable to proceed any further.
The section is divided into four parts:

- 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 General description of an Error Message

When printer detects an error, the error message will be displayed on the screen and the printer will beep three times to alert the user. The display alternates between **Error message** and related error code. For example, **Error: 4522**.



- The ⚠ Error icon is displayed in the upper right corner.
- **1/1** in the upper right corner indicates the number of printed labels and the total labels in batch.

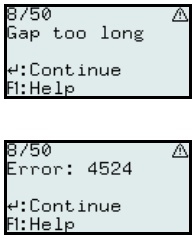
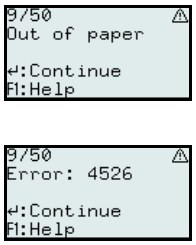
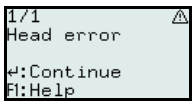
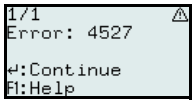
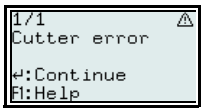
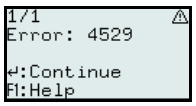
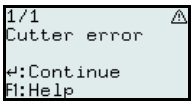
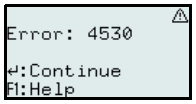
Press **F1** button for **Help** menu.
When an error occurs, it is possible to directly use the buttons described on the F1 help screen without first pressing **F1** button.

Note:
Setup menu entered from **F2** is limited, all functions that make stepper motor move are disabled.

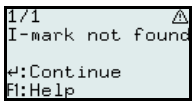
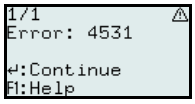
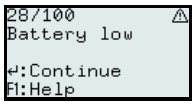
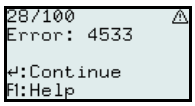
5.1.2 Error Message

Error code	ERROR DISPLAY	ERROR CONDITION	CORRECTIVE ACTION
4522	**Gap not found** 1/1 ⚠ Gap not found ↵:Continue F1:Help 1/1 ⚠ Error: 4522 ↵:Continue F1:Help	**1) Distance between gaps is too great (labels too long).** **2) Gap sensor not properly calibrated.** **3) Wrong media set-up; Gap was set as Sensor Type but gap media was not loaded.** **4) Gap sensor blocked by residue of media and adhesive.** **5) MAX FEED is set to a value shorter than the actual label length.** **To clear error: Perform corrective action and press ↵ enter to continue.**	**1) Use media according to specification.** **2) Calibrate sensor.** **3) Check media set-up or load the correct media.** **4) Clean media compartment and sensor cover.** **5) Set the MAX FEED value again.**
4523	**Cover open** ⚠ Cover open ↵:Continue F1:Help ⚠ Error: 4523 ↵:Continue F1:Help	**1) Cover has been opened.** **To clear error: Perform corrective action and press ↵ enter to continue.** **Note:** If the cover is opened during printing a label, that label, if not finalized, will be re-printed when cover is closed and printing is resumed. Before resuming, feed one blank label to adjust media position. When cover has been closed, the printer goes into Pause mode.	**1) Close the cover.**

5.1 ERROR SIGNAL TROUBLESHOOTING (Cont'd)

Error code	ERROR DISPLAY	ERROR CONDITION	CORRECTIVE ACTION
4524	**Gap too long**  	**1) The gap is longer than 15 mm.** **2) Gap sensor not properly calibrated.** **To clear error: Perform corrective action and press ↵ enter to continue.**	**1) Use media according to specification.** **2) Calibrate sensor.**
4526	**Out of paper**  	**1) The printer runs out of media during printing.** **2) If no media is loaded before attempting to print.** **To clear error: Perform corrective action and press ↵ enter to continue.** **Note:** If the printer runs out of media during printing a label, that label, if not finalized, will be reprinted when new media is loaded, cover is closed and printing is resumed. Before resume, feed one blank label to adjust media position.	**1) Load new media.** **2) Load media**
4527	**Head error**  	**1) One or more broken dots are detected.** **To clear error: If print head has been changed, printer and print job must be restarted.** **Note:** If not printing barcodes, head error may not be considered serious. Turn off HEAD CHECK to avoid unnecessary reminders.	**1) Turn off the printer and change print head if head error is considered serious.**
4529	**Cutter error**  	**Cutter error (does not start)** **1) The connection to the cutter motor is broken.** **2) The cutter motor is broken.** **To clear error: Perform corrective action and press ↵ enter to continue.**	**1) Check the cutter cables and connectors.** **2) Replace the cutter.**
4530	**Cutter error**  	**Cutter error (stuck)** **1) The media is too thick.** **2) The cutter blade is jammed due to residues of media and media adhesive.** **3) The cutter is worn out.** **To clear error: Perform corrective action and press ↵ enter to continue.**	**1) Check media thickness according to specification.** **2) Clean the cutter** **3) Replace the cutter.**

5.1 ERROR SIGNAL TROUBLESHOOTING (Cont'd)

Error code	ERROR DISPLAY	ERROR CONDITION	CORRECTIVE ACTION
4531	**I-Mark not found**  	**1) Distance between I-Marks is too great (labels too long).** **2) I-Mark sensor not properly calibrated.** **3) Wrong media set-up; I-Mark was set as Sensor Type but I-Mark media was not loaded.** **4) MAX FEED is set to a value shorter than the actual label length.** **To clear error: Perform corrective action and press ↵ enter to continue.**	**1) Use media according to specification.** **2) Calibrate sensor.** **3) Check media or media set-up.** **4) Set the MAX FEED value again.**
4533	**Battery low**  	**1) The battery voltage has temporarily dropped below 14.2 volts during printing.** **2) ▭ "Battery empty" icon is displayed; battery level below 14.5 volt for some time.** **To clear error: Perform corrective action and press ↵ enter to continue.** **Note:** After "Battery low" warning is displayed, the printer can still be used for a short time. However, full functionality and proper behavior can not be guaranteed.	**1) Charge battery or change to a charged battery.**

5.2 TROUBLESHOOTING TABLE

TROUBLESHOOTING TABLE	
NO POWER	
Printer does not turn on.	Power connector or AC adapter is not properly connected. The optional battery is not charged or not installed.
NO LABEL MOVEMENT	
Media is not set properly.	Set media and media guide correctly or clear the jammed media.
Incorrect label sensor selected.	Set the sensor type correctly in printer setup.
Dirty platen roller.	Clean the platen roller.
Damaged platen gear.	Replace platen roller and gear.
INCORRECT LABEL POSITIONING	
Incorrect label sensor selection.	Set the sensor type correctly in printer setup.
Improper sensor adjustment.	Adjust sensor sensitivity as required.
Incorrect media size set.	Set the correct media size.
Incorrect offset settings.	Adjust settings as required.
NO PRINT MOTION	
Media is stuck.	Open cover and solve media problem.
Top cover is not properly closed.	Make sure that the top cover is properly closed and snaps into position.
The interface cable is not properly connected.	Connect the interface cable.
Interface problems.	Troubleshoot interface; refer to the next section.
Data input error in On-line mode.	Ensure correct data stream.
PRINTER CREATES A BLANK LABEL	
Top cover is not properly closed.	Make sure that the top cover is properly closed and snaps into position.
Data input error in On-line mode.	Ensure correct data stream.
Incorrect label sensor selection.	Set the sensor type correctly in printer setup.
Print head is disconnected.	Power off the printer and ensure a proper connection.
Defective print head.	Replace print head as required.
Defective main circuit board.	Have SATO authorised service personnel replace main board.
IMAGE VOIDS	
Dirty print head.	Clean print head.
Defective print head.	Replace print head.
Defective main circuit board.	Have SATO authorised service personnel replace main board.
Damaged or worn platen roller.	Replace platen roller.
Poor label 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.

5.2 TROUBLESHOOTING TABLE (Cont'd)

TROUBLESHOOTING TABLE	
UNEVEN PRINT DARKNESS	
Top cover is not properly closed.	Make sure that the top cover is properly closed and snaps into position.
Damaged or worn platen roller.	Replace platen roller.
Dirty print head.	Clean print head.
Defective print head.	Replace print head 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 labels	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.
MEANDERING MEDIA	
Incorrectly loaded media.	Ensure correct loading.
Media is not set properly.	Set media and media guide correctly.
Damaged or worn platen roller.	Replace platen roller.
LCD FIELD ILLUMINATED BUT WITHOUT WORDS OR NO DISPLAY AT ALL	
Power supply issues.	Ensure power connector or AC adapter is properly connected. Check/replace AC adapter. The optional battery is not charged or not installed.
Screen contrast is incorrectly adjusted.	Adjust as required.

5.3 INTERFACE TROUBLESHOOTING

This chapter 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

Verify the device drivers have been successively installed by performing the following:

CHK	TROUBLESHOOTING STEP
	Click on Start, and then Control Panel.
	Click on System within the new window.
	Click on the Hardware tab and then Device Manager button.
	Ensure that the View Device By Type is checked.
	Scroll to Port (COM & LPT) and TH2 USB Serial and ensure that errors do not exist. Reinstall as required.
	Reboot the PC and the printer.

LAN ETHERNET INTERFACE

CHK	TROUBLESHOOTING STEP
	Ensure the interface has been correctly configured.
	Ensure the cable and its ports are not defective.
	Ensure 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, ensure 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, ensure the SQE “Signal Quality Error” is turned off. Also ensure the repeater port is not defective by trying the print server on another port.
	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.

WIRELESS LAN INTERFACE

CHK	TROUBLESHOOTING STEP
	Ensure the wireless LAN unit is properly configured.
	Ensure field strength icon on printer is showing a good reception.
	If not obtaining an IP address, check the SSID or encryption and ensure those were properly entered.

5.4 TEST PRINT TROUBLESHOOTING

Chapter 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 ASCll format. Refer to **Section 3.8 Advanced Setup Menu** for more details to perform this activity.

5.4.2 Test label printing

Allows the operator to identify specific problems regarding mechanical performance and setup. The test label is designed to assist in the identification of print problems.
From the **SYSTEM SETUP** menu, selecting **TEST** and then **Labels** will open the menu with different pre-defined test labels for selection. Refer to **Section 3.7.4 When System is selected in the SETUP menu** for more details to perform this activity.

6

BASIC SPECIFICATIONS

6.1 PRINTER BASIC SPECIFICATIONS

MODEL NAME	TH208

PHYSICAL CHARACTERISTICS	
Width	132 mm (5.2”)
Height	147 mm (5.8”)
Depth	194 mm (7.6”)
Weight	1.7 kg (3.7 lbs.)

- The above dimensions and weight are excluding the battery pack.

POWER SUPPLY	
AC Adapter Voltage	Input power voltage: AC 100V - 240V, 50/60 Hz, +/-10% (Full range) Output voltage: DC 19V, 3.6A
Power Consumption	At peak: 42.5W / 64.0VA (Print ratio 30%) In standby: 6.2W / 12.6VA

ENVIRONMENTAL (EXCLUDING MEDIA)	
Operating Temperature	0°C to 40°C (32°F to 104°F)
Storage Temperature	-5°C to 60°C (23°F to 140°F)
Operating Humidity	30 to 80% RH, Without condensation
Storage Humidity	30 to 90% RH, Without condensation

PRINT	
Method	Direct Thermal
Print Speed (selectable)	50 to 100 mm/sec (2 to 3.9 Inch/sec) (Setting value: 50, 75, 100 mm/sec) *Print speed varies depending on the type of media used.
Resolution	8 dots/mm (203 Dots Per Inch)
Maximum Print Width	56 mm (2.2”)

PRINT	
Maximum Print Length	156 mm (6.1 “)
Print darkness	Darkness level: 1 to 5
Label issuing mode	**Standard**: Continuous mode, Dispenser mode, Tear-off mode, Sensor off mode **Option**: Cutter mode, Linerless mode (with cutter)*, Linerless mode (without cutter)* * The availability of linerless option is subject to future development. For more information, you may contact to SATO sales representatives.

