SATO
DCS & Labeling Worldwide

HT200e
Direct Thermal Printer

OPERATOR MANUAL

SATO America, Inc.
10350A Nations Ford Road
Charlotte, NC 28273

Main Phone: (704) 644-1650
Technical Support Hotline: (704) 644-1660
Technical Support Fax: (704) 644-1661
E-Mail: satosales@satoamerica.com
www.satoamerica.com

TABLE OF CONTENTS

OPERATION

TROUBLESHOOTING

MAINTENANCE

1

INTRODUCTION

- **About This Manual**
- **General Description**
- **Primary Components**
- **Control Features**

ABOUT THIS MANUAL

This manual is laid out consistent with the product discussed and provides all of the information required for general printer installation, configuration, troubleshooting, and maintenance. For specialized programming, refer to the Programming Manual provided with the product.

Step-by-step maintenance instructions are provided with typical problems and solutions. Become familiar with each section before installing and maintaining the printer.

This manual also incorporates the use of special information boxes. Examples of these boxes and the type of information provided in each, are below.

> WARNING: PROVIDES INFORMATION THAT, IF UNHEEDED, MAY RESULT IN PRESONAL INJURY.

> **CAUTION:** PROVIDES INFORMATION THAT, IF UNHEEDED, MAY RESULT IN EQUIPMENT DAMAGE.

> NOTE: Provides helpful hints to assist in performing the tasks at hand.

> LCD DISPLAY: Provides the specific display that should be visible on the LCD at that point.

A comprehensive Table Of Contents provided at the front of this manual facilitates rapid movement within. The contents identify the different Units, Chapters, and Sections. Each references the page number of their commencement.

The pages of this manual have embedded headers and footers to assist the user in identifying his or her exact position within the manual. The header provides the section number followed by its name. The footer identifies the product on the left, the manual's part number in the center, and the page number to the right side of the page.

Page enumeration is two-part with each separated by a hyphen. The first character set references the Unit and the second identifies the page number. Page numbers begin with the numeral (1) one at the commencement of a new unit and ascends sequentially.

GENERAL DESCRIPTION

The HT200e is a small, compact printer designed specifically for point-of-usage labeling applications. It can be used as a stand alone printer with predefined formats or connected to a PC using an RS232C communications for variable labeling applications.
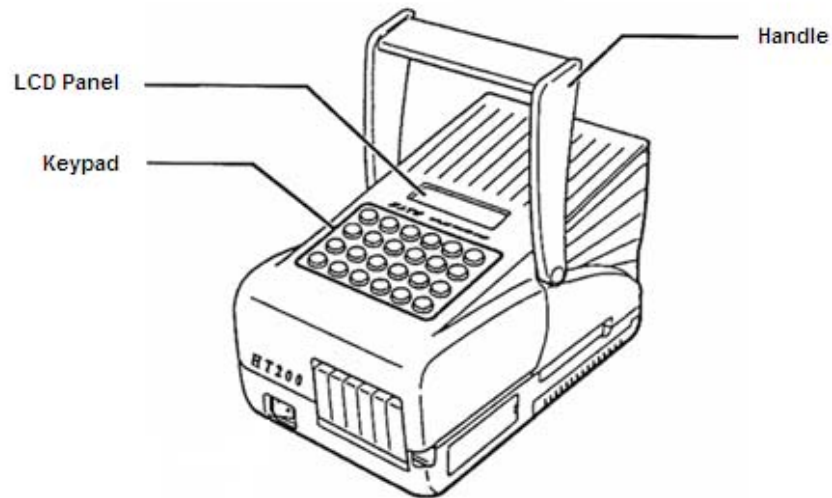
Figure 1-1a, Primary Components
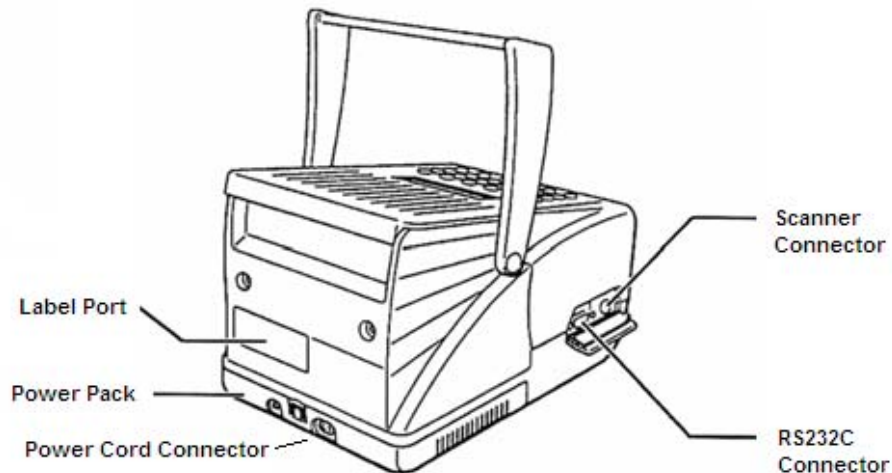
Figure 1-1b, Primary Features & Components
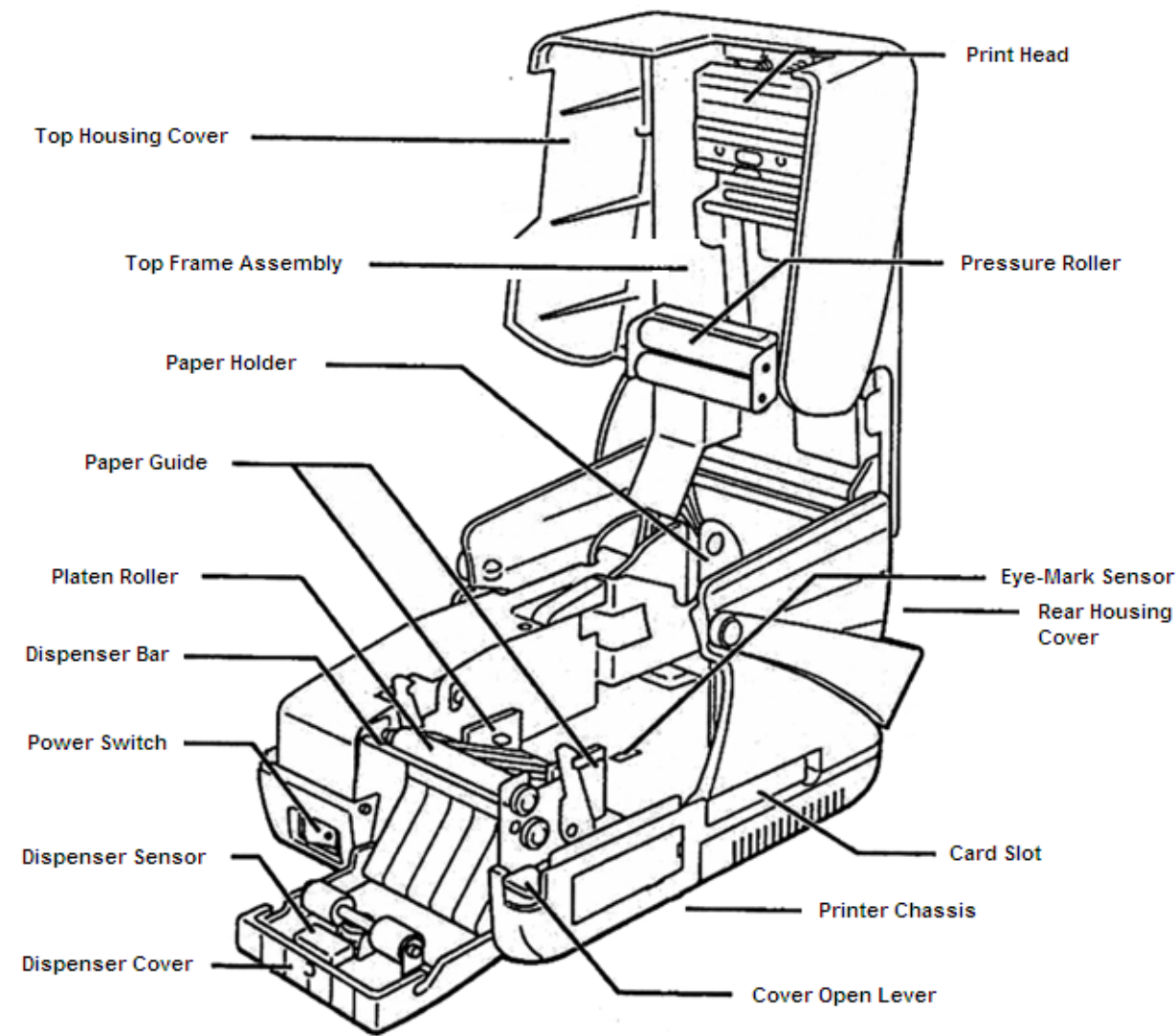
Figure 1-1b, Primary Components

CONNECTION PORTS	
TYPE	**FUNCTION**
Power	Electrical cord provided with the product. Permits source electrical supply to the printer for operation.
Serial Port	Permits an RS232C cable to be connected for host computer interface. Is used for remote configuration and operation.
Scanner Port	Allows a barcode scanner to be connected and used in conjunction with the printer.
Test Terminal	Permits a SATO Test Module and/or multimeter to be connected to troubleshoot electrical circuitry and to measure electrical values when adjusting potentiometers.

CONTROL FEATURES

KEYPAD BUTTONS		
KEY NAME	**FULL NAME**	**FUNCTION**
0 TO 9	Numeric Keys	For entry of numerals, alphabets, and symbols. Keys [1] and [.] are used for input of symbols.
	Cursor Keys	For scrolling through screen options and moving the cursor.
FNC1	Function1	Sets usage of British Pound (GMP) and unit volume. During input of print format number, displays menu for managing table data management. In the print density menu, allows user to change black and red density.
FNC2	Function2	Sets discount rate, exchange rate, and consumption tax. In the print format input menu, displays name for label and format.
SET	Set	Switches between input of numeric and alphabetical characters.
FEED	Paper Feed	Feeds media forward one label at a time.
FMT	Format	Allows selection of label format.
RCL	Recall	Calls up the preset menu for management of presets. During input of alphabetical code data, calls up the code-entry menu for inserting special symbols. During input of a table item number, allows user to preview the item's contents to check for accuracy.
DATE	Date	Displays calendar information. Allows adjustment of the calendar when pressed during Power On.
S/S	Start/Stop	Allows user to start and stop printing.
PGUP	Page Up	Returns user to the previous screen.
SHIFT	Shift	Switches between upper and lower case input. Selects the other functions of a dual-function key.
DEL	Delete	Deletes data entered one character at a time.
AC	All Clear	Clears all input data on the screen.
ENTR	Enter	Confirms current action and proceeds to the next step.

2

TECHNICAL DATA

- **Physical Characteristics**
- **Power**
- **Processing**
- **Enviromental**
- **Print**
- **Media**
- **Sensing**
- **Interface Modules**
- **Processing**
- **Character Font Capabilities**
- **Character Control**
- **Symbologies**
- **Other Features**
- **Accessories**
- **Regulatory Approvals**

TECHNICAL DATA

All technical data deemed pertinent has been tabulated below for quick reference. Find the relative section header and then locate the specific type of technical data in the left column.

PHYSICAL CHARACTERISTICS	
Width	5.2 Inches (132 mm)
Height	5.94 Inches (151 mm)
Depth	9.06 Inches (230 mm)
Weight	5.5 Pounds (2.5 Kg)

POWER	
Adapter Voltage	Autoswitching 100-120/200-240 VAC, 50-60 Hz
Battery Supply	NiMH, 8.4VDC 2.4 AH

PROCESSING	
CPU	32 Bit RISC
FLash ROM	512K Bytes
SRAM	2 Mega-Bytes

ENVIRONMENTAL	
Operating Temperature	41° to 104°Fahrenheit (5° to 40°C)
Storage Temperature	-4° to 104°Fahrenheit (-5° to 45°C)
Storage Humidity	Maximum 90% RH, Non-Condensing
Operating Humidity	15 to 80% RH, Non-Condensing

PRINT	
Type	Direct Thermal Only
Speed	2.4 Inches Per Second (60 mm/s) Battery Operated Up to 3 Inches Per Second (80 mm/s) AC Adapter
Resolution	203 Dots Per Inch (8 d/mm)
Print Module (Dot Size)	0.0049 Inches (0.125 mm)
Maximum Print Width	1.89 Inches (48 mm)
Maximum Print Length	3.78 Inches (96 mm)

MEDIA	
Type	Die-Cut & Fan-Fold Labels, Tags (Face Up Stack), Continuous
Minimum Width	1.1 Inches (28 mm)
Minimum Length	0.63 Inches (16 mm)
Maximum Width	2.0 Inches (51 mm)
Maximum Length	4.0 Inches (103 mm)
Maximum Caliper	0.007 Inches (0.18 mm)
Maximum Roll Diameter	2.95 Inches (75 mm) Wound Face-In
Minimum Core Diameter	1.0 Inches (25.4 mm)

SENSING	
Reflective	Eye-Mark
Continuous Form	Sensor not used.

INTERFACE MODULES	
Serial Port	RS232C, 4800 to 19.2K BPS Hardware Ready/Busy Flow Control Sftware X-On/X-Off Flow Control
Scanner Input	RS232C or TTL

CHARACTER FONT CAPABILITIES	
MATRIX FONTS	
X1	20 dots W x 50 dots H
X2	8 dots W x 20 dots H
X3	13 dots W x 21 dots H
OCR-B	20 dots W x 24 dots H
Price	16 dots W x 24 dots H (Numeric Only)
Outline 1	28 dots W x 48 dots H (Numeric Only)
Outline 2	48 dots W x 68 dots H (Numeric Only)
Outline 3	26 dots W x 56 dots H (Numeric Only)

CHARACTER CONTROL	
Expansion	Up to 4X in either the X or Y coordinates
Rotation	0, 90, 180, or 270 Degrees
Pitch	0 to 90 dots

SYMBOLOGIES	
Linear	UPC-A/E, EAN-8/13, Code 39, I 2/5, Codabar, Code 128B/C

OTHER FEATURES	
Sequential Numbering	Sequential numbering of both numerics and bar codes.
Custom Characters	Up to 24 Currency Marks
Graphics	BW Graphic files in BMP format
Real-Time Clock	Day, Month, Year
Formats	29 Fixed Formats 6 User defined (30 fields/format std, 200 fields/format w/2M)

ACCESSORIES	
Battery Pack	NiMH Battery Pack and Charger
Wand Scanner	For scanning input fields
CCD Scanner	For scanning input fields

REGULATORY APPROVALS	
Safety	UL, CE, TUV
RFI/EMI	FCC Class B

3

INSTALLATION

- • **Unpacking**
- • **Parts Identification**
- • **Printer Installation**
- • **Interface Selection**
- • **Accessories Installation**

UNPACKING & PARTS IDENTIFICATION

Unpack the printer as directed in the following procedure.

1. Place the shipping container (box) upright on a solid, flat surface.
2. Open the box, remove any loose items and the first layer of packing material.
3. Carefully lift the printer and accessories from the box and place them on a solid flat surface.
4. Remove the plastic covers from the packed items and visually inspect for physical damage.
5. Ensure the following components are present:
6. Report damaged property.

PACKED COMPONENTS	
Printer (Figure 3-1a)	
Power Cord (Figure 3-1b)	
Media Spool (Figure 3-1c)	
Operator Manual Programming Manual (Figure 3-1d)	
Software Disk (Figure 3-1e)	

PRINTER INSTALLATION

SITE LOCATION
- Stationed on a solid flat surface

- Stationed away from hazardous conditions

- Stationed within operational distance of the host based on interface specificaitons

POWER SUPPLY

Figure 3-2a	Figure 3-2b	Figure 3-2c
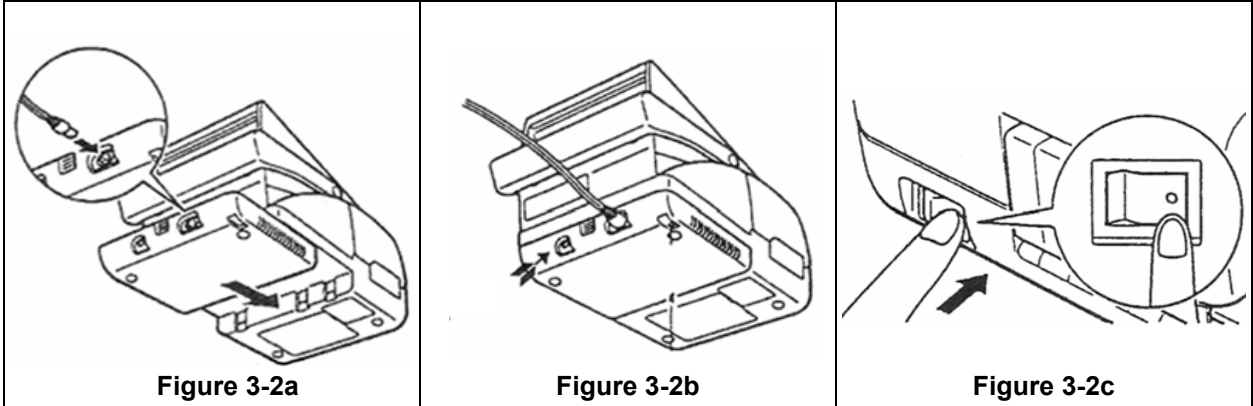
MEDIA SELECTION
The size and type of the labels or tags to be printed should have been taken into consideration before printer purchase. Ideally, the media width will be equal to, or just narrower than, the print head. Using media that does not cover the print head, will allow the platen roller to tread on it and wear it out. The media edge will also wear a groove in the platen roller effecting print quality.

MEDIA LOADING
1 Unlatch top housing cover (Figure 3-2a).

2 Lift top housing cover into a vertical position (Figure 3-2b).

3 Apply media to the printer's media spool (Figure 3-2c).

4 Place the media spool onto the printer's holder (Figure 3-2d).

5 Unwind approximately one (1) foot of media from the roll (Figure 3-2e).

6 Adjust the media guides loosely against each side of the media (Figure 3-2f).

7 Close the printer and begin operation (Figure 3-2g).

With Dispenser Function

8 Remove approximately 6 inches of labels from backing (Figure 3-2h).

9 Open dispenser cover (Figure 3-2i).

10 Feed media through slot beneath cover (Figure 3-2j).

11 Close top housing cover (Figure 3-2k).

12 Close dispenser cover and begin operation (Figure 3-2l).
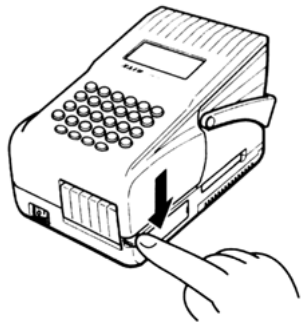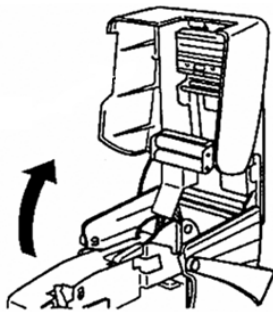
Figure 3-3a	Figure 3-3b	Figure 3-3c
Figure 3-3d	Figure 3-3e	Figure 3-3f
Figure 3-3g	Figure 3-3h	Figure 3-3i
Figure 3-3j	Figure 3-3k	Figure 3-3l
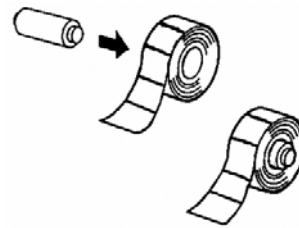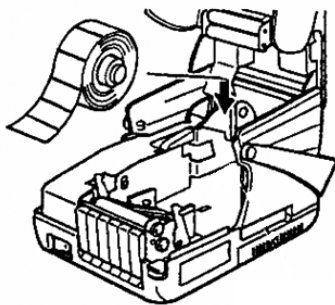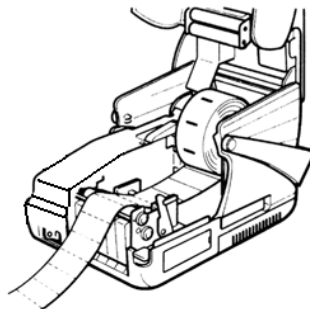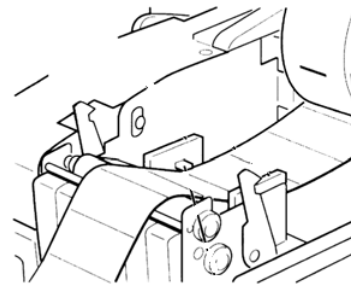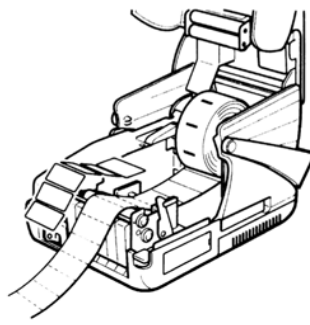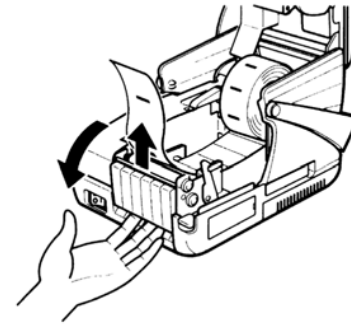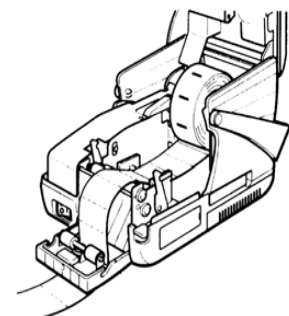
INTERFACE SELECTION

The HT200e has two integrated interface connectors accessible on the printer's left front side. One is a RS232C serial used for interfacing with a host computer and the other is for use with an optional scanner to input variable data by reading barcode symbols from a menu sheet.