6.1 PRINTER BASIC SPECIFICATIONS (Cont'd)

MEDIA (Be sure to use media manufactured or certified by SATO)	
Size • The size may be limited by use conditions.	**Die cut label** Continuous: **Width:** 25 to 60 mm (0.9" to 2.3") **Width including liner:** 28 to 63 mm (1.1" to 2.4") **Pitch:** 16 to 156 mm (0.6" to 6.1") **Pitch including liner:** 19 to 159 mm (0.7" to 6.2") Cutter: **Width:** 25 to 60 mm (0.9" to 2.3") **Width including liner:** 28 to 63 mm (1.1" to 2.4") **Pitch:** 16 to 156 mm (0.6" to 6.1") **Pitch including liner:** 19 to 159 mm (0.7" to 6.2") Tear-off: **Width:** 25 to 60 mm (0.9" to 2.3") **Width including liner:** 28 to 63 mm (1.1" to 2.4") **Pitch:** 16 to 156 mm (0.6" to 6.1") **Pitch including liner:** 19 to 159 mm (0.7" to 6.2") Dispenser: **Width:** 25 to 60 mm (0.9" to 2.3") **Width including liner:** 28 to 63 mm (1.1" to 2.4") **Pitch:** 16 to 117 mm (0.6" to 4.6") **Pitch including liner:** 16 to 120mm (0.6" to 4.7")
	Butt-cut label Continuous: **Width:** 25 to 60 mm (0.9" to 2.3") **Width including liner:** 28 to 63 mm (1.1" to 2.4") **Pitch:** 16 to 156 mm (0.6" to 6.1") **Pitch including liner:** 19 to 159 mm (0.7" to 6.2") Tear-off: **Width:** 25 to 60 mm (0.9" to 2.3") **Width including liner:** 28 to 63 mm (1.1" to 2.4") **Pitch:** 16 to 156 mm (0.6" to 6.1") **Pitch including liner:** 19 to 159 mm (0.7" to 6.2") Dispenser: **Width:** 25 to 60 mm (0.9" to 2.3") **Width including liner:** 28 to 63 mm (1.1" to 2.4") **Pitch:** 16 to 117 mm (0.6" to 4.6") **Pitch including liner:** 16 to 120 mm (0.6" to 4.7")
	Linerless label*[1] without cutter: **Width:** 28 to 60 mm (1.1" to 2.3") **Pitch:** 25.4 to 100 mm (1" to 3.9") with cutter: **Width:** 28 to 60 mm (1.1" to 2.3") **Pitch:** 45 to 100 mm (1.7" to 3.9") *[1] The availability of linerless option is subject to future development. For more information, you may contact to SATO sales representatives.
Type	Direct Thermal Use roll media specified by SATO.

MEDIA (Be sure to use media manufactured or certified by SATO)	
Roll Diameter	Maximum outer diameter: 75 mm (2.9”)
Core Diameter	Inner core diameter: 26 mm(1.0”), depending on media type
Thickness	0.14 to 0.19 mm (0.006” to 0.007”).
Wind Direction	Face-out or Face-In

6.1 PRINTER BASIC SPECIFICATIONS (Cont'd)

PROCESSING	
CPU	32 Bit RISC-CPU 100MHz
Flash ROM	12 Megabytes
SDRAM	8 Megabytes

APPLICATION SCRIPTING LANGUAGE	
Standard	Lua version 5.1 is loaded Lua Standard API (SATO proprietary) version 1.0

INTERFACES	
Standard Interface	1) USB Interface, USB and LAN Interface or Wireless LAN Interface 2) Scanner connector (Supported PS/2) 3) SD Card slot (FAT file system)

SENSING	
Gap (Transmissive)	Sensitivity Adjustable
I-Mark (Reflective)	Sensitivity Adjustable
Head Open	Fixed
Dispenser	Fixed

SELF-DIAGNOSIS FUNCTION	
	1) Broken head element check 2) Paper end detection 3) Test print 4) Cover open detection 5) Calendar check 6) Calendar battery check 7) Battery check 8) Cutter error

CHARACTER FONT CAPABILITIES	
RESIDENT BITMAP FONTS	
M	13 dots W x 20 dots H (Alphanumeric, symbols)
S	8 dots W x 15 dots H (Alphanumeric, symbols)
U+XU	5 dots W x 9 dots H (Alphanumeric, symbols)

CHARACTER FONT CAPABILITIES	
RESIDENT BITMAP FONTS	
X1	20 dots W x 50 dots H (Alphanumeric, symbols)
X2	8 dots W x 20 dots H (Alphanumeric, symbols)
X3	13 dots W x 21 dots H (Alphanumeric, symbols)
OCR-B	20 dots W x 24 dots H (Alphanumeric, Capital)

6.1 PRINTER BASIC SPECIFICATIONS (Cont'd)

CHARACTER FONT CAPABILITIES	
RESIDENT BITMAP FONTS	
PRICE Character	16 dots W x 24 dots H (Number, Period, Currency Mark)
POP1	28 dots W x 48 dots H (Number, Currency Mark, Comma)
POP2	48 dots W x 68 dots H (Number, Currency Mark, Comma)
POP3	26 dots W x 56 dots H (Number, Currency Mark, Comma)
	Support subscript (example: the 2 in H_2O) Numbers Only): X1, X2, X3
RESIDENT TRUE TYPE FONTS	
	SATO Sans SATO Serif
CHARACTER CONTROL	
Magnification	Vertical 1 to 12 times, Horizontal 1 to 12 times
Rotation	0°, 90°, 180° and 270° True Type text can be rotated 0 - 359° (1° increments).

BARCODE CAPABILITIES	
Linear Bar Codes	UPC-A/E, JAN/EAN-8/13 Code 39 Code 128A/B/C, GS1-128 (UCC/EAN128) Codabar (NW-7) Interleaved 2 of 5 Bookland (2-5 char add-on code) GS1 DataBar (RSS) **Note**: GS1 DataBar is new version of RSS.
Two Dimensional	QR code (Ver 8.1 including Micro QR) GS1 DataMatrix
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) GS1-128 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	1 to 12 times

HARDWARE AND RELATED	
Operation keys	**Ten keypad: 0** to **9** (for alphanumeric characters and symbols input) **Function key:** ⏻,**F1**, **F2**, ⏸/⇩, **1/a/A/-**, ⮌ , **C**, ⏎ , **. /␣** **Arrow key**: ▲, ▼, ◀, ▶
Indicators	**CHARGE:** Red LED
Buzzer	Built-in buzzer • No volume control function is available

6.1 PRINTER BASIC SPECIFICATIONS (Cont'd)

OPTIONS	
	Cutter unit, Linerless kit (with cutter)*, Linerless kit (without cutter)*, External label supply unit, External label rewinder (RW350), Battery pack, Battery charger, SD card, Key cover (To protect printer from wet hands), Wall-mounting kit, barcode scanner * The availability of linerless option is subject to future development. For more information, you may contact to SATO sales representatives.

REGULATORY COMPLIANCE	
Safety regulation	UL60950-1(2001) (USA) CSA22.2 No.60950-1-30 (Canada) EN60950-1, CE (Europe) SS337:2001 (Singapore) CCC (GB4943-2001) (China)
EMC regulation	FCC15B Class B (USA/Canada) CE (EN55022, EN55024) (Europe) GB9254-1998, GB17625.1(2003) (China) MIC (KN22, KN24) (Korea)
Radio Standards Wireless LAN(2.45MHz)	FCC15B /FCC15C (USA/Canada) R&TTE (EN300 328 V1.4:2003-04),(EN301 489 V1.4.1:2002-08) (Europe) IDA TS SRD:2004 (Singapore), SRRC (信部无 [2001]653 号) (China) MIC (Korea)
Radio Standards RFID(HF/ UHF)	FCC15B /FCC15C (USA/Canada) R&TTE (EN300-330) (HF-band RFID, Europe) R&TTE (EN300-220-1/EN302-208-1) (UHF-band RFID, Europe) MIC (Korea)
Packaging Drop Standard	ISTA-2A
Environmental (RoHS)	Design with Non RoHS Directive material RoHS Directive: 6 controlled substances • Hexavalent chromium compounds .....less than 0.1% • Lead and lead compounds .....less than 0.1% • Mercury and mercury compounds .....less than 0.1% • Cadmium and cadmium compounds .....less than 0.01% • Polybrominated Biphenyl (PBB) .....less than 0.1% • Polybrominated Diphenyl Ether (PBDE).....less than 0.1%
Antibacterial finishing	Antibacterial finishing for external cover and operative parts. Tested according to JIS Z 2801 standard

6.2 OPTIONAL ACCESSORIES SPECIFICATIONS

CUTTER KIT SPECIFICATIONS	
Media Type	Non-adhesive paper and Label
Media Size	**Width (including liner)**: 28 to 63 mm (1.10” to 2.48”) **Pitch (including liner)**: 19 to 120 mm (0.74” to 4.72”)
Thickness	0.14 to 0.19 mm (0.006” to 0.007”)
Self-diagnosis function	Cutter error detection
Durability	More than 300,000 cuts

LINERLESS KIT SPECIFICATIONS*		
Kit Type	Linerless kit with cutter	Linerless kit without cutter
Media Type	Linerless Label without perforated line	Micro-perforated Linerless Label
Media Size	**Width:** 28 to 60 mm (1.1” to 2.3”) **Pitch:** 45 to 100 mm (1.7” to 3.9”)	**Width:** 28 to 60 mm (1.1” to 2.3”) **Pitch:** 25.4 to 100 mm (1” to 3.9”)
Thickness	0.14 to 0.19 mm (0.006” to 0.007”)	
Media Winding direction	Face-out	
Roll and core Diameter	Maximum outer diameter: 75 mm (2.9”) with Inner core diameter: 26 mm (1.0”)	
Sensor Type	Label sensor (Reflective type)	
Label issuing mode	Cutter mode	Continuous mode, Tear-off mode

* The availability of linerless option is subject to future development. For more information, you may contact to SATO sales representatives.

BATTERY SPECIFICATIONS	
Model Name	PT/MB400-BAT
Battery Type	Lithium ion battery
Rated Voltage	14.8 V
Rated Capacity	1700mAh (TYP)
Dimensions	43 mm (W) X 20.4 mm (D) X 109 mm (H) 1.7” (W) X 0.8” (D) X 4.3” (H)
Weight	Approximately 170 g (0.37 lbs)
Charge cycle	Approximately 300 times
Charging time	Approximately 6 hours (Fully charges with the printer unit) Approximately 1.5 hours (Charged by dedicated charger)

6.2 OPTIONAL ACCESSORIES SPECIFICATIONS (Cont'd)

EXTERNAL REWINDING UNIT SPECIFICATIONS		
Rewinding Method		Using Paper core size ϕ 40 mm (1.5") or POS cassette
Rewinding Direction		Face-out
Rewind Capacity	Paper core	70 mm (2.76") maximum diameter
	POS cassette	50 mm (1.97") maximum diameter
Media Type		Label only
Media Size	Paper core	Width including liner: 32 to 48 mm (1.3" to 1.9") Pitch including liner: 19 to 181 mm (0.7" to 7.1")
	POS cassette	Width including liner: 33 mm (1.3") Pitch including liner: 25.4 mm (1"), 50.8 mm (2")
Thickness		0.07 to 0.265 mm (0.003" to 0.01")
Media Detection		No detection of label or label end
Dimensions		135 mm (W) X 115 mm (D) X 128 mm (H) 5.3" (W) X 4.5" (D) X 5" (H)
Weight		0.7 kg (1.5 lbs)

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7

INTERFACE SPECIFICATIONS

This section presents the interface types and their specifications for the TH2 Series printers. These specifications include detailed information to assist in the selection of the most appropriate method for the printer to interface with the host.