RS232C SERIAL INTERFACE SPECIFICATIONS	

Asynchronous ASCII	Half-duplex communication
	Ready/Busy Hardware Flow Control
	    Pin 9, DTR Control
	    Pin 4, RTS Error Condition
	X-On/X-Off Software Flow Control
	Bi-Directional Communication

Data Transmission Rate	4800, 9600, 19200 bps
Data Length	8 bit (selectable)
Stop Bit	1 or 2 bits (selectable)
Parity Bit	ODD, EVEN, NONE (selectable)
Character Format	1 Start Bit (fixed), 7 or 8 bits (selectable)
Connector	DB9S (female)
Cable	DB-9P (male), 50 feet maximum length.
Signal Levels	High = +5V to +12V, Low = -5V to -12V

RS232 INTERFACE SIGNALS		
PIN	**DIRECTION**	**SIGNAL DEFINITION**
1	Reference	FG (Frame Ground)
2	To Host	TD (Trnasmit Data) - Data from the printer to the host computer. X-On/X-Off.
3	To Printer	RD (Receive Data) - Data to the printer from the host computer.
4	To Host	RTS (Request To Send) - Always high.
6	To Printer	DSR (Data Set Ready) Always high.
7	Reference	SG (Signal Ground)
9	To Host	DTR (Data Terminal Ready) - This signal applies to Ready/Busy flow control. The printer is ready to receive data when this pin is high. It goes low when the printer is Busy or off line due to an error condition.

RS232 CABLE REQUIREMENTS					
DB9	**DB25**	**HOST**	**CONNECTION**	**DB9**	**PRINTER**
	1	FG (Frame Ground)	Bi-Directional	1	FG (Frame Ground)
2	3	RD (Receive Data)	To Host	2	TD (Transmit Data)
3	2	TD (Transmit Data)	To Printer	3	RD (Receive Data)
8	5	CTS Clear To Send)	To Printer DB9 - 6	4	RTS (Request to Send)
4	20	DTR (Data Terminal Ready)	To Printer DB9 - 4	6	DSR (Data Set Ready)
6	6	DSR (Data Set Ready)	To host	9	DTR (Data Terminal Ready)
5	7	SG (Signal Ground)	Bi-Directional	7	SG (Signal Ground)

ACCESSORIES INSTALLATION

There are several optional accessories that are available to make the HT200e printer more useful in certain applications.

- Battery Power Module
- PCMCIA Memory Card
- Scanner

BATTERY POWER MODULE

The optional Battery Power Module attaches to bottom of the printer the same as the included AC Power Module. To charge the battery pack, simply power off the printer and withdraw it from the underside.

1 Remove AC Power Module (Figure 3-4a).

2 Insert Battery Power Module in its place (Figure 3-4b).

3 Power on printer to operate. Power off to remove battery pack for charging (Figure 3-4c).

To Charge Battery Pack

4 Connect charger to power receptacle (Figure 3-4d).

5 Insert battery pack into the charger base (Figure 3-4e).

6 Charge until LED indicates charging is complete (Figure 3-4f).
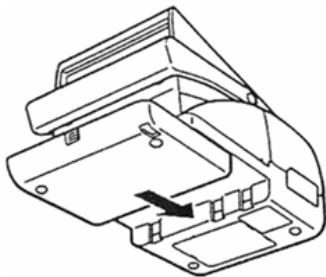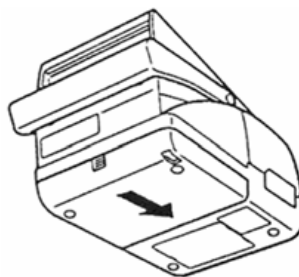
Figure 3-4a	**Figure 3-4b**	**Figure 3-4c**
Figure 3-4d	**Figure 3-4e**	**Figure 3-4f**
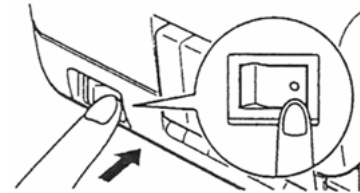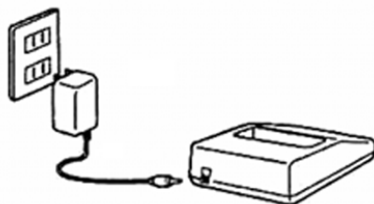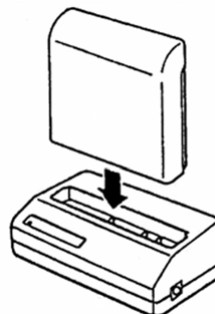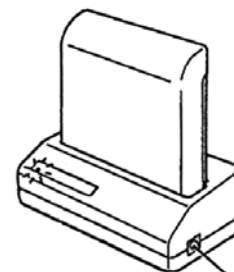
PCMCIA MEMORY CARD

This purchase option provides memory expansion up to 2MB. Perform the procedure below to for memory card installation.

1   Lift memory card cover (Figure 3-5a).

2   Insert memory card into slot (Figure 3-5b).

3   Press button to eject memory card as necessary (Figure 3-5c).

| Figure 3-5a | Figure 3-5b | Figure 3-5c |
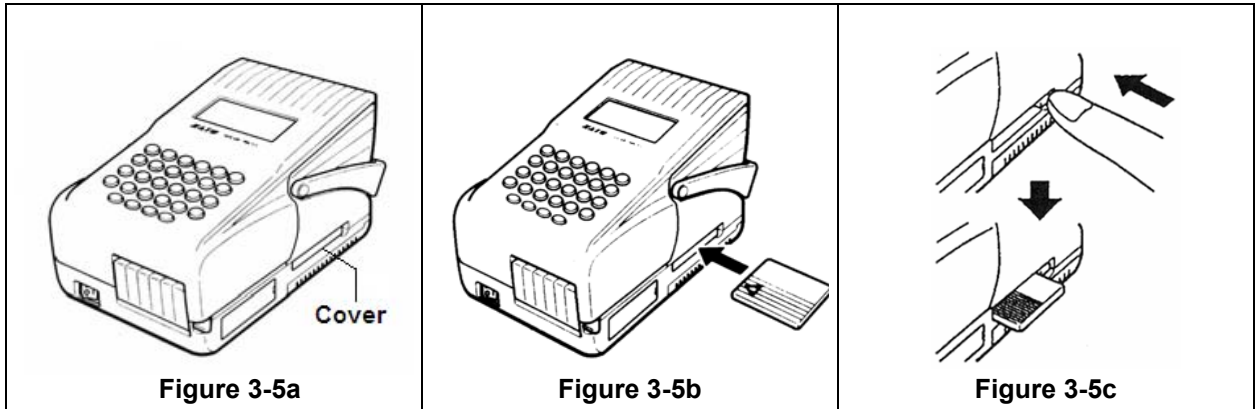
SCANNER CONNECTION

The scanner option can be used to input variable data by reading barcode symbols from a menu sheet.

1   Open the interface cover (Figure 3-6a).

2   Connect the scanner to the scanner connector (Figure 3-6b).

| Figure 3-6a | Figure 3-6b |
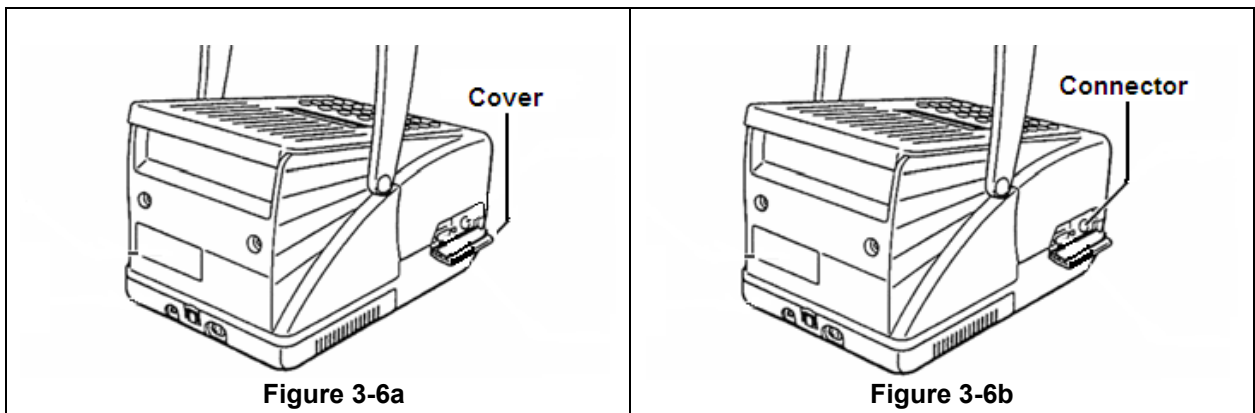
4

OPERATION

- • **Printer Configuration**
- • **Configuration Modes**
- • **Fixed Formats**
- • **Customizing Label Formats**
- • **Operational Modes**
- • **Operational Adjustments**

PRINTER CONFIGURATION

The printer may be configured for specific jobs via the operator panel located on the top surface of the printer. The operator panel is comprised of a keypad and a LCD panel.

Once the printer has been configured, the settings are retained in the battery backup memory. For additional information regarding the operator panel, refer to Unit 1: Introduction.

ENTERING ALPHANUMERICS & SYMBOLS
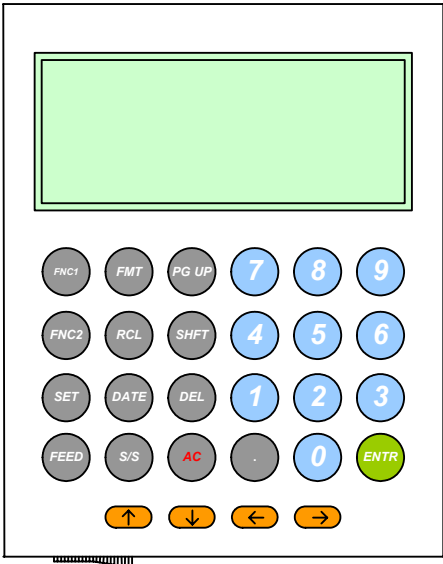
Figure 5-1, Operator Panel

Each numeric key of the keypad can also input alphabets when the **SET** or **SHFT** key has been pressed.

For example, pressing the **SET** key and then pressing **2** once yields an **A**. Pressing 2 again yields a **B**.

Refer to the table below.

KEY	DEFAULT	WITH SET KEY PRESSED	WITH SHFT KEY PRESSED
.	.	( ) < > , - : ; '	( ) < > , - : ; '
0	0	Y Z space ½ ¼	y z space ½ ¼
1	1	£ * + ! & % $ = / °	£ * + ! & % $ = / °
2	2	ABC Ä Å Æ Ç	abc ä å æ ç
3	3	DEF Ë É	def ë é
4	4	GHI	ghi
5	5	JKL	jkl
6	6	MNO Ñ Ö Ø	mno ñ ö ø
7	7	PQR	pqr
8	8	STU ß Ü	stu ü
9	9	VWX	vwx

INITIAL SETUP MODE

Is the first menu in the printer configuration process. Typically, these values will not change following initial printer setup.

```
                          ╭──────────╮
                          │ POWER ON │
                          ╰──────────╯
                               │
          ┌────────────────────┤────────────────────────────┐
          │                    │                             │
          │            ┌───────────────┐           ┌──────────────────┐
          │            │ FORMAT NO.    │           │ Use arrow keys to│
          │            │ [ . . ]       │           │ cursor. Press    │
          │            │       HT200e  │           │ ENTR to advance. │
          │            └───────────────┘           └──────────────────┘
          │                    │                             │
          │               ┌────────┐                ┌──────────────┐
          │               │   00   │                │ Power = Off  │
          │               └────────┘                └──────────────┘
          │                    │
          │            ┌───────────────┐
          │            │ STR/RCL PRESET│
          │            │ INT/RAM OPT CARD│
          │            └───────────────┘
          │                    │
   ┌─────────────┐    ┌───────────────┐    ┌──────────────────┐
   │ CHECK LABEL │◄───│ PRINT         │    │ REAL-TIME PRINT  │
   │ YES    NO   │    │ NORMAL DEMAND │───►│ ON        OFF    │
   └─────────────┘    └───────────────┘    └──────────────────┘
          │                                          │
          │                               ┌──────────────────┐
          │                               │ PRE-EDITED PRINT │
          │                               │ ON          OFF  │
          │                               └──────────────────┘
          │                                          │
          │                               ┌──────────────────┐
          │                               │ GUARD BAR        │
          │                               │ NORMAL     LONG  │
          │                               └──────────────────┘
          │                                          │
          │                               ┌──────────────────┐
          │                               │ CALENDAR PRINT   │
          │                               │ NO PRINT   PRINT │
          │                               └──────────────────┘
          │                                    │        │
          │              ┌──────────────────┐  │  ┌──────────────────┐
          │              │ PRICE POSITION   │  │  │ CALENDAR EXP     │
          │              │ UPPER      LOWER │  │  │ DDMMYY   MMDDYY  │
          │              └──────────────────┘  │  └──────────────────┘
          │                       │            │
          │              ┌──────────────────┐  │
          │              │ PRICE FONT SIZE  │  │
          │              │ NORMAL      BIG  │  │
          │              └──────────────────┘  │
          │                       │            │
   ┌──────────────────┐  ┌──────────────────┐  │
   │ PRINT PRESET NO. │◄─│ PRICE FORMAT     │  │
   │ PRINT  NO PRINT  │  │ UK       EUROPE  │  │
   └──────────────────┘  └──────────────────┘  │
          │                                     │
          └─────────────────────────────────────
```

Figure 4-2, Initial Setup Mode

USER MODE

This menu, like the Initial Setup Mode, allows certain values to be set based on the user/ operator's needs that typically will not change.

3 + POWER

PRINT DARKNESS
L 1 2 3 4 5 D

Use arrow keys to cursor. Press **ENTR** to advance.

Power = Off

PRINT SPEED
600 MM/SEC
800 MM/SEC

AUTO POWER OFF
ON   OFF

STARTUP DISPLAY
MANUAL   ONLINE

I/F SETTING
4800 BPS 9600 BPS
800 BPS

DATA BIT SETTING
7 BITS   8 BITS

PARITY SETTING
ODD   EVEN   NONE

PROTOCOL
READY/BUSY
XON/OFF

FIXED FORMAT
NO [. .]
99: CLEAR

CALENDER SETTING
DDMMYY   XX:XX

HEAD CHECK
NORMAL   BARCODE

HEAD CHECK
ON   OFF

BEEP SETTING
ON   OFF

CODE PAGE SET
858   852

PROTO CODE
STANDARD
NON-STANDARD

NON-STANDARD
STX: 02 HEX

EURO CALC
CM=E   E=CM

REPRINT FUNC
YES   NO

NON-STANDARD
DEFAULT   USER SET

NON-STANDARD
ETX: 03 HEX

NON-STANDARD
ESC: 1B HEX

CALENDAR DISP
NO   YES

NON-STANDARD
EOT: 04 HEX

NON-STANDARD
SOH: 01 HEX

Figure 4-3, User Mode

DATA MAINTENANCE MODE

Is the primary menu for the maintenance of print data. This chart provides the route to more specific menus for the transfer and storage of data.
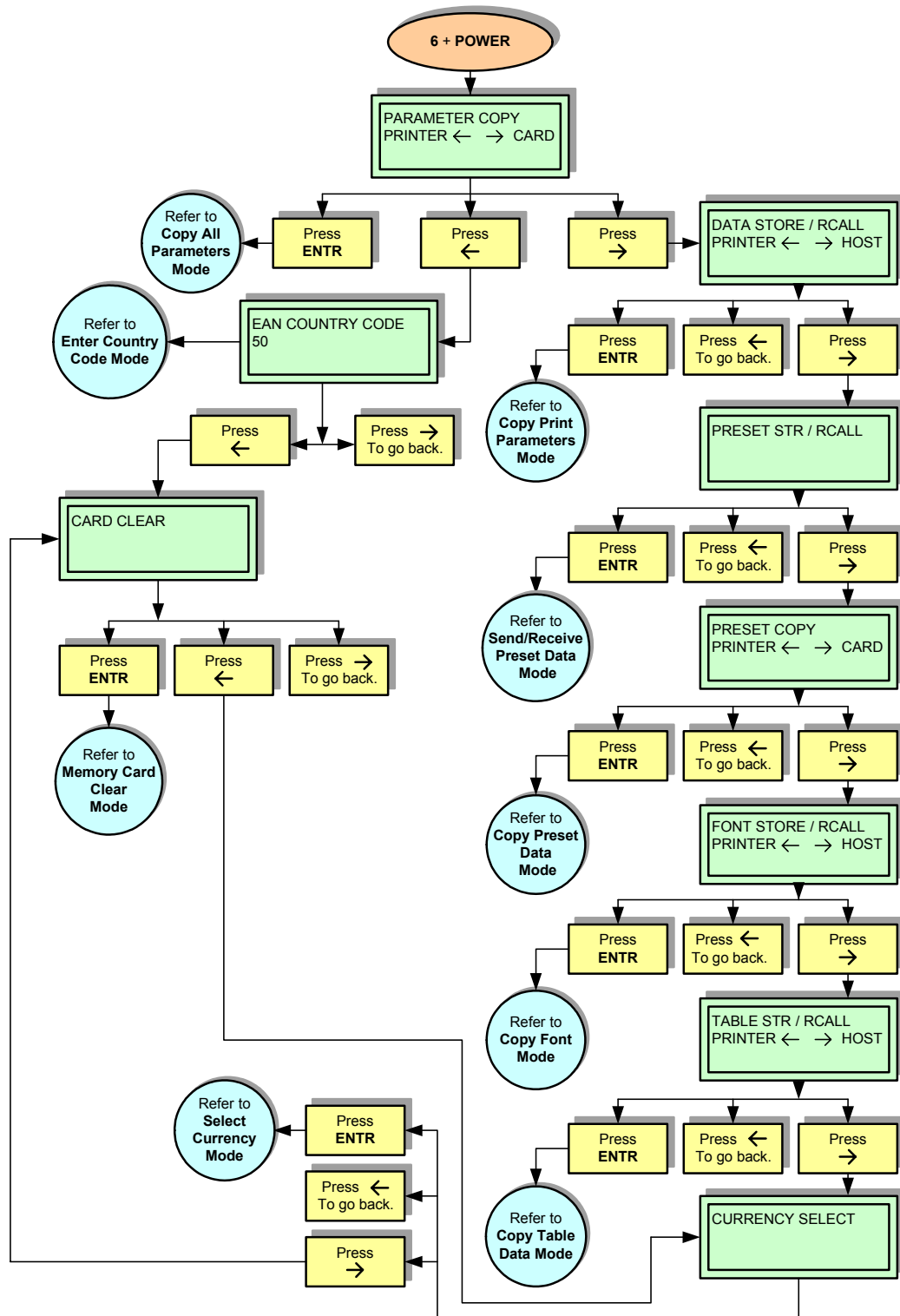
Figure 4-4a, Data Maintenance Mode

COPY PRINT PARAMETERS MODE

This menu provides the flow sequence of copying print parameters from the host and sending them to the printer or copying from the printer and sending them to the host.

This menu is accessed through the Data Maintenance Mode.
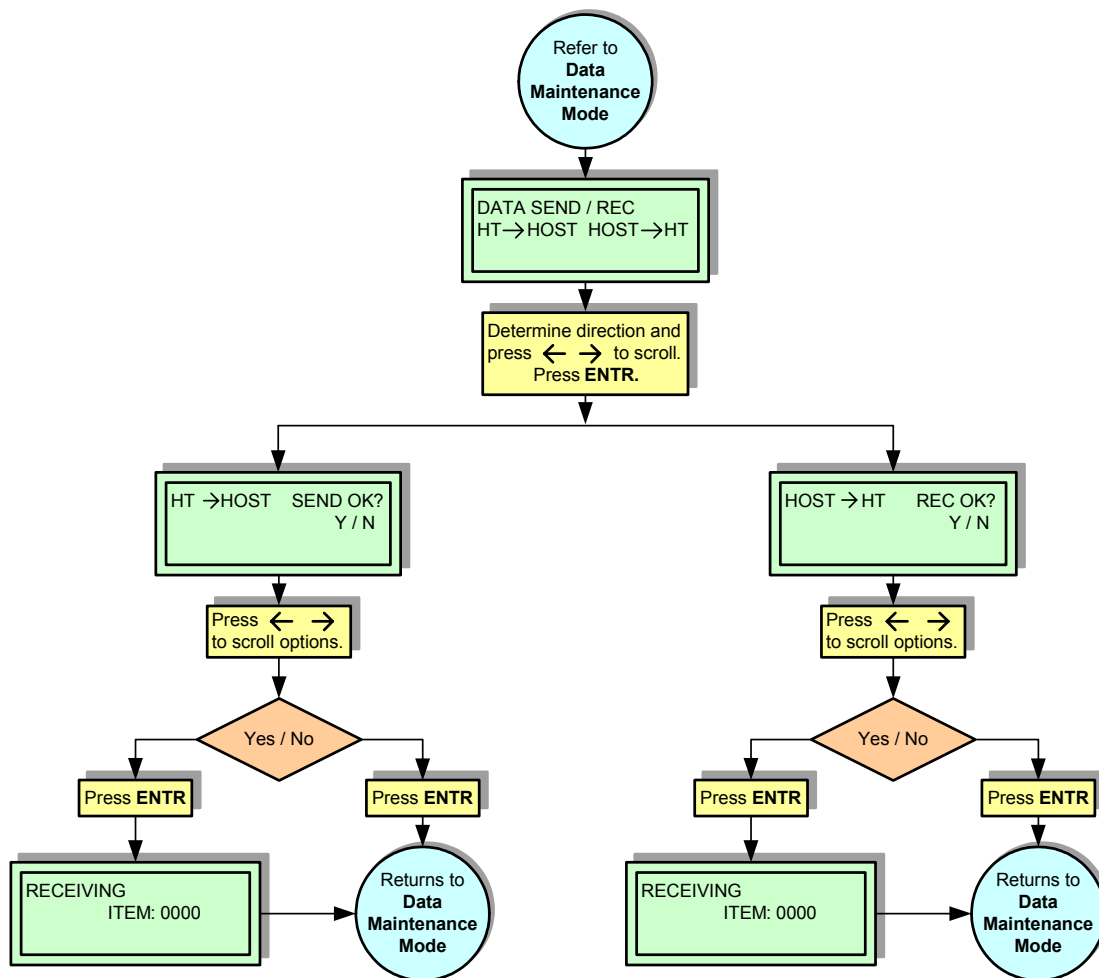
Figure 4-4b, Copy Print Parameters Mode