The following information is presented in this section:

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

7.1 INTERFACE TYPES

The TH2 Series has three types of Main PCBs. Each type of PCB is equipped with different interface types in order to perform data communication with the host. These are described as follows.

1) **Type 1**: USB on-board
2) **Type 2**: USB and LAN on-board
3) **Type 3**: Wireless LAN on-board

.

Model	Interface Types		
	USB	LAN	Wireless LAN
TH2 series (Type 1)	Yes	-	-
TH2 series (Type 2)	Yes	Yes	-
TH2 series (Type 3)	-	-	Yes

Caution

Disconnect power before connecting or disconnecting interface cables. 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

This printer supports the USB 2.0-compliant interface and transfer rate of 12 Mbps. The Universal Serial Bus (USB) interface requires a driver that must be loaded on your PC and the PC must be configured to support USB peripherals using Windows2000, XP, Server2003, Vista or Windows7. Up to 127 devices may be connected to a USB port using powered hubs. The TH2 printer supports USB CDC (Communication Device Class).

7.2.1 Basic Specifications of USB interface

The USB interface is available with Type 1 board.

Interface connector	 Series B plug Cable length: 5m or less (Twisted Pair Shielded)
Version	USB 2.0

7.2.2 Pin Assignments

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

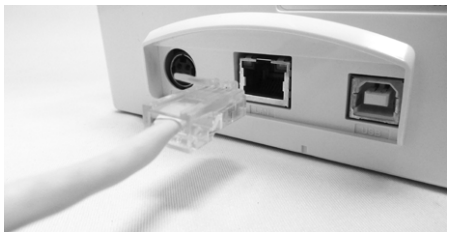
Notes

- USB interface is supported only by Windows2000/XP/Server2003/Vista/Server2008/7.
  Be sure to use the instruction manual of your PC, or consult with the PC (host) manufacturer.
- Recommended length for USB cable is 1m.
- Connect USB type B plug (square form factor) to the printer.
- Device name of USB port should be TH2 USB Serial (COMxx).

7.3 LOCAL AREA NETWORK (LAN) ETHERNET AND WIRELESS LAN

7.3.1 Basic Specifications of LAN

LAN interface is available with Type 2 boards.

<table>
<tr><td>Interface connector</td><td> 
Cable type: For 10BASE-T and 100BASE-TX
Cable length: 100m or less</td></tr>
<tr><td>Link/Status LED</td><td>Status LED lights up when establishing the LINK with Ethernet equipment. The LINK is established by Auto Negotiation.
<table>
<tr><th>LED</th><th>Color</th><th>Conditions</th></tr>
<tr><td>LINK/ Active</td><td>Yellow</td><td>LED on when establishing the link.
LED blink when Data Transmit or Receive.</td></tr>
<tr><td>SPEED</td><td>Green</td><td>Lights off when recognizing the destination 10BASE-T
Lights up when recognizing the destination 100BASE-TX</td></tr>
</table></td></tr>
<tr><td>Maintenance function</td><td>[Printing LAN configuration information]
LAN configuration information will be printed on the second and third sheet of factory test print.
[Initializing LAN configuration information]
LAN configuration information will be initialized through Service Mode or Advanced setup. For more details, refer to the authorised SATO service personnel.</td></tr>
</table>

<table>
<tr><td>Communication configuration</td><td>The following settings can be configured via the Printer network setup.
<table>
<tr><th>Item</th><th>Setting range</th></tr>
<tr><td>IP address</td><td>0.0.0.0 ~ 255.255.255.255</td></tr>
<tr><td>Gateway address</td><td>0.0.0.0 ~ 255.255.255.255</td></tr>
<tr><td>Netmask</td><td>0.0.0.0 ~ 255.255.255.255</td></tr>
<tr><td>IP address setup</td><td>Static, DHCP, RARP</td></tr>
<tr><td>Name server</td><td>0.0.0.0 ~ 255.255.255.255</td></tr>
</table>
2-port connection by Port 1024 and Port 1025 or 1 port connection by Port 9100.</td></tr>
</table>

7.3 LOCAL AREA NETWORK (LAN) ETHERNET AND WIRELESS LAN (cont'd)

7.3.2 Basic Specifications of Wireless LAN

The Wireless LAN interface is available with Type 3 board.

Wi-Fi	Standard 1) IEEE802.11b/g Frequency 2) 2.4GHz Transfer rate 3) Max. 11Mbps (IEEE802.11b) Max. 54Mbps (IEEE802.11g) W-LAN communication mode 4) Infrastructure mode Ad hoc mode Channel 5) 1 to 11 ch SSID 6) Alphanumeric up to 32 characters (except for ',' (comma), "" (double quotation) and / (backslash) Authentication method 7) None IEEE802.11 (authenticaion with access points) WEP (Open System / Shared Key) IEEE802.11 (authentication between W-LAN devices) WPA (PSK (Pre-Shared Key) or IEEE 802.1x authentication) WPA2 (PSK (Pre-Shared Key) or IEEE 802.1x authentication) IEEE 802.1x (EAP-LEAP, EAP-TLS, EAP-PEAP, or EAP-TTLS) (Herein after called "EAP") Encryption method 8) None WEP key TKIP AES

7.3 LOCAL AREA NETWORK (LAN) ETHERNET AND WIRELESS LAN (cont'd)

Wi-Fi

9) Security (Combination of authentication and encryption)

Ad hoc mode

Security	IEEE 802.11	IEEE 802.11i	Encryption
None	None	None	None
WEP	Open System	None	WEP key
	Shared Key		

Infrastructure mode

Security	IEEE 802.11	IEEE 802.11i	Encryption
None	None	None	None
WEP	Open System	None	WEP key
	Shared Key	None	
WPA	None	PSK	TKIP
		EAP	
WPA2	None	PSK	AES
		EAP	
Dynamic WEP	None	EAP	WEP key

[Notes]
Consult your system administrator about the interference from radio waves when using the printer near medical equipment and facilities.

7.3.3 Software Specifications

ProtocolTCP/IP
Network layerARP, RARP, IP, ICMP
Session layerTCP, UDP
Application layerFTP, DHCP, HTTP

Notes

- Send the print data by dedicated socket protocol.
- Use socket connection to get the printer status.
- From applications TCP client sockets can be created.

7.3.4 TCP/IP Specifications

In socket connection, the printing operation and the status are monitored. In this case, multiple connections cannot be established at the same time.

IP address and variables can be set using the Printer setup, or in application.

7.3 LOCAL AREA NETWORK (LAN) ETHERNET AND WIRELESS LAN (cont'd)

7.3.5 Setting/Displayed Items

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

TCP/IP related settings

Variable identifier	Default (Factory setting)	Setting range
IP address	0.0.0.0 (Externally obtained)	0.0.0.0 ~ 255.255.255.255
Subnet mask	0.0.0.0 (Derived from IP address)	0.0.0.0 ~ 255.255.255.255
Gateway address	0.0.0.0 (Invalid)	0.0.0.0 ~ 255.255.255.255
RARP protocol	DISABLED	ENABLE/DISABLE
DHCP protocol	ENABLE	ENABLE/DISABLE
ROOT password	NULL (No password)	Up to 16 alphanumeric characters
Name server	0.0.0.0 (Default)	0.0.0.0 ~ 255.255.255.255

7.3.6 Wireless LAN Setting

Item		Default	Setting range
WLAN Mode		2	1: Infrastructure (use SSID) 2: Ad hoc
SSID		"SATO"	1 ~ 32 characters (*4)
Channel		11	1 ~ 11 (*2)
WLAN Authentication		0	0: Open System 1: Shared Key
Security Mode		0	0: Not used 1: WEP 2: WPA 3: WPA2 4: DynamicWEP
Configure WEP Key (Set this item when encrypting with WEP key)	WEP Key1	""(NULL)	40 bit WEP: (*1) 5 characters 10-digit HEX code 104 bit WEP: 13 characters 26-digit HEX code
	WEP Key2	""(NULL)	
	WEP Key3	""(NULL)	
	WEP Key4	""(NULL)	
	WEP Key Index	1	1 ~ 4
Configure WPA (Set this item when using WPA/WPA2)	WPA Authentication	0	0: PSK 1: EAP(IEEE802.1X)
	WPA PSK Mode	0	0: TKIP 1: AES
	WPA PSK	""(NULL)	8 ~ 63 characters (*4)

7.3 LOCAL AREA NETWORK (LAN) ETHERNET AND WIRELESS LAN (cont'd)

7.3.6 Wireless LAN Setting (Cont'd)

Item		Default	Setting range
Configure 802.1x (Set this item when using 802.1x authentication)	EAPMode	0	0: EAP not used 1: Reserved 2: EAP-TLS 3: EAP-PEAP 4: Reserved 5: EAP-LEAP 6: EAP-TTLS
	EAP User Name	“”(NULL)	1 ~ 63 characters (*4)
	EAP Password	“”(NULL)	0 ~ 32 characters (*4)
	EAP Cert Key Password	“”(NULL)	0 ~ 32 characters (*4)

*1 Acceptable HEX or ASCII code to input. Case-sensitive for ASCII code, on the other hand, HEX code is not.
*2 Regarding Channel, the setting range varies depending on the destination of the printer.
*3 AironetExtension (Setting to send KEY continuously from AP) is not supported.
*4 Alphanumeric and symbols excluding [,] (comma) and [“] (double quotation).

[Certification]

Certificate is required for 802.1x authentication. There are two types of certificates. These include Client Certificate and Root Certificate. Each one of them is downloadable from its own website only. Time-out at the time of import is 10 seconds.

[Corresponding certification format]

- •CA root certificate: X.509 (cer, DER, PEM)
- •Client certificate: PKCS#12 (pfx, p12), X.509 (cer, DER, PEM)
- •Secret key: Key

* When the client certificate file is in PKCS#12 format, leave [secret key file name] blank.

7.3 LOCAL AREA NETWORK (LAN) ETHERNET AND WIRELESS LAN (cont'd)

[Connectable combination]

Security	IEEE 802.11	IEEE 802.11i	Encryption
None	None	None	None
WEP	Open System	None	WEP key
	Shared Key	None	
WPA	None	PSK	TKIP
		EAP-LEAP	
		EAP-TLS	
		EAP-PEAP	
		EAP-TTLS	*1
WPA2	None	PSK	S
		EAP-LEAP	
		EAP-TLS	
		EAP-PEAP	
		EAP-TTLS	*2
Dynamic WEP	Open System	EAP-LEAP	EP key
		EAP-TLS	
		EAP-PEAP	
		EAP-TTLS	
	Shared Key	EAP-LEAP	
		EAP-TLS	
		EAP-PEAP	
		EAP-TTLS	

*1 The following items should be specified for WPA-IEEE802.1x (TKIP).
Security Mode: WPA
WPA Authentication: EAP(IEEE802.1x)
WPA PSK Mode: TKIP
EAP Mode: EAP-LEAP / EAP-TLS / EAP-PEAP / EAP-TTLS
EAP User Name: (user name)
EAP Password: (password)

*2 The following items should be specified for WPA2-IEEE802.1x (AES).
Security Mode: WPA2
WPA Authentication: EAP(IEEE802.1x)
WPA PSK Mode: AES
EAP Mode: EAP-LEAP / EAP-TLS / EAP-PEAP / EAP-TTLS
EAP User Name: (user name)
EAP Password: (password)

For WPA-802.1x authentication, it is not necessary to set [WPA-PSK Setting].
Pre-Shared Key setting of [WPA-PSK Setting] must be configured when WPA mode is set to "PSK". Match "Data encryption: AES / TKIP" of [WPA Setting] with data encryption setting of access point. You cannot establish the connection to the access point if data encryption setting is set to "AUTO"(TKIP / AES Auto-detect).

7.3 LOCAL AREA NETWORK (LAN) ETHERNET AND WIRELESS LAN (cont'd)

[Restrictions]

1) Not supporting Atheros SuperG and XR.
2) Extended Aironet is not supported.
3) When AdHoc is in use, baud rate will be based on IEEE802.11b.
4) When AES is in use, the connection to AP by Broadcom will be unstable.
   This is because Broadcom is equipped with AES based on 802.11Draft.
5) There is no guarantee of proper operation for DSA authentication of EAP-TLS.

Notes

For Both On-board LAN and Wireless LAN Interface

- To open/close Print data port (Port 1024), Status port (Port1025) or Sending/Receiving port (Port 9100), make sure to close and open the port at intervals of approximately 150ms to 200ms. If you don't have enough time from closing to opening the port, it may result in double connection.
- If the host requests the connection to the port already connected (Port 1024, Port 1025 or Port 9100), the printer accepts the request (establishing double connection); however, the printer disconnects the second connection immediately.

For Wireless LAN Interface

1) Communication range and transmission rates between the host computer and the printer (Wireless LAN board) may change depending on the operating environment and conditions of radio waves.
2) In Infrastructure mode, the best operating environment and conditions of the radio field strength is Medium level (50 to 75%) or higher.
3) Communication data may be lost under the inappropriate circumstances for radio waves such as the mobile computing type of environment and actual operating conditions.
4) When multiple wireless network groups are nearby, the frequency for the channel of each group has to be 5 or higher.
   For example: When the channel of Group1 is [1], set the channel of Group2 to [6] or higher.

For On-board LAN Interface

1) Do not connect and disconnect the LAN cable while starting up the printer. Restart the printer with which you are having a communication error due to connection or disconnection of the LAN cable.

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8

APPENDIX

The following information is provided:

- 8.1 About Optional Cutter
- 8.2 Positions of sensors and options
- 8.3 Operation Mode Selection
- 8.4 Base Reference Point
- 8.5 Adjustments

8.1 ABOUT OPTIONAL CUTTER

The cutter should only be installed by SATO qualified servicing personnel.

8.1.1 To route the media when the cutter is installed

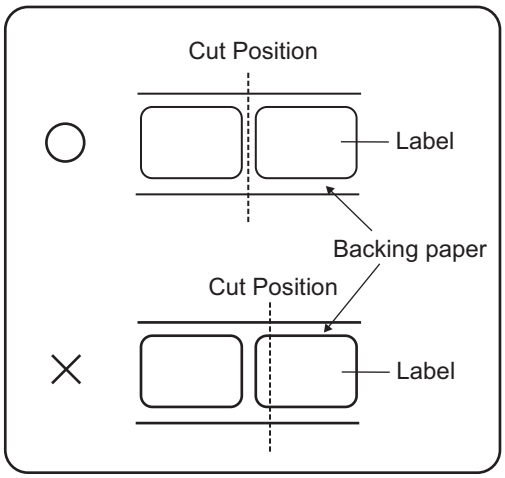
Loading of the media for cutter unit is similar to the usual procedure as explained in **Section 2.3 Loading Media**.

8.1.2 Cut position Adjustment

If the cutting position is not at the regular position as mentioned below, you can change the **Cutter adj.** (cutter adjustment) in the **ADV SETUP** (Advanced Setup) menu.

Notes when using media with optional cutter

- **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.



- **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 (see Figure 1).

  The folded perforated line +4 to +25 mm (+0.15” to +0.98”) of fan-folded paper is the cut prohibited zone (see Figure 2).

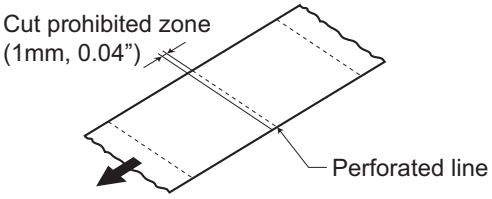


Figure 1

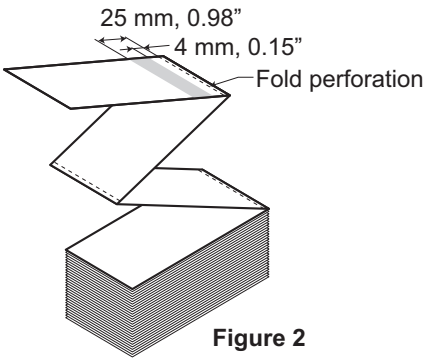
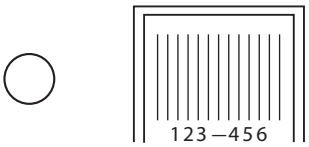


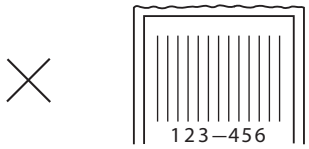
Figure 2

8.1 OPTIONAL ACCESSORIES - CUTTER (cont'd)

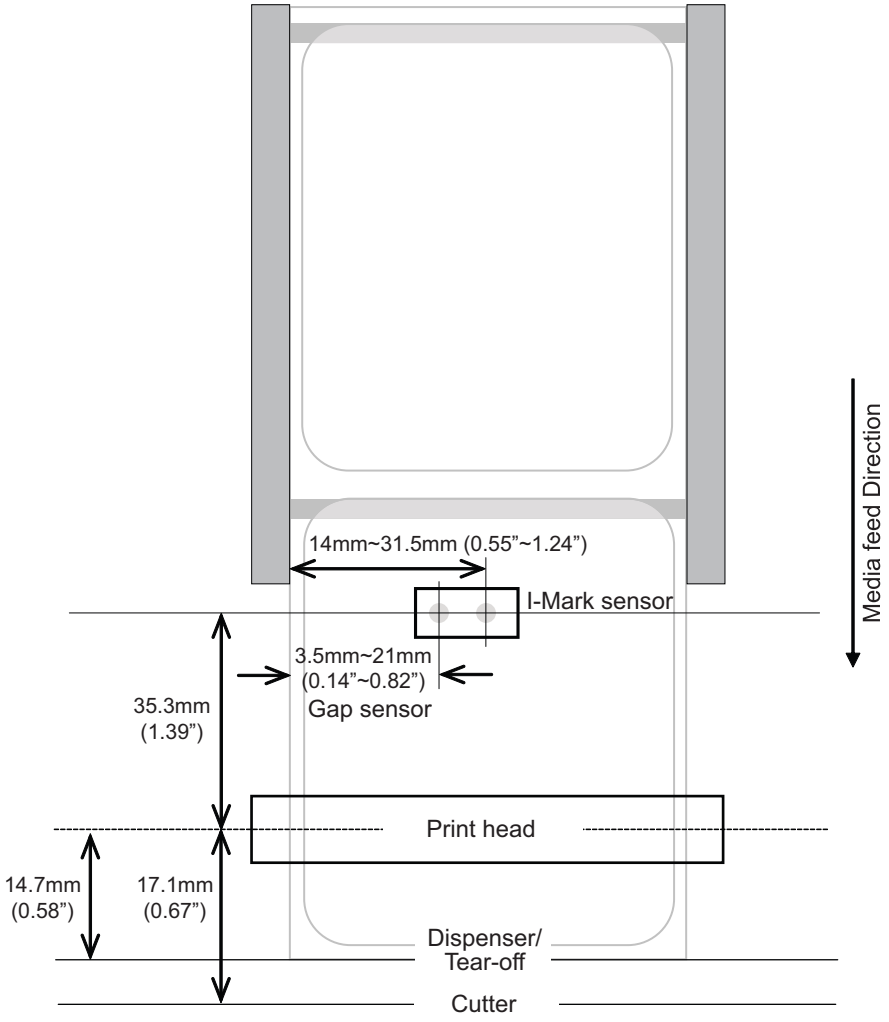
8.1.3 Cutter replacement

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 authorised SATO representative for replacement.)





8.2 POSITIONS OF SENSORS AND OPTIONS



8.3 OPERATION MODE SELECTION

There are different modes of printer operation: Continuous, Tear off, Dispensing, Cutter, Linerless* Cutter, Journal, Cutter Journal and Linerless* Cutter Journal mode. The differences are the ways in which the label and liner (paper backing) are ejected. Before printer configuration, one must determine which mode will be used. This section identifies the functional differences among the eight.

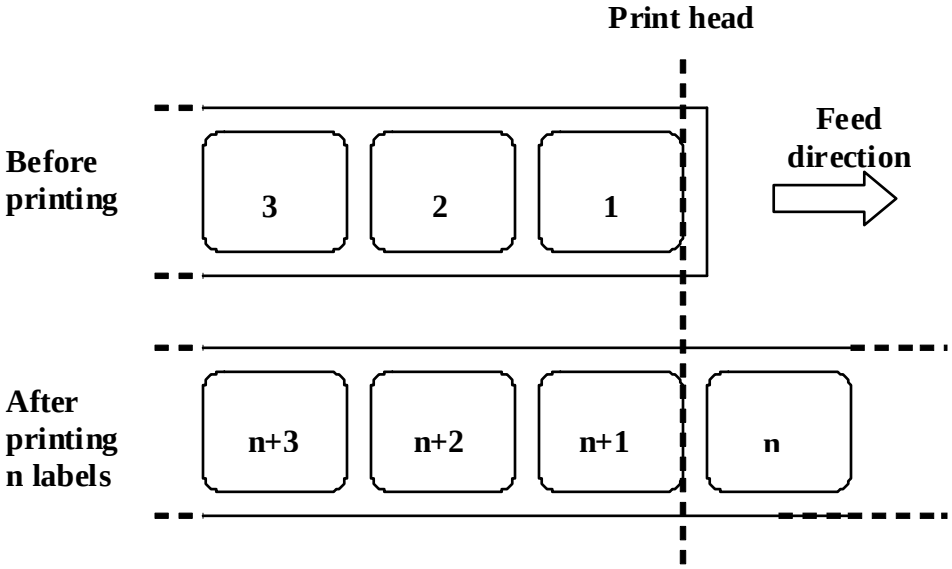
Note:

* The availability of linerless option is subject to future development. For more information, you may contact to SATO sales representatives.

8.3.1 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 label is only available for removal when one to two additional labels have been printed (quantity depends on label size). This mode of operation is specifically suited for printing bulk quantities to be applied later on.

In the figure below, n labels are printed (where n is equal to 1 or more).
Before printing, label number 1 is in the printing start position.
When all n labels are printed, label number n+1 is in the printing start position.