SEND/RECEIVE PRESET DATA MODE

This menu provides the flow sequence of sending or receiving preset data from the host or printer. This menu is accessed through the Data Maintenance Mode.
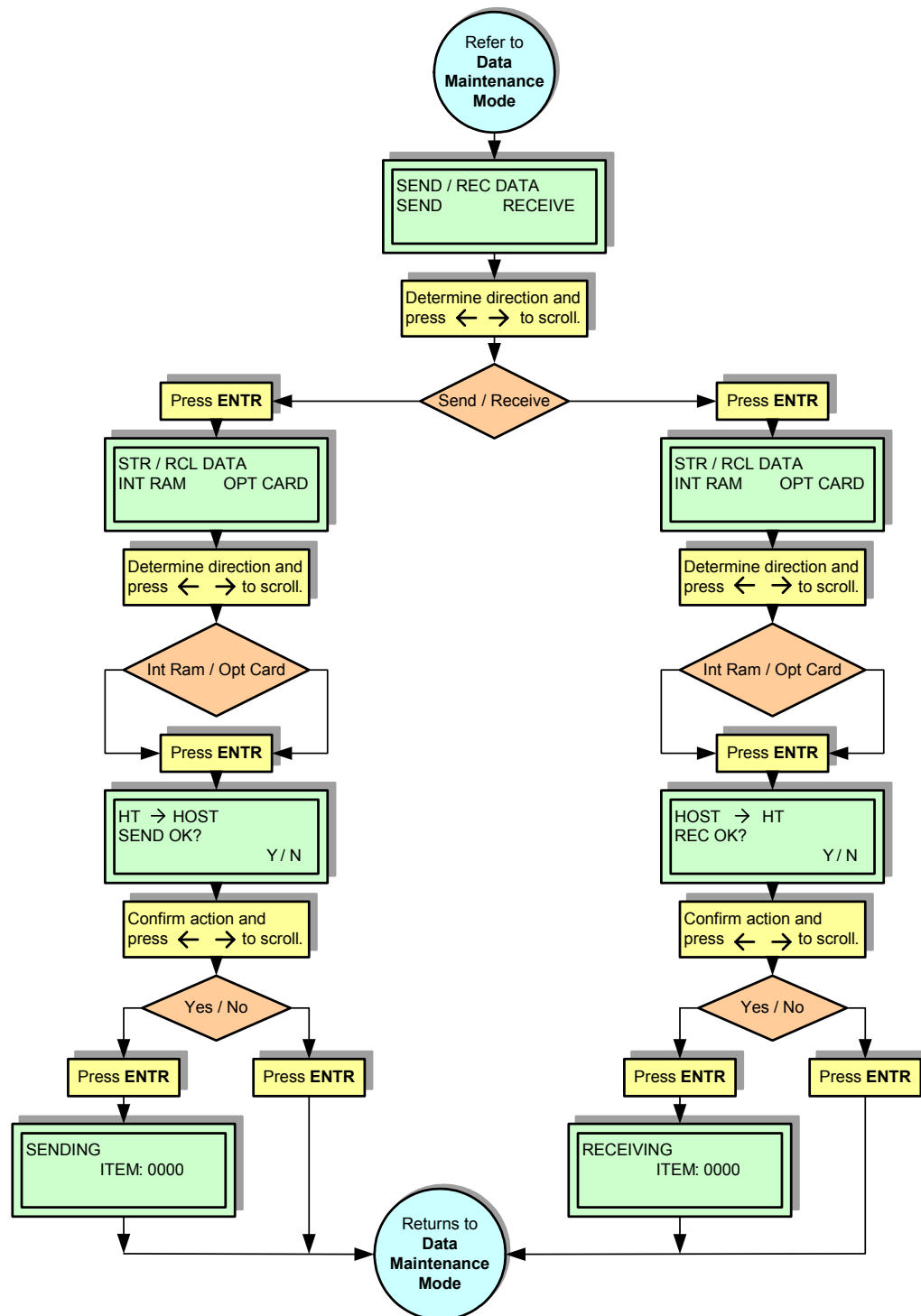
Figure 4-4c, Send/Receive Preset Data Mode

COPY PRESET DATA MODE

This menu provides the flow sequence of copying preset data from the host to the printer or vice versa. This menu is accessed through the Data Maintenance Mode.
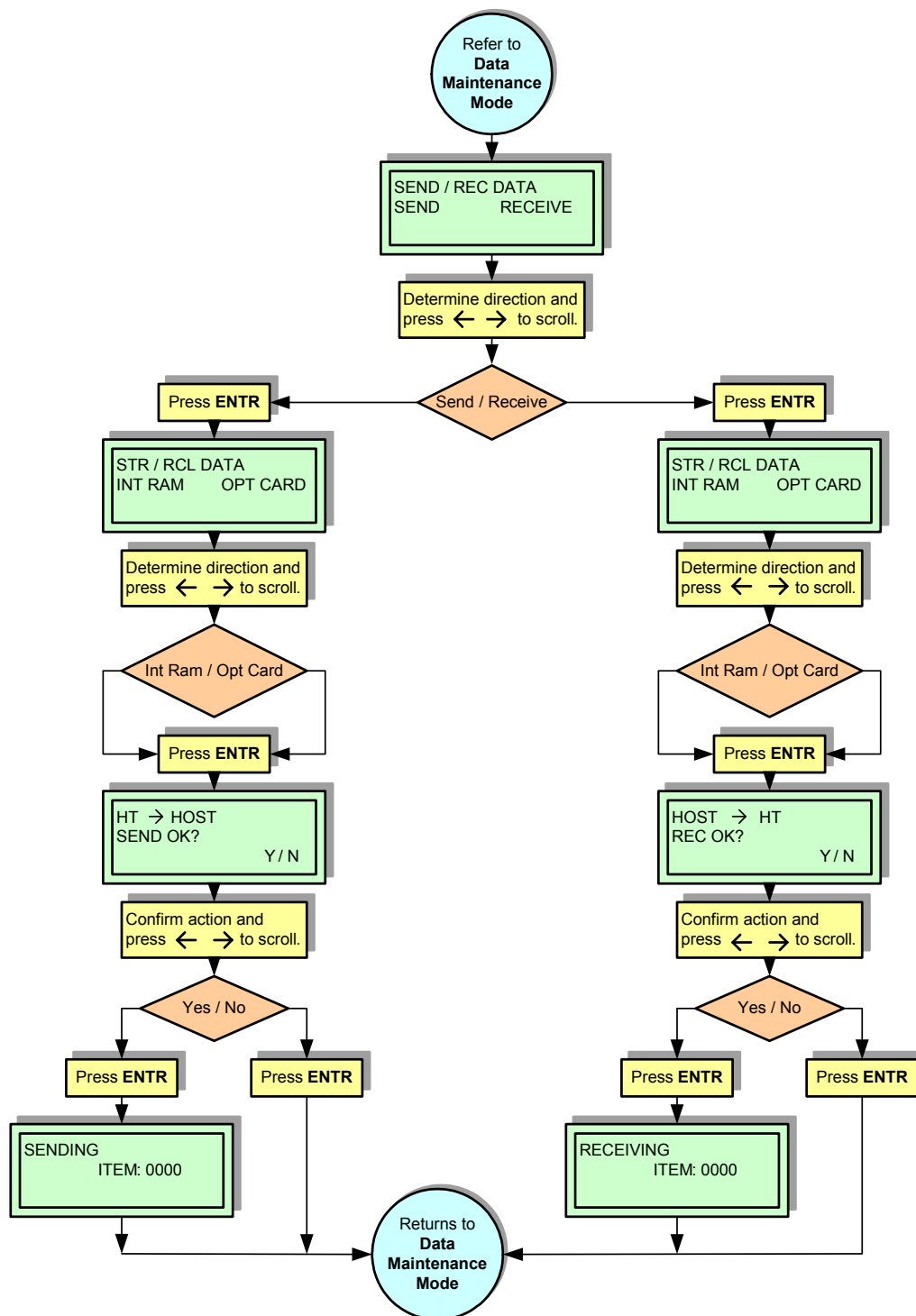
Figure 4-4d, Copy Preset Data Mode

COPY FONT MODE

This menu provides the flow sequence of copying font types from the host to the printer and vice versa. This menu is accessed through the Data Maintenance Mode.
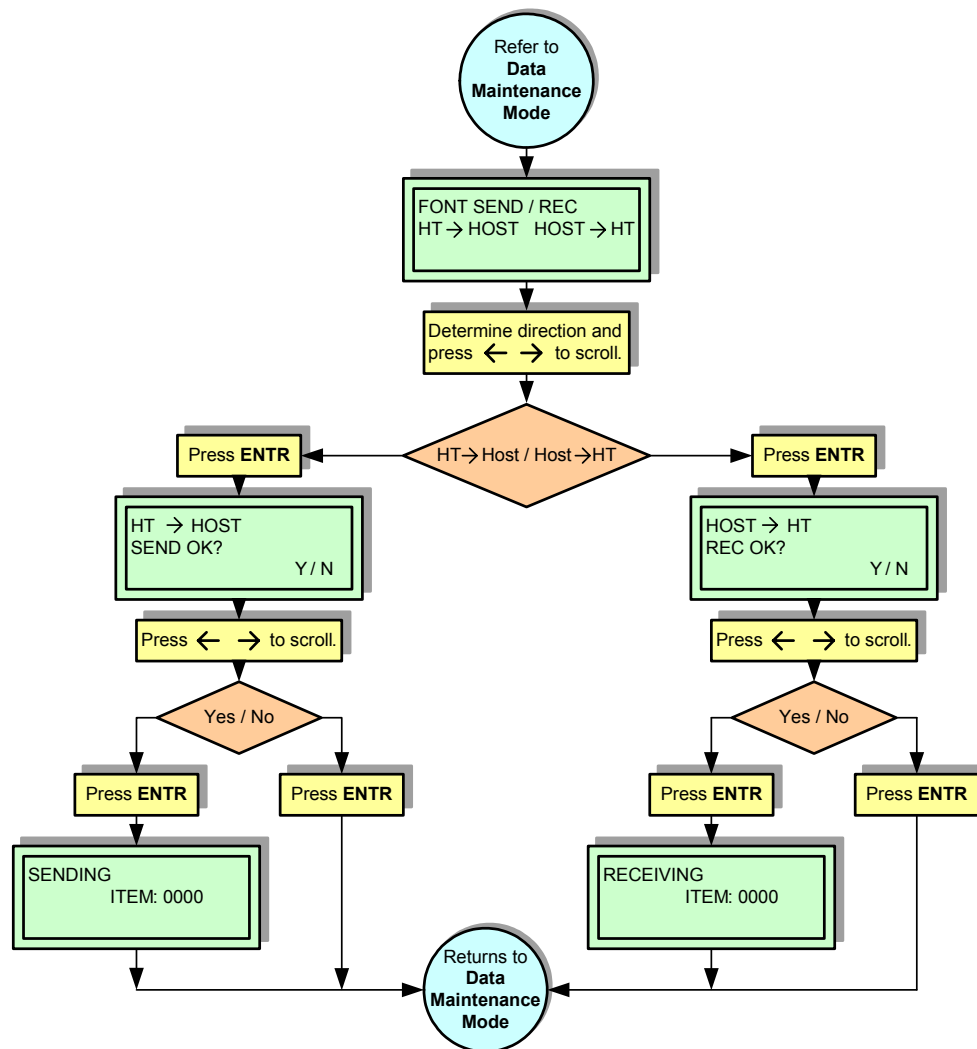
Figure 4-4e, Copy Font Mode

COPY TABLE DATA MODE
This menu provides the flow sequence of copying table data from the host to the printer or vice versa. This menu is accessed through the Data Maintenance Mode.

```
                              ┌──────────────┐
                              │  Refer to    │
                              │    Data      │
                              │ Maintenance  │
                              │    Mode      │
                              └──────┬───────┘
                                     │
                          ┌──────────▼──────────┐
                          │ DATA SEND / REC     │
                          │ HT→HOST  HOST→HT    │
                          └──────────┬──────────┘
                                     │
                          ┌──────────▼──────────┐
                          │ Determine direction │
                          │ and press ←  → to   │
                          │ scroll.             │
                          └──────────┬──────────┘
```

Determine direction and press ← → to scroll.