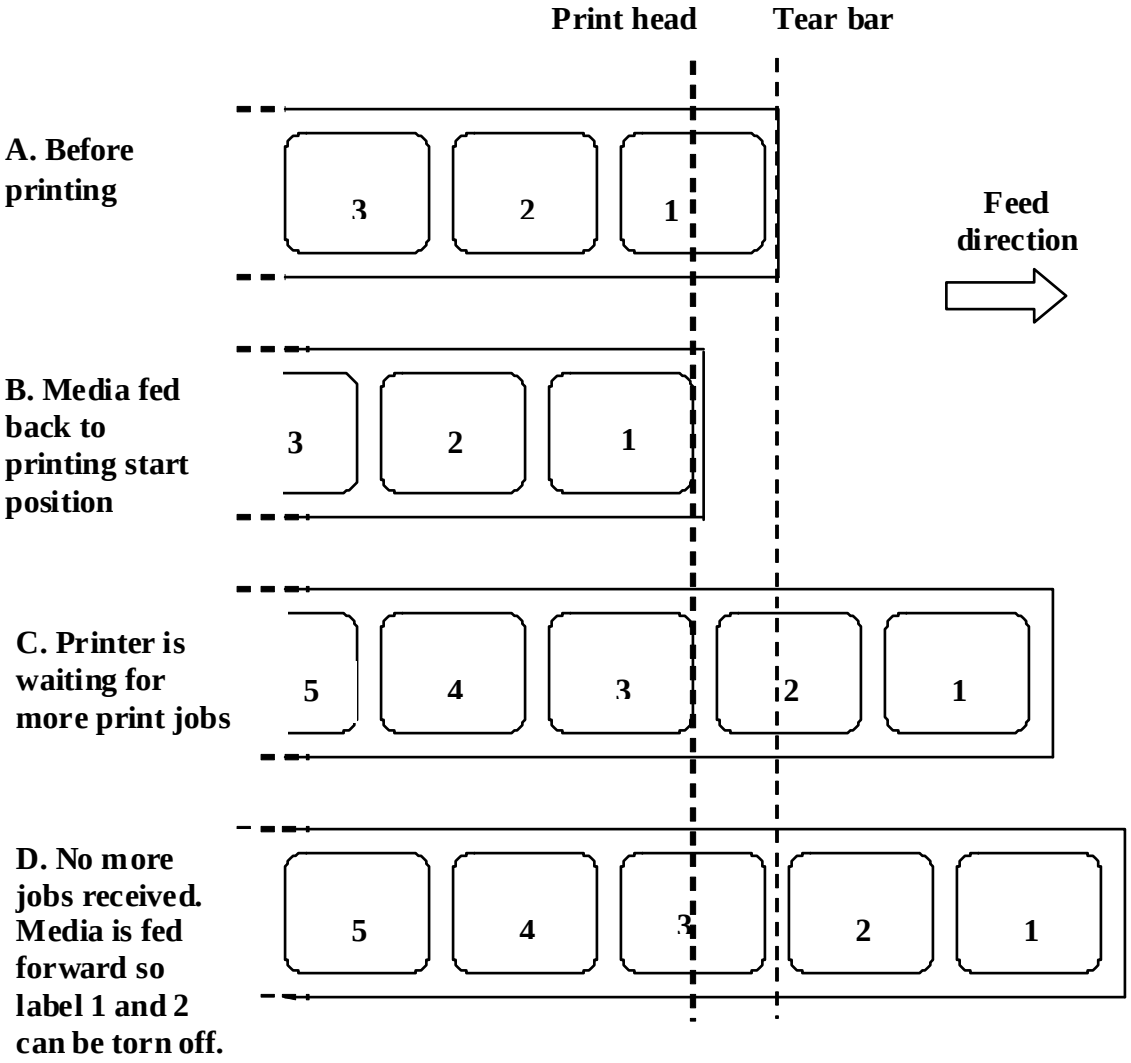


8.3 OPERATION MODE SELECTION (cont'd)

8.3.2 Tear Off Mode

In Tear Off mode, the media is fed forward to the tear bar when all labels are printed.

When printing starts (A. in the figure below), the media is in a position so that the previous label could be torn off.
Before printing label 1, the media has to be fed back so that label 1 is in the printing start position (B. in the figure below).
Label 1 and label 2 are printed. Now the printer waits 1 second (configurable) for more print jobs with label 3 in printing start position. (C. in the figure below).
Since no more print jobs were received, the media is fed forward so label 1 and label 2 can be torn off on the tear bar (D. in the figure below).

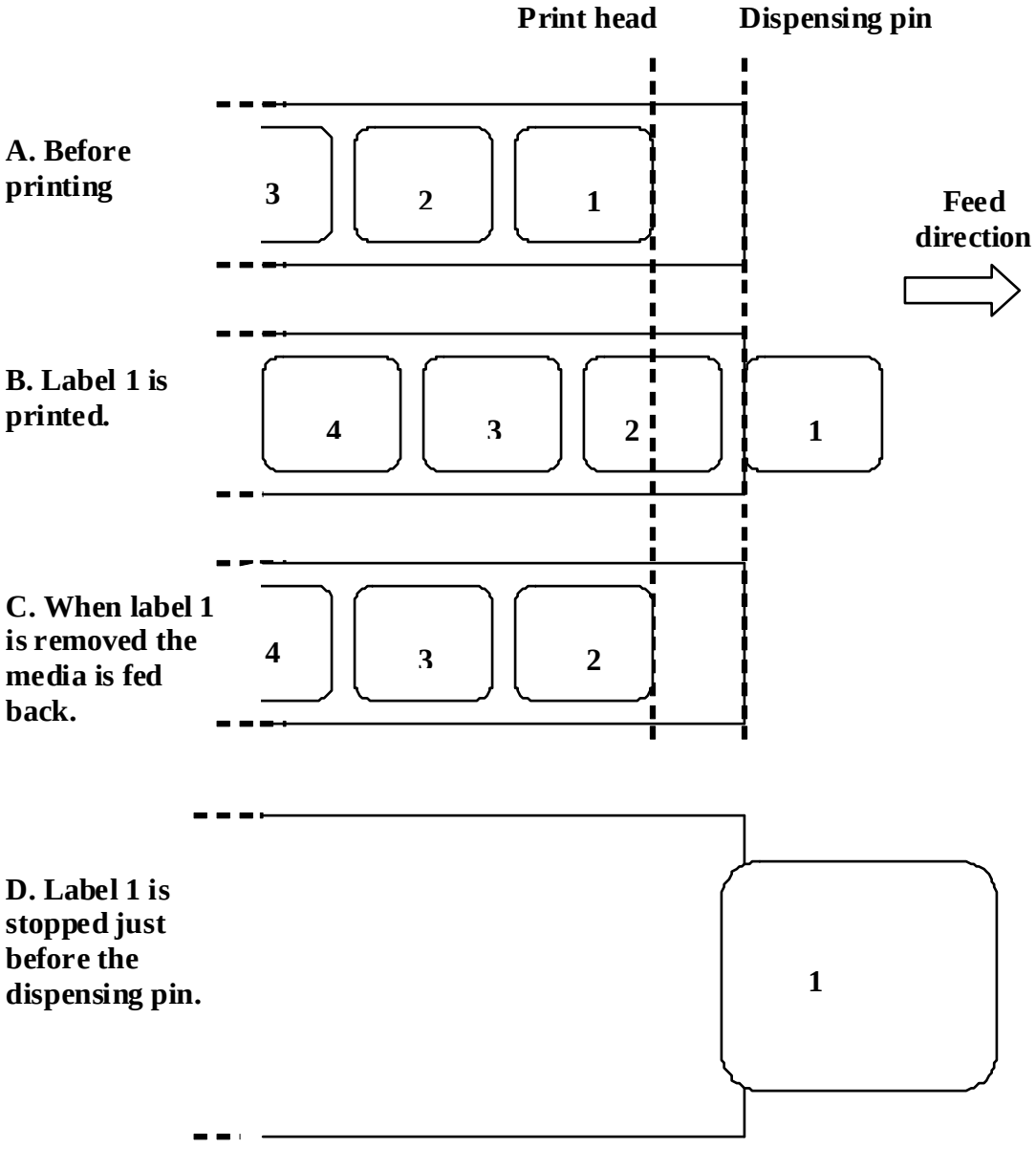


8.3 OPERATION MODE SELECTION (cont'd)

8.3.3 Dispensing Mode

This mode of operation will peel the liner (paper backing) 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 operational mode is specifically applicable to print operations where the label is to be immediately adhered.

Motion 1 (Backfeed set to After)
When printing starts (A. in the figure below), the media is in the correct position to start printing.
When label 1 is printed, the media is fed forward so the label can be removed (B. in the figure below).
When the label is removed, the media is fed back so that the next label is in the start position (C. and D. in the figure below).

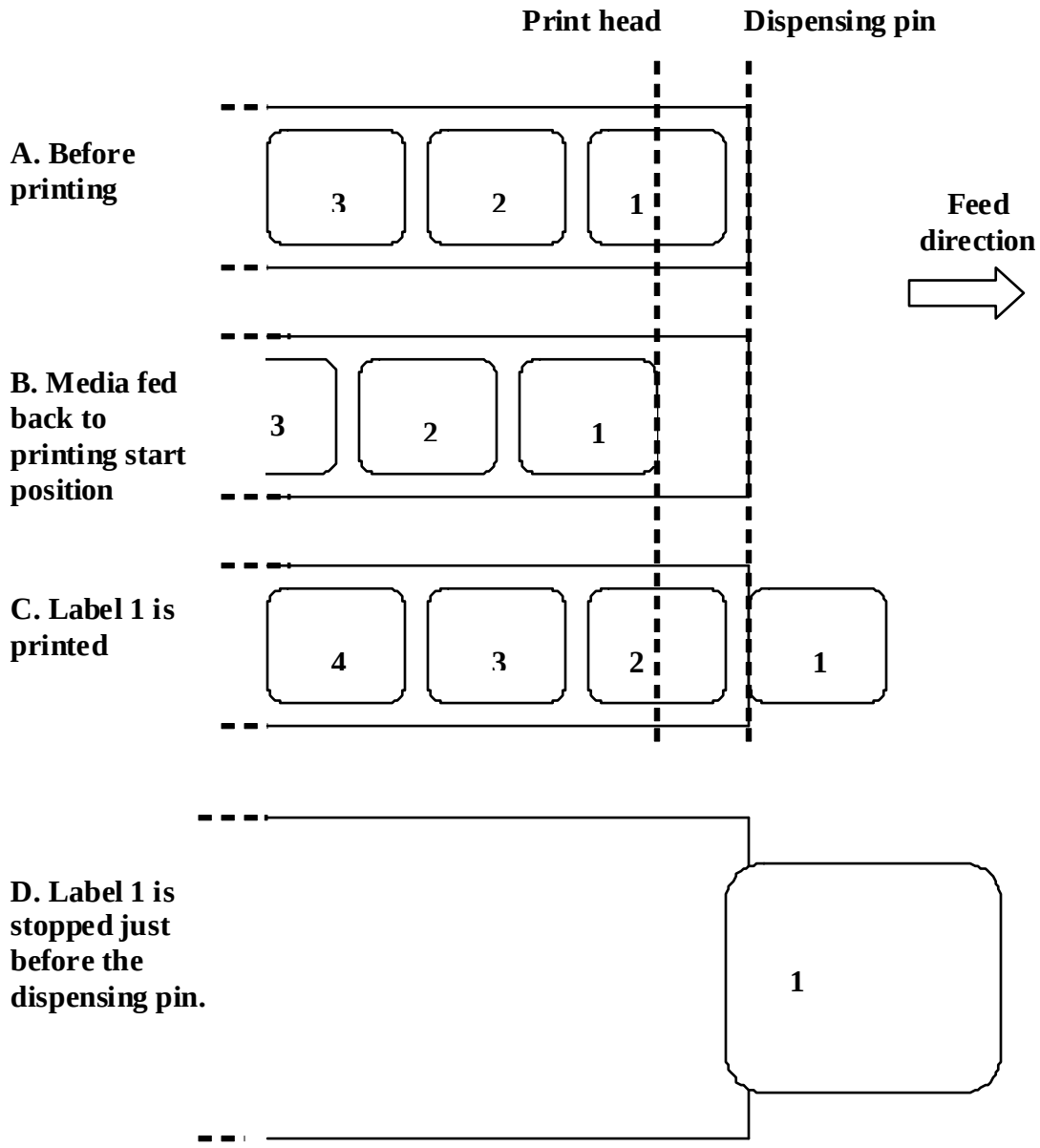


8.3 OPERATION MODE SELECTION (cont'd)

8.3.3 Dispensing Mode (cont'd)

Motion 2 (Backfeed set to Before)

When printing starts (A. in the figure below), the media is in a position so that the previous label could be removed.
Before printing label 1, the media has to be back fed so that label 1 is in the printing start position (B. in the figure below).
When label 1 is printed, the media is fed forward so it can be removed (C. and D. in the figure below).
When label 1 is removed the printer is ready to start printing label 2.

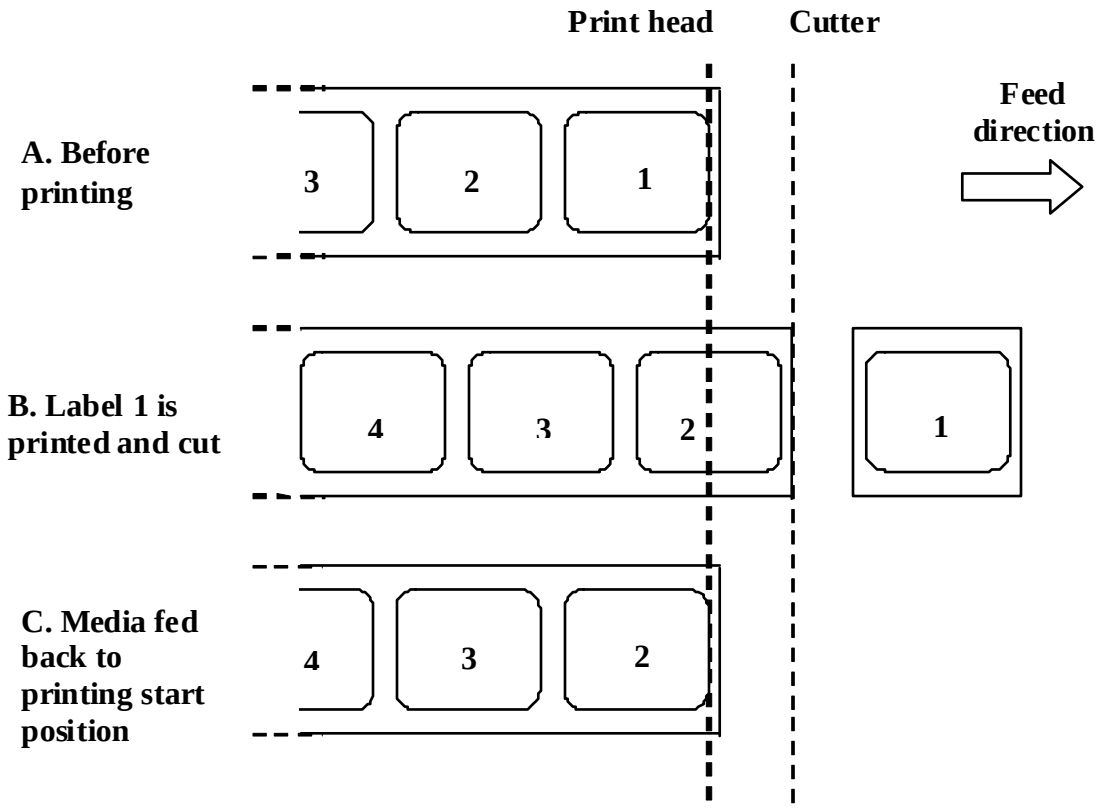


8.3 OPERATION MODE SELECTION (cont'd)

8.3.4 Cutter Mode

In Cutter mode, when a label is printed the media is fed forward and cut.

Motion 1 (Backfeed set to After)
When printing starts (A. in the figure below), the media is in the correct position to start printing.
When label 1 is printed, the media is fed forward so the label can be cut off (B. in the figure below).
When the label is removed, the media is fed back so that the next label is in the start position (C. in the figure below).

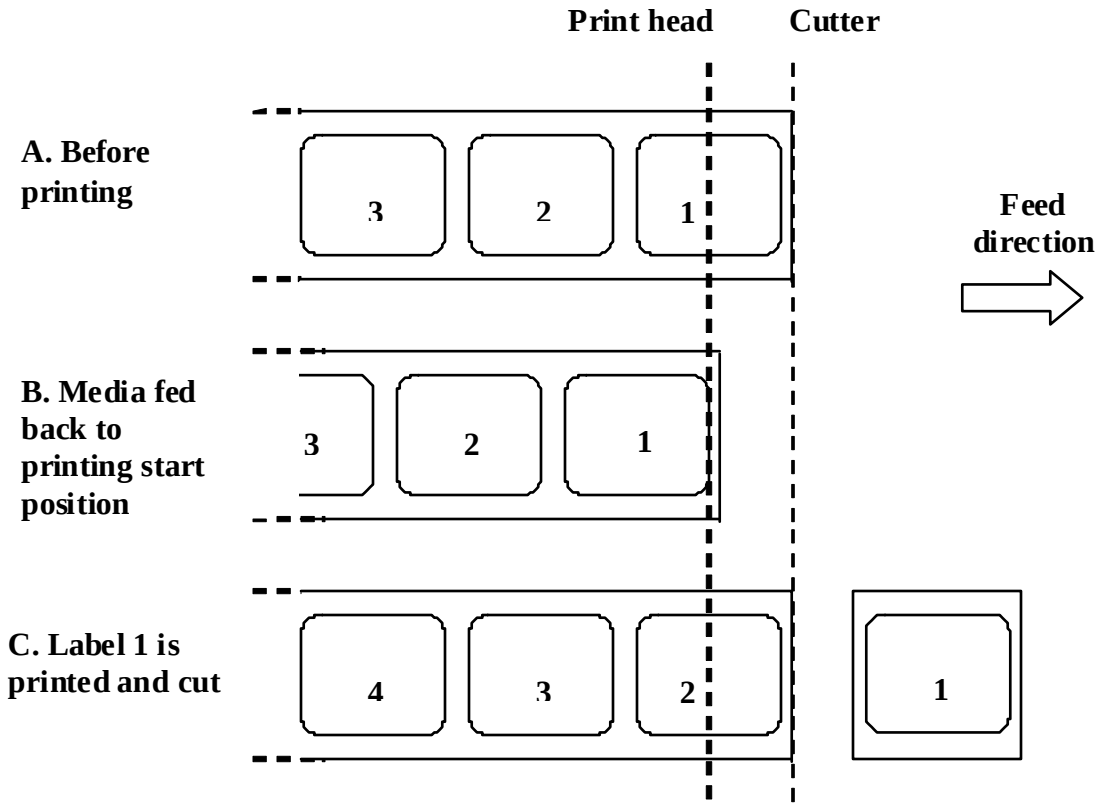


8.3 OPERATION MODE SELECTION (cont'd)

8.3.4 Cutter Mode (cont'd)

Motion 2 (Backfeed set to Before)

When printing starts (A. in the figure below), the media is in a position so that the previous label could be cut off.
Before printing label 1, the media has to be fed back so that label 1 is in the printing start position (B. in the figure below).
Label 1 is printed and the media is fed forward so label 1 can be cut off. (C. in the figure below).

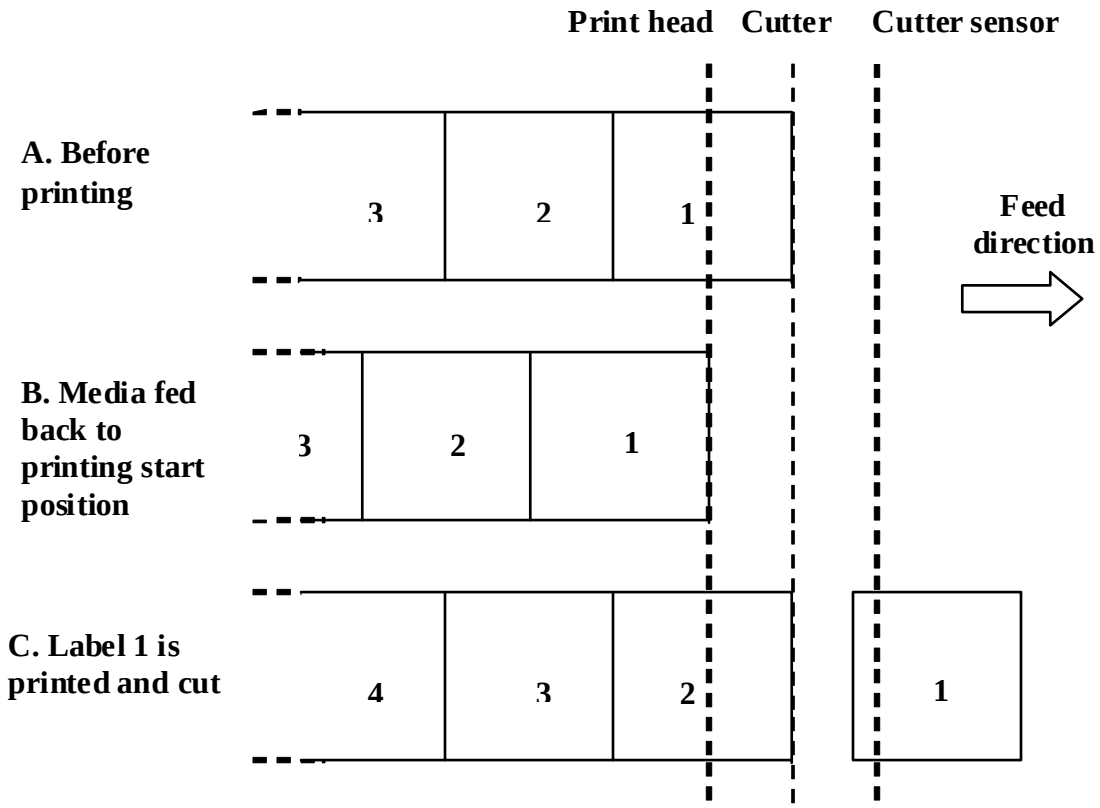


8.3 OPERATION MODE SELECTION (cont'd)

8.3.5 Linerless Cutter Mode*

The linerless cutter has an extra sensor ("Cutter sensor" in the figure below) that can detect if the label is removed or not.

When printing starts (A. in the figure below), the media is in a position so that the previous label could be cut off.
Before printing label 1, the media has to be fed back so that label 1 is in the printing start position (B. in the figure below).
Label 1 is printed and the media is fed forward so label 1 can be cut off. (C. in the figure below).
A new print job cannot be started until the previous label is removed.



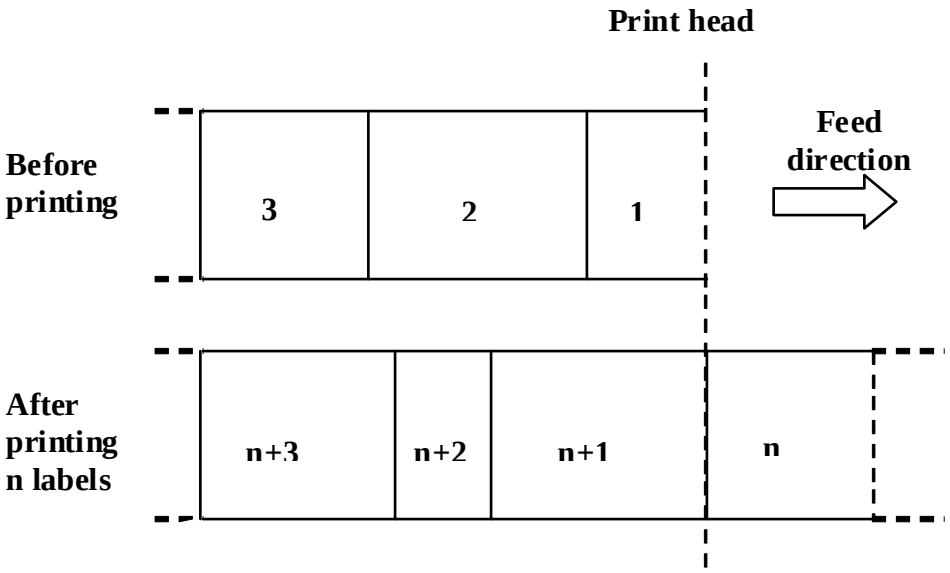
Note:
* The availability of linerless option is subject to future development. For more information, you may contact to SATO sales representatives.