HT→Host / Host→HT

Press **ENTR**

HT→HOST   SEND OK?
Y / N

Press ← → to scroll.

Yes / No

Press **ENTR**

Press **ENTR**

SENDING
ITEM: 0000

Press **ENTR**

HOST → HT   REC OK?
Y / N

Press ← → to scroll.

Yes / No

Press **ENTR**

Press **ENTR**

RECEIVING
ITEM: 0000

Returns to
**Data
Maintenance
Mode**
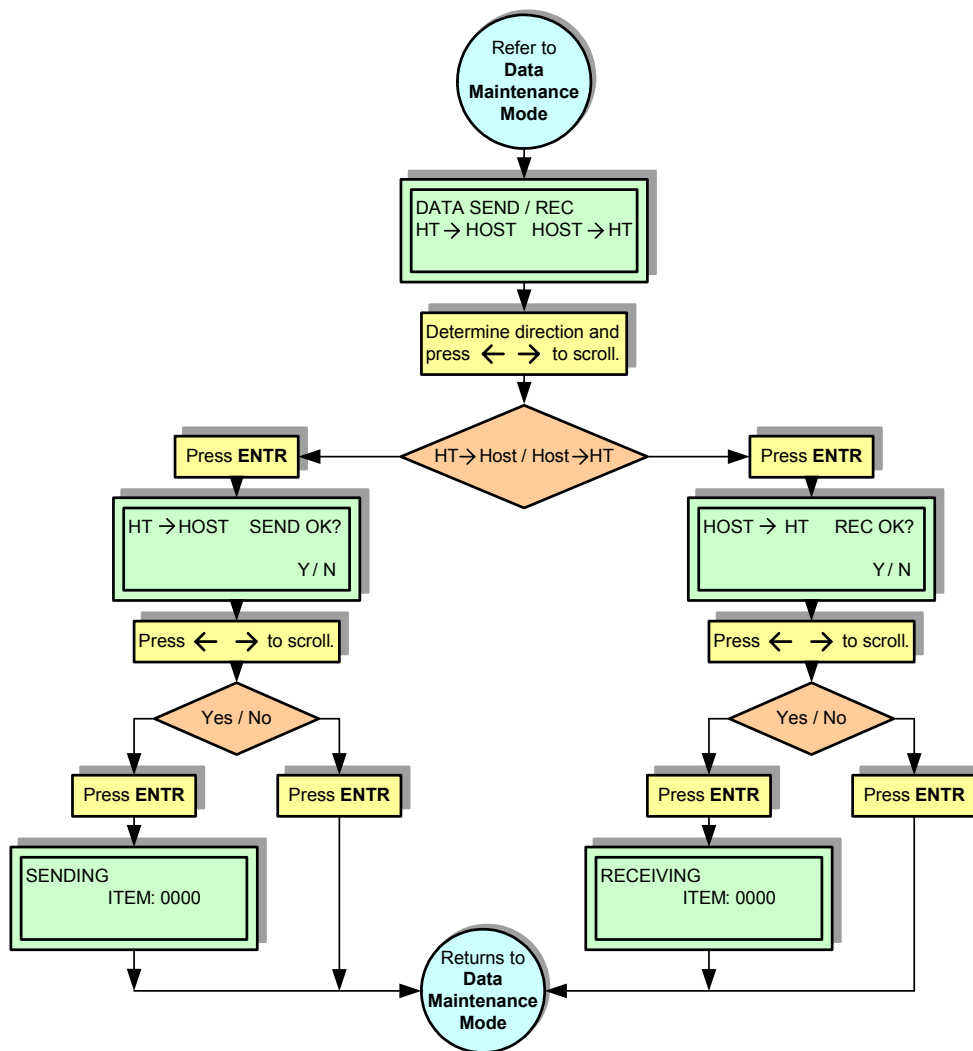
Figure 4-4f, Copy Table Data Mode

COPY ALL PARAMETERS MODE

This menu provides the flow sequence of copying print parameters from the host to the printer or vice versa. This menu is accessed through the Data Maintenance Mode.
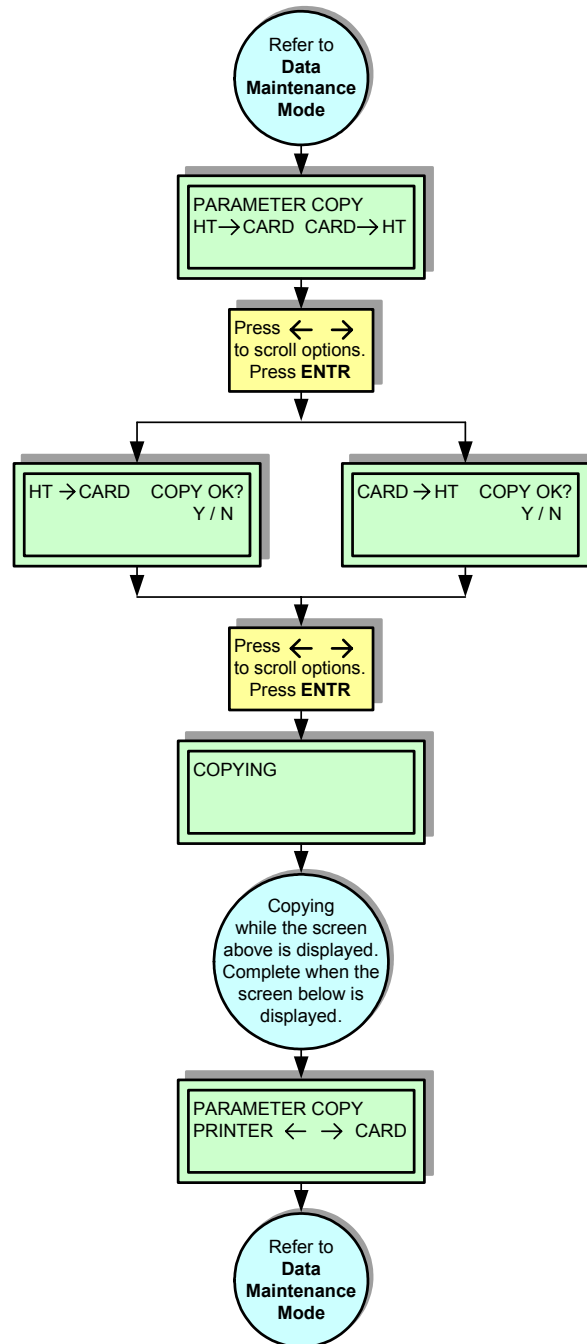
Figure 4-4g, Copy All Parameters Mode

SELECT COUNTRY CODE MODE

This menu provides theflow sequence for selecting the applicable Country of use. By selecting the applicable Country; specific symbols, features, and calculations are automatically initiated as part of the operational function. Each Country is assigned a two-digit code for this selection process.

This menu is accessed through the Data Maintenance Mode.
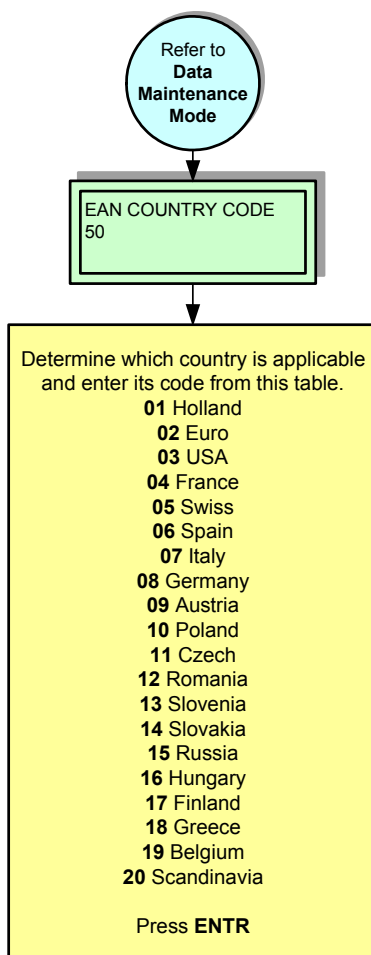
Figure 4-4h, Country Code Mode

MEMORY CARD CLEAR MODE

Allows the selected values stored on the memory card to be cleared from its memory. This menu is accessed through the Data Maintnenance Mode.
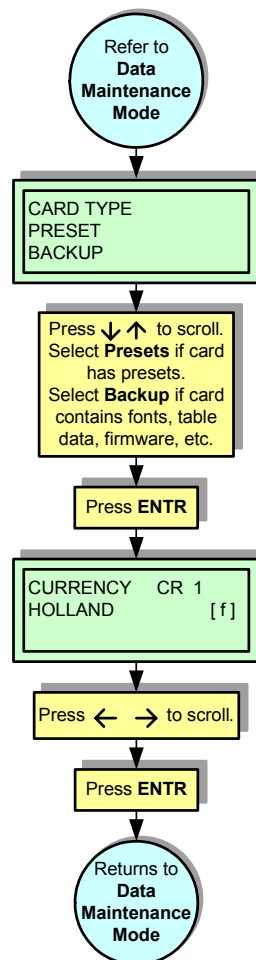
Figure 4-4i, Memory Card Clear Mode

SELECT CURRENCY MODE

Allows the desired currency to be selected independently of the Country previously selected. Typically, the currency selected will be representative of the Country selected.

```
            ┌─────────────┐
            │   Refer to  │
            │     Data    │
            │ Maintenance │
            │     Mode    │
            └─────────────┘
                   │
                   ▼
        ┌───────────────────────┐
        │ CURRENCY SELECT       │
        │ DEFAULT        USER   │
        └───────────────────────┘
                   │
                   ▼
        ┌───────────────────────┐
        │ Determine direction and│
        │ press ←  → to scroll. │
        └───────────────────────┘
                   │
                   ▼
  ┌───────────┐       ◇             ┌───────────┐
  │ Press ENTR│◄── Default / User ──►│ Press ENTR│
  └───────────┘                     └───────────┘
        │                                 │
        │                                 ▼
        │                   ┌───────────────────────┐
        │                   │ CURRENCY    CR  1     │
        │                   │ HOLLAND          [ f ]│
        │                   └───────────────────────┘
        │                                 │
        │                                 ▼
        │                   ┌───────────────────────┐
        │                   │ Press ←  → to scroll. │
        │                   └───────────────────────┘
        │                                 │
        │                                 ▼
        │                         ┌───────────┐
        │                         │ Press ENTR│
        │                         └───────────┘
        │                                 │
        └──────────────┬──────────────────┘
                       ▼
               ┌─────────────┐
               │  Returns to │
               │     Data    │
               │ Maintenance │
               │     Mode    │
               └─────────────┘
```
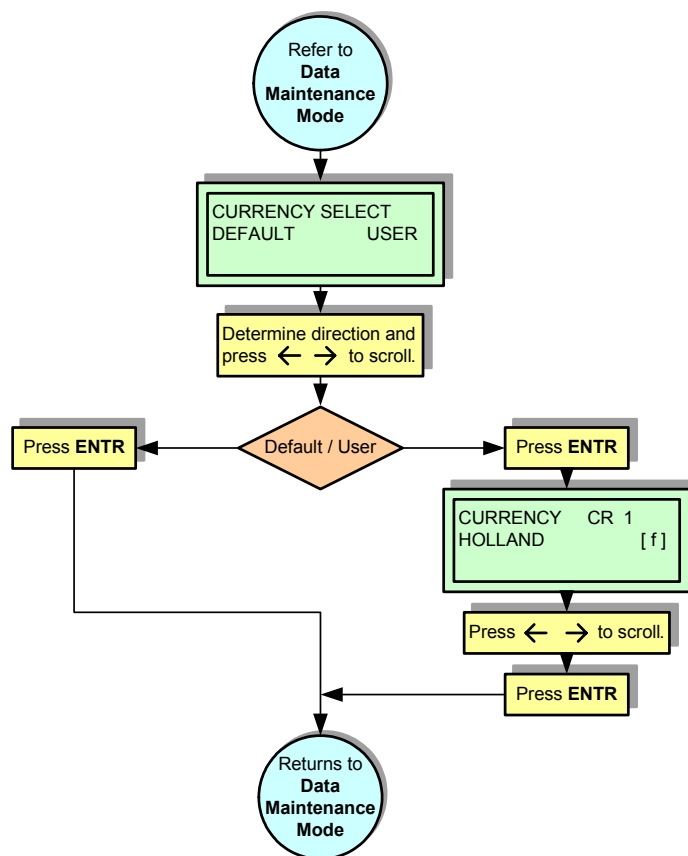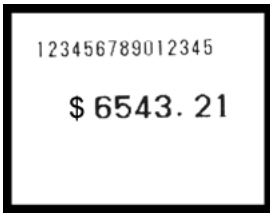
Figure 4-4j, Select Currency Mode