8.3 OPERATION MODE SELECTION (cont'd)

8.3.6 Journal Mode

The Journal mode is identical to Continuous mode, except that neither the gap nor the I-Mark sensor is enabled. The Sensor Type is set to **None** or **Fix**, in **Continous** mode. This means that the media is fed long enough for all data to be printed regardless of any gaps or I-Marks.

In the figure below, n labels are printed (where n is equal to 1 or more).
Before printing, label number 1 is in the printing start position.
When all n labels are printed, label number n+1 is in the printing start position.



The size of the labels in the figure above differs. This is to indicate that normally in Journal mode, the size depends on the data printed.

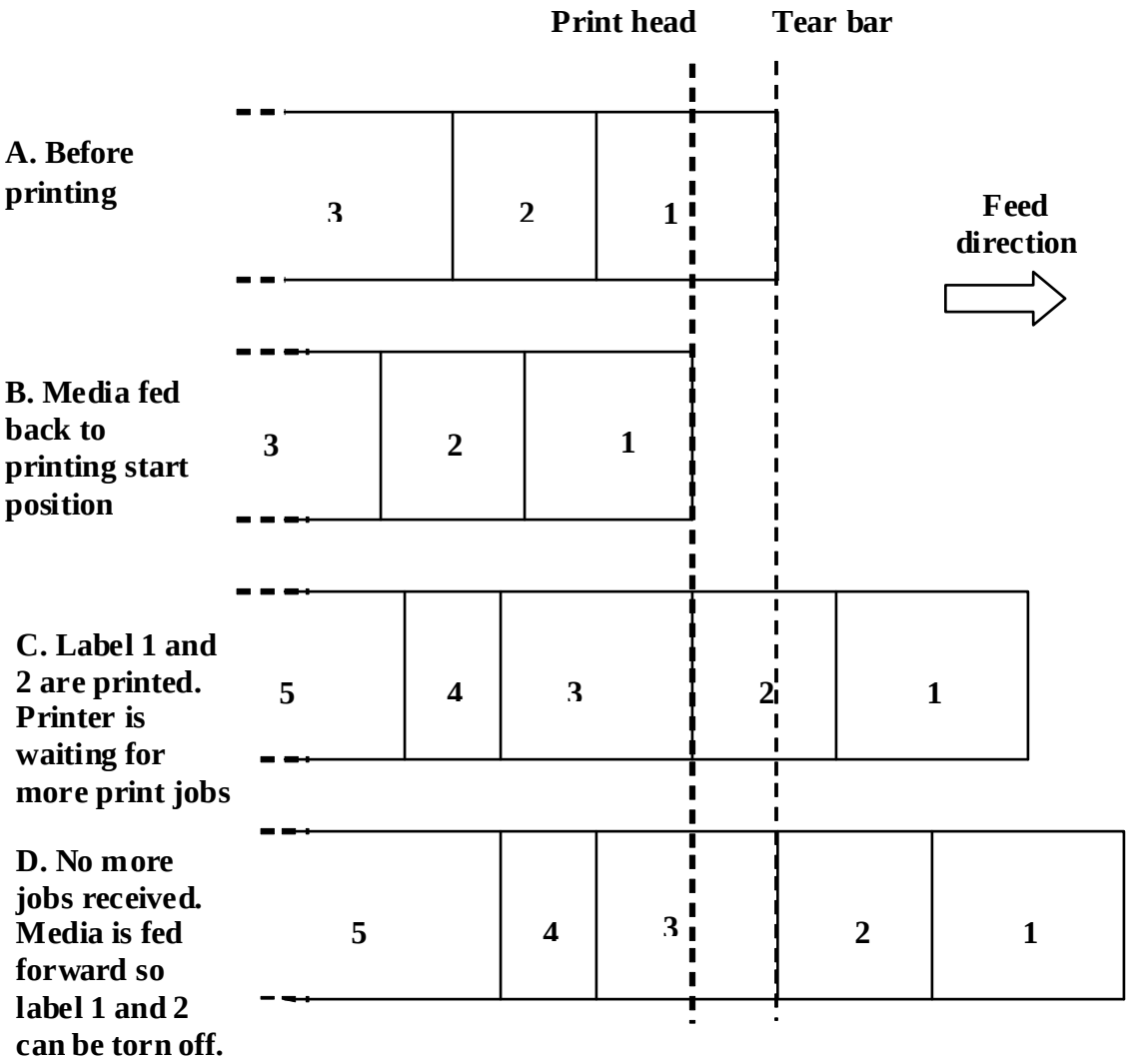
It is possible to set a fixed label length in Journal mode. In this case, the media will be fed according to this length.

8.3 OPERATION MODE SELECTION (cont'd)

8.3.7 Tear Off Journal Mode

Tear Off Journal mode is identical to Tear Off mode except that neither the gap nor the I-Mark sensor is enabled. The Sensor Type is set to **None** or **Fix**, in **Tear Off** mode.

When printing starts (A. in the figure below), the media is in a position so that the previous label(s) could be torn off.
Before printing label 1, the media has to be fed back so that label 1 is in the printing start position (B. in the figure below).
Label 1 and label 2 are printed. Now the printer waits 1 second (configurable) for more print jobs with label 3 in printing start position. (C. in the figure below).
Since no more print jobs were received, the media is fed forward so label 1 and label 2 can be torn off on the tear bar (D. in the figure below).

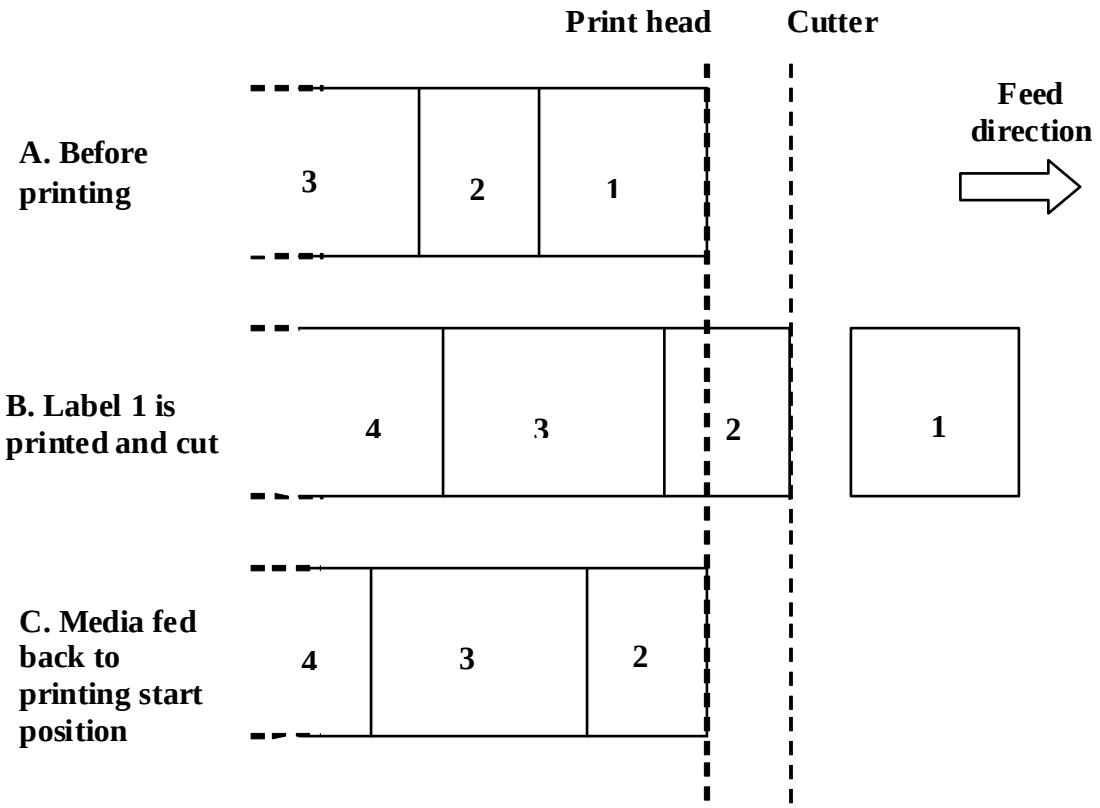


8.4 OPERATION MODE SELECTION (cont'd)

8.4.8 Cutter Journal Mode

Motion 1 (Backfeed set to After)
Cutter Journal mode, Motion 1 is identical to Cutter mode, Motion 1 except that neither the gap nor the I-Mark sensor is enabled. The Sensor Type is set to **None** or **Fix**, in **Cutter** mode.

When printing starts (A. in the figure below), the media is in the correct position to start printing.
When label 1 is printed, the media is fed forward so the label can be cut off (B. in the figure below).
When the label is removed, the media is fed back so that the next label is in the start position (C. in the figure below).

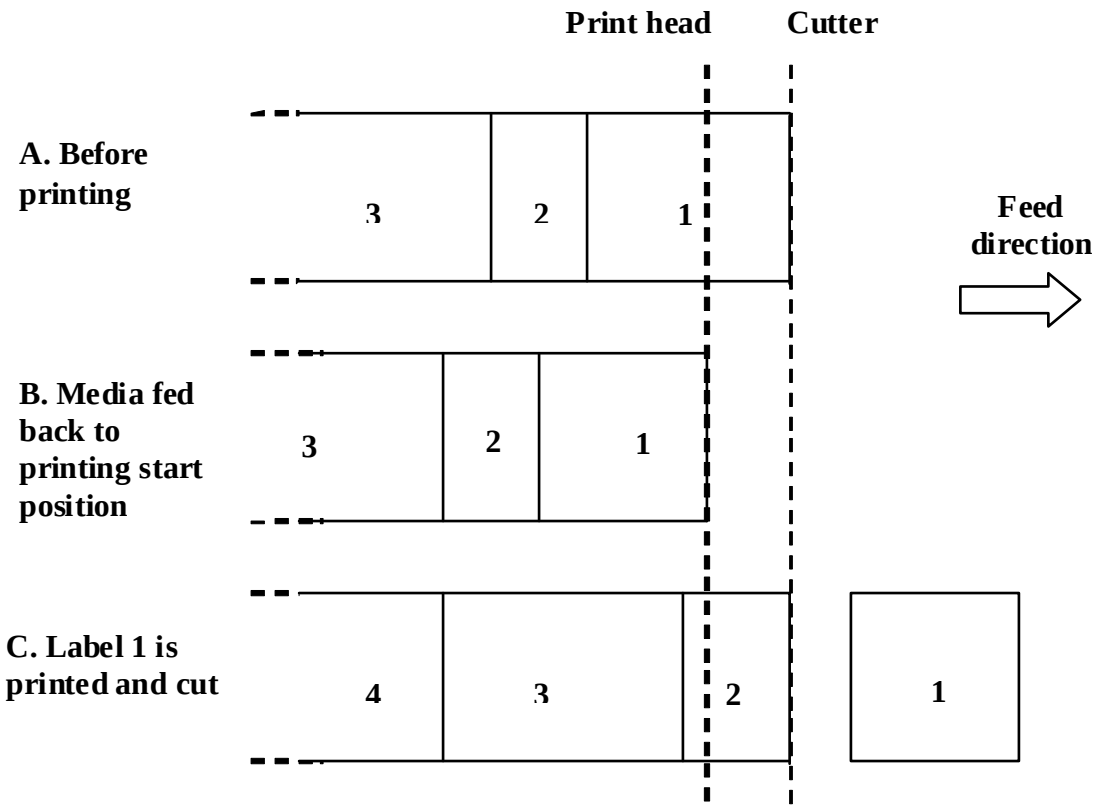


8.4 OPERATION MODE SELECTION (cont'd)

8.4.8 Cutter Journal Mode (cont'd)

Motion 2 (Backfeed set to Before)
Cutter Journal mode, Motion 2 is identical to Cutter mode, Motion 2 except that neither the gap nor the I-Mark sensor is enabled. The Sensor Type is set to **None** or **Fix**, in **Cutter** mode.