FIXED FORMATS
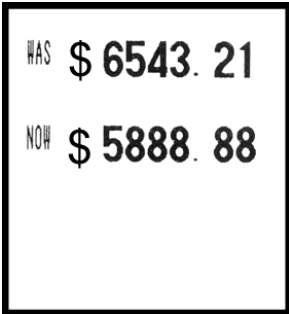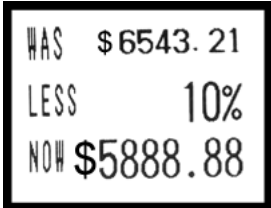
This unit identifies and defines the 29 pre-programmed label designs that are part of the HT200e printer package. These fixed formats are suitable for a wide variety of general uses.
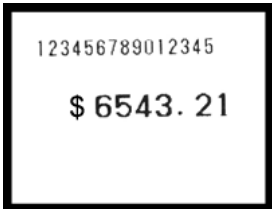
> NOTE: The folowing text references PLU. PLU (Price Lookup) is the process by which a bar coded item number is decoded and seached for in a database so the price information can be sent back to the scanning location.

PLU BARCODES			
Format 01	**Format 02**	**Format 03**	**Format 04**
EAN 8 Barcode. Has price and three-digit human readable code.	EAN 8 Barcode. Flag 50 is fixed. Includes price and three-digit human readable code.	EAN 13 barcode. Has price and three-digit human readable code.	EAN 13 barcode. Flag 50 is fixed. Includes price and three-digit human readable code.

NON PLU BARCODES			
Format 05	**Format 06**	**Format 07**	**Format 08**
EAN 8 Barcode. Needs a Non PLU flag. Has price and three-digit human readable code.	EAN 13 Barcode. Needs a Non PLU flag. Has price and three-digit human readable code.	EAN 13 barcode. Needs a Non PLU flag. Has price and three-digit human readable code.	EAN 13 barcode. Needs a Non PLU flag. Has price and three-digit human readable code.

NON PLU BARCODES		
Format 09	**Format 11**	**Format 12**
EAN 13 Barcode. Needs a Non PLU flag. Has four-digit item code and six-digit price. Also has human readable code.	EAN 13 Barcode. Needs a Non PLU flag. Has five-digit item code and five-digit price. Human readable code not included.	EAN 13 barcode. Needs a Non PLU flag. Has four-digit item code and six-digit price. Human readable code not included.

Format 14	Format 15
Format 14	**Format 15**
Two EAN 8 barcodes. Not normally PLU. Includes price and three-digit human readable code.	Two EAN 13 barcodes. Not normally PLU. Has price and three-digit human readable code.

PRICE REDUCTIONS

Format 16	Format 17	Format 18
Enter the non-discounted (WAS) price. The printer calculates the discounted (NOW) price.	Enter the EAN 13 Barcode and non-discounted (WAS) price. The discounted (NOW) price is calculated automatically. The EAN 13 and the "NOW" price are added into the new barcode (Code128). A prefix "10" is added to act as an application identifier.	Enter the EAN 13 Barcode and non-discounted (WAS) price. The discounted (NOW) price is calculated automatically. The EAN 13 and the "NOW" price are added into the new barcode (Code128). A prefix "10" is added to act as an application identifier.

Format 19	Format 25
Enter the non-discounted (WAS) price. The printer calculates the discounted (NOW) price.	Enter the non-discounted (WAS) price. The printer calculates the discounted (NOW) price. The discounted rate is also printed on the label.

SIMPLE DATA AND PRICE	
123456789012345 $ 6543. 21	123456789012345 987654321098765 $ 6543. 21
Format 10	**Format 13**
Contains 15 alphanumeric characters and the price.	Contains two lines of 15 alphanumeric charcters and the price.

VAT CALCULATION	
123456789012345 987654321098765 $ 6543. 21	VAT Ex.VAT $ 654.32 $ 6543.21 1 234567 890128 INC. VAT $7197.53
Format 23	**Format 24**
Enter the pre-tax amount. The printer automatically calculates the VAT and payable amount.	Enter the pre-tax amount and the EAN 13 barcode data. The printer automatically calculates the VAT and payable amount., and creates or copies the barcode.

SHELF EDGE LABEL
12345678901234567890 9876543210 $6543.21 1234567890 1 234567 890128
Format 22
Contains one line of 20 alphanumeric characters, plus tow of ten digits, a price, and the EAN 13 barcode.

UNIT PRICING	
1234567890123456 9876543210987654 12345g **$543.21** $4.40/100g 03/01/01	1234567890123456 9876543210987654 12345g **$543.21** $4.40/100g
Format 26	**Format 27**
When promted to enter "Unit Voles", press [FNC1] to select the number of units. Press Enter. At the "Pack Size" screen, enter a numeric value, the pack price, two line of sixteen-digit alphanumeric code, and the symbol of the weight/volume unit (Kg, g). To complete the label, enter the number of days to add the current date.	When promted to enter "Unit Voles", press [FNC1] to select the number of units. Press Enter. At the "Pack Size" screen, enter a numeric value, the pack price, two line of sixteen-digit alphanumeric code, and the symbol of the weight/volume unit (Kg, g).

EURO PRICING	
$543.21 €0.54 1 234567 890128	$6543.21 €6.54
Format 20	**Format 21**
Enter the local currency. The printer calculates the Euro value. Data is needed for the EAN 13 barcode.	Similar to Format 20 but excludes the barcode.

CUSTOMIZING LABEL FORMATS

Customized Label Formats allow label layout and format to be customized by the user. A label format consists of a single or multiple printable areas called fields. For each field and field type, predetermined configuaration attributes must be programmed. Regardless of the field type, to customize a label format, a total of 46 numerical programming entries must be made for each established field. These numerical programming entries are refered to as parameters.

Before beginning to create a customized label, determine the label size, the number of fields within the label, and their contents. It is recommended that a sample label be drawn on a piece of paper displaying the location of each field and its field type before commencing. Figure 7-1 displays a sample label.

Since all programming is numerical, the format name, the label name, and all configuration entries will be made by using the printer's keypad. The following procedure generalizes the programming sequence when prompted by the LCD:

1   Enter a format number for the label.

2   Enter a label name.

3   Configure label size.

4   Create and configure each field one at a time.

- • Field number

- • Field type

- • Parameters

Figure 7-2 is a visual image of how programming entries are broken down into three primary categories: Field Designation & Font Type (1-3), Field Configuration (4-21), and Copy Configuration (22-46). Each time a parameter is configured, its configuration numeral replaces a "0", or series of "0" 's, in the bottom row of the LCD.

BOTTOM ROW OF LCD WHEN CONFIGURING LABEL

000 0000000000000000000 0000000000000000000000000

← 1 to 3 → ← 4 to 21 → ← 22 to 46 →

← 46 Data Entry Characters Required (Replace the Zeroes with the Required Numerals) →
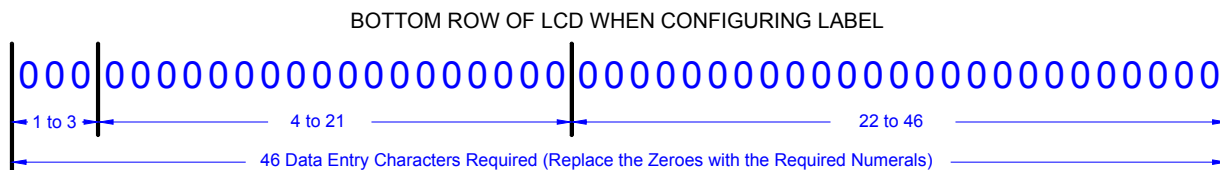
Figure 4-6, Configuration Breakdown

Figure 7-3 is an example of a LCD display. Notice that the field parameter to be configured on that LCD is FONT TYPE and that the configuration entry 03 is displayed to its left. Whichever option is chosen (0, 1, 2) will replace the third character from the left on the bottom row.
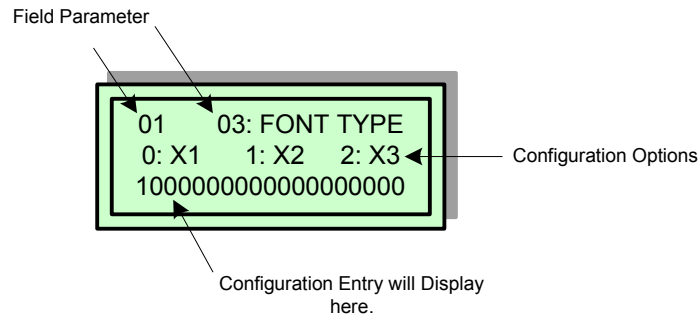
Figure 4-7, Sample LCD Display