When printing starts (A. in the figure below), the media is in a position so that the previous label could be cut off.
Before printing label 1, the media has to be fed back so that label 1 is in the printing start position (B. in the figure below).
Label 1 is printed and the media is fed forward so label 1 can be cut off. (C. in the figure below).

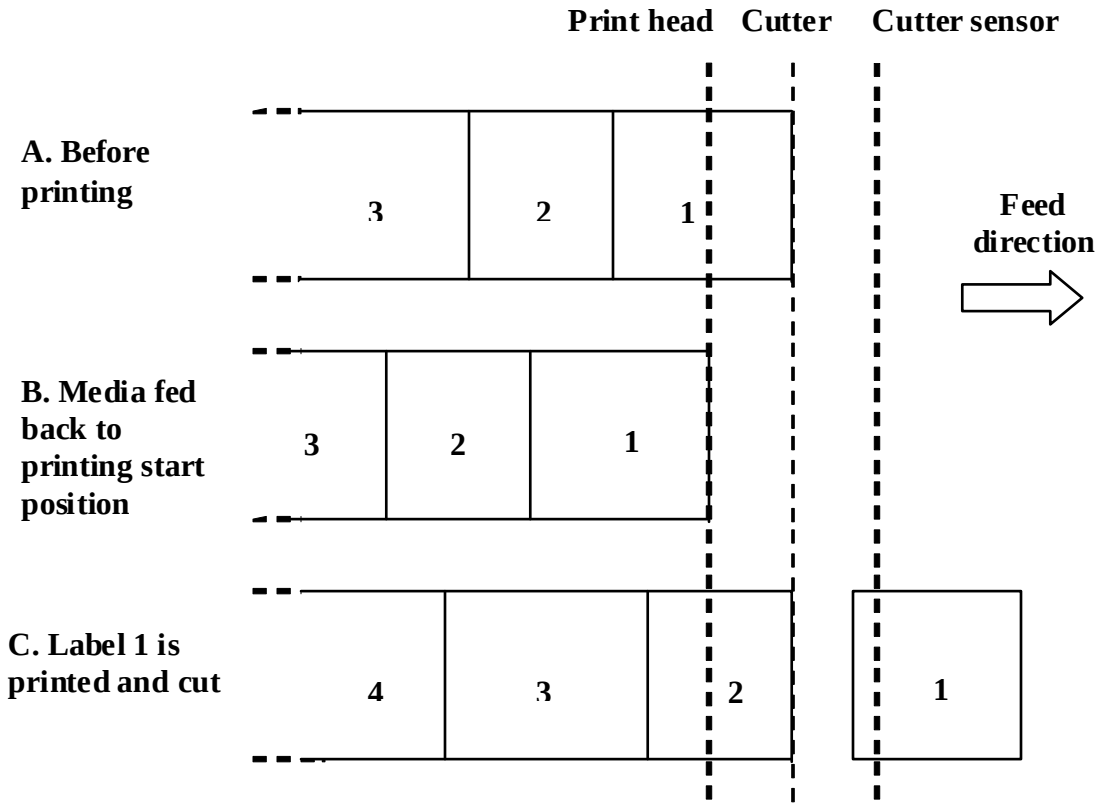


83 OPERATION MODE SELECTION (cont'd)

8.3.9 Linerless Cutter Journal Mode*

Motion 2 (Backfeed set to Before)
Linerless Cutter Journal mode, Motion 2 is identical to Cutter mode, Motion 2 except that neither the gap nor the I-Mark sensor is enabled. The Sensor Type is set to **None** or **Fix**, in **Linerless Cutter** mode.

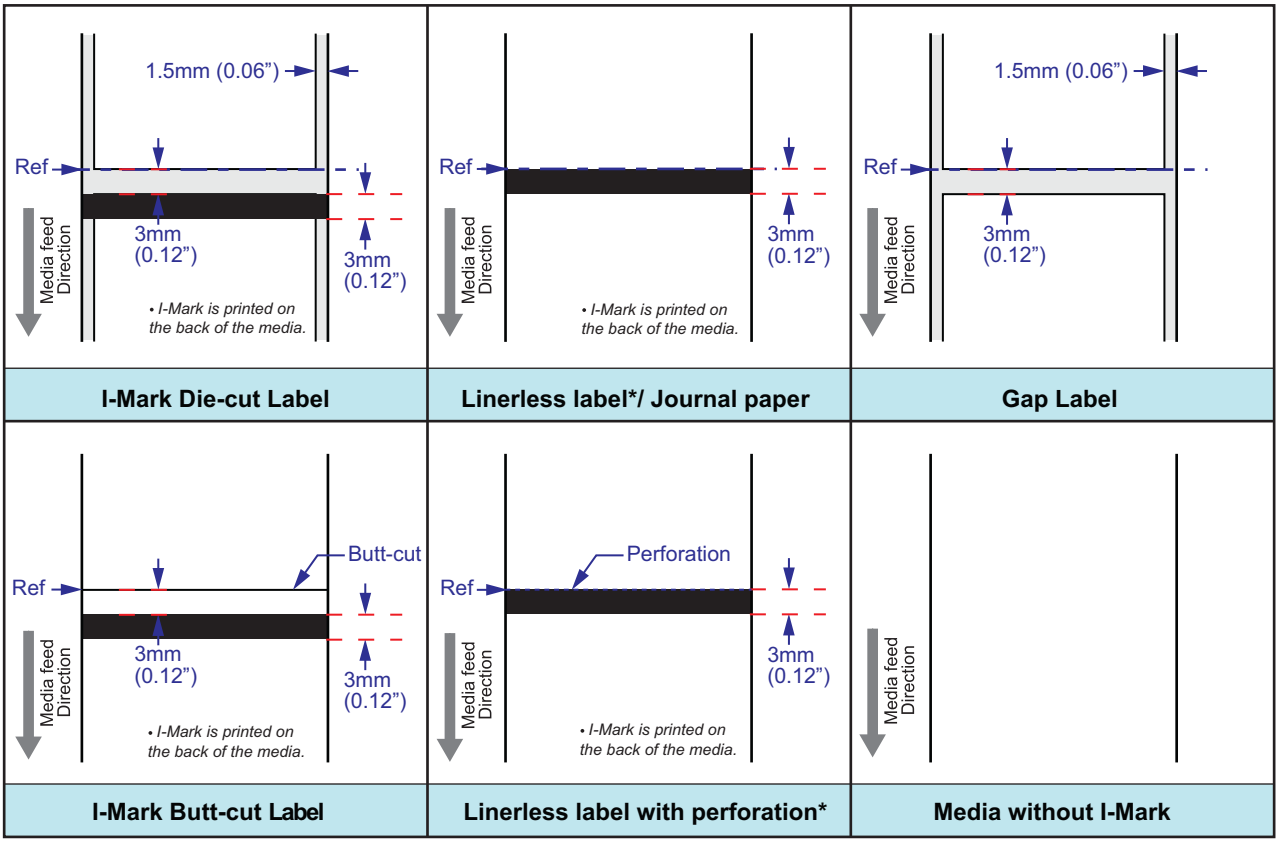
When printing starts (A. in the figure below), the media is in a position so that the previous label could be cut off.
Before printing label 1, the media has to be fed back so that label 1 is in the printing start position (B. in the figure below).
Label 1 is printed and the media is fed forward so label 1 can be cut off. (C. in the figure below).
A new print job cannot be started until the previous label is removed.



Note:
* The availability of linerless option is subject to future development. For more information, you may contact to SATO sales representatives.

8.4 BASE REFERENCE POINT

The base reference point (Ref) is the point at which one determines the start and stop positions.
The base reference position differs, depending on the print mode or the label pitch sensor to be used.



* The availability of linerless option is subject to future development. For more information, you may contact to SATO sales representatives.

8.4.1 Start of print positions

The start position is always defined by the media setting and how the start of media is detected. For gap sensing, the start of the label is detected as the start position. The length of the gap is not affecting the start of print.

For I-Mark media, the start is defined by the media specification, and it is important that the I-Mark width and distance to next label conform to the specification. If the I-Mark is positioned at the beginning of the label, a negative **pos adjust** must be input by the user in order to print at the beginning of the label.
If the printer has been pitch calibrated so that the first bitmap line barely prints on the label, a positive print offset can be used to move it farther down on the label. Moving it the opposite way is not possible in normal mode.

8.4 BASE REFERENCE POINT (cont'd)

8.4.2 Stop positions

The stop positions, or label rest position is defined by the motion mode and the configured sensor type. For I-Mark media, the media specification determines the stop position. The targeted position is to stop at the same position as for gap media with 3 mm (0.12") long gaps.

Motion mode	Stop, Gap	Stop, I-Mark
Tear off	Center	Center
Continuous	First detected part of label	First detected part of label
Dispenser/ Peel off	End of label - 4mm	Center - 4mm
Dispenser/ Tear off linerless*	Not Applicable	Center - 1mm
Cutter	Center	Center
Cutter Linerless*	Not Applicable	Center

* The availability of linerless option is subject to future development. For more information, you may contact to SATO sales representatives.

8.5 ADJUSTMENTS

8.5.1 I-mark (Pitch Offset (I)) and Gap sensor (Pitch Offset (G))

These two parameters modify the distance to the dot row. They exist to compensate for mechanical tolerances in sensor position. These settings are stored in the parameter area and are configured by using the shipping program. The accepted range here is +/- 3 mm (+/- 0.12”). It is not reset by “Reset all”.

8.5.2 Dispensing adjustment (Disp adj.)

This parameter adjusts the distance between the dot row and the tear/dispensing plate to compensate for mechanical tolerance in order to get a good value for tear operation and peel off operation. This setting is stored in the parameter area and is configured at the distribution centers when mounting the normal, dispensing option. It is found in the advanced setup (**ADV SETUP**). It is not reset by “Reset all”. This parameter affects the tear off action & peel off action in both backward and forward feed direction.

8.5.3 Cutter adjustment (Cutter adj.)

This parameter adjusts the distance between the dot row and the cutter position to compensate for mechanical tolerance in order to get a good value for cutter and linerless* cutter operation. This setting is stored in the parameter area and is configured at the distribution centers when mounting the cutter or linerless* cutter option. It is found in the advanced setup (**ADV SETUP**) when a cutter is detected. It is not reset by “Reset all”. This parameter affects the feed length in both backward and forward feed direction.

* The availability of linerless option is subject to future development. For more information, you may contact to SATO sales representatives.

8.5.4 Position adjustment (Pos Adjust)

The position adjustment parameter adjust the end feed length in forward direction. It DOES NOT adjust the backfeed length in any motion mode. This intentionally affects the stop position, and intentionally and consequently where the image is printed on the label. There is only one use-case for **Pos Adjust** and it is for I-Mark media, where the I-Mark is positioned off from the media specification. This setting is a user setting and it is reset by “Reset all”.

8.5.5 Pitch adjustment (Pitch)

The pitch parameter is a parameter to tweak the print position. It accepts only positive values. This is a user-setting and it is reset by “Reset all”.

When print offset is larger than 0, it will move the printed image farther down the label. This is done by feeding without printing. For example, if print offset is 16 dots, it would feed 16 dots before strobing; if an oscilloscope would measure the motor step and head strobe signals, it would show exactly as that: 16 stepping cycles are performed and then the strobing starts. A positive print offset can be used to adjust the top of form.

8.5.6 Offset adjustment (Offset)

The Offset parameter lets the user input an offset value for the default feed distances to the rest position. It can be adjusted +/-3 mm (+/- 0.12”) and it adjusts the length in backfeed and forward feed. This setting superpositions the **Disp adj./ Cutter adj.** setting. It is reset by “Reset all”. This parameter can be useful if the customer has some odd label material that stops at the wrong position, or if the customer builds a special tear off plate.

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