Figure 7-4 displays the programming process for creating a customized label.
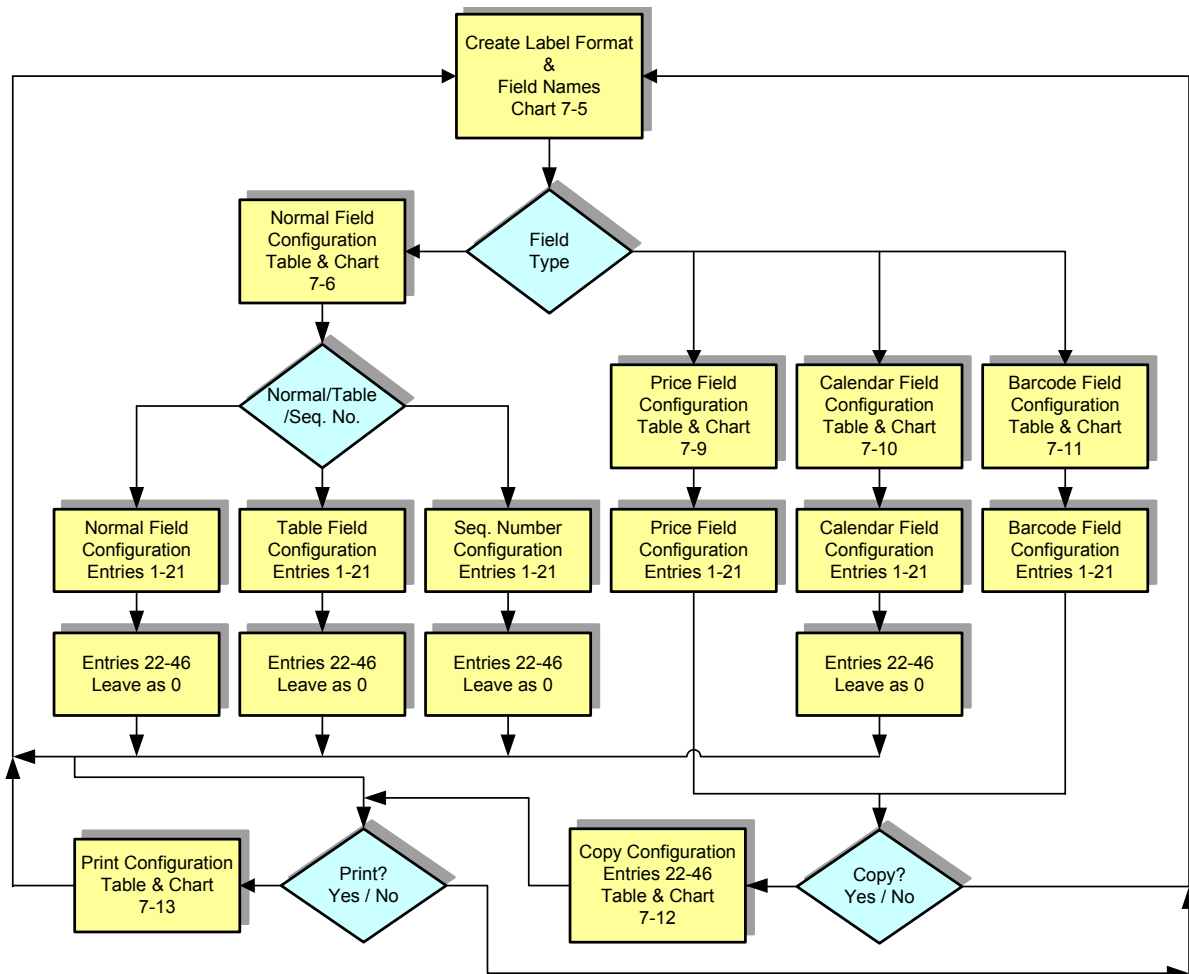
Figure 4-8, Programming Process

NOTE: A calendar field cannot be copied. For Normal/Table data, a copy cannot be received.

Figure 7-5 provides visual sequential instructions for beginning to create a customized label. After completing those instructions, refer to the relative flow chart for **Normal**, **Price**, **Calendar**, or **Barcode** fields configuration. Use those flow charts in conjunction with the tables that follow to create a customized label.
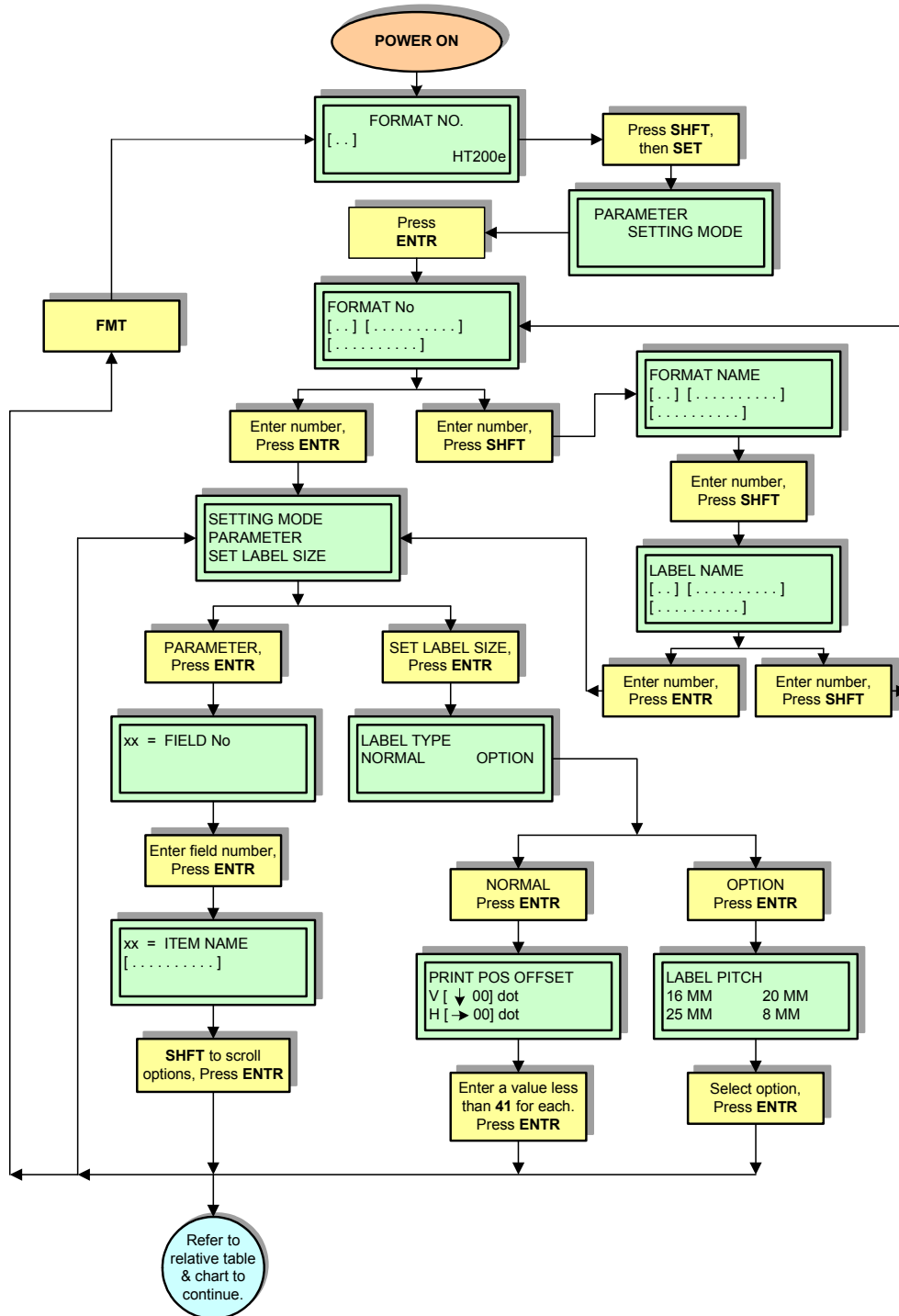
Figure 4-9a, Beginning a Customized Label

NORMAL FIELD CONFIGURATION

Normal fields may easily be defined as any that does not possess the characteristics of any of the other field types. Typically, it will contain text or graphic that is stable or unchanging.
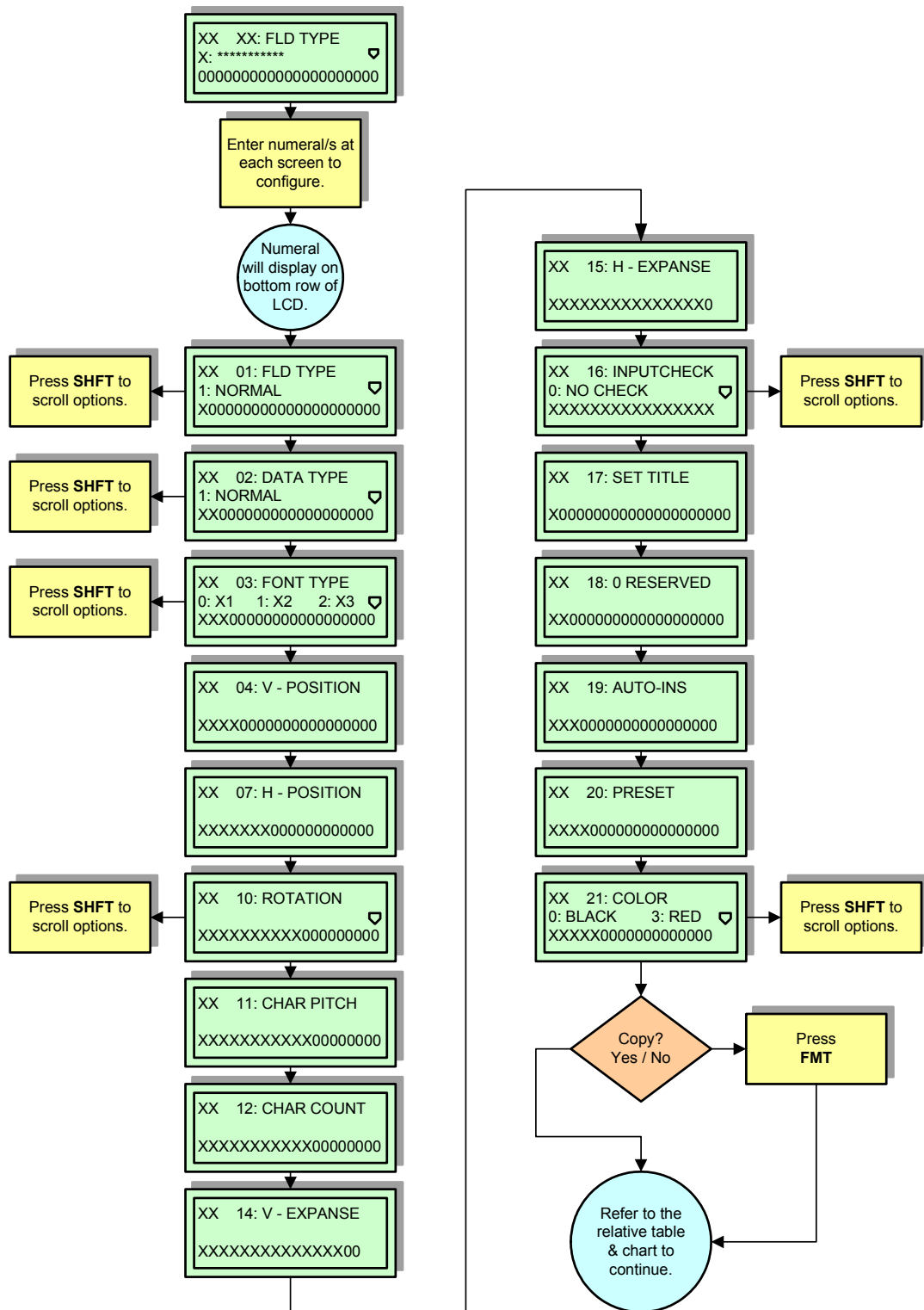
Figure 4-9b, Normal Field Configuration

NORMAL FIELD CONFIGURATION		
DIGIT POSITIONS	**DESIGNATED ITEM**	**DESCRIPTION**
1, 2	Normal	**10**: Normal
3	Font Type	**0**: X1 **1**: X2 **2**: X3 **4**: OCR-B
4, 5, 6	Vertical Position	**001** to **784** dots: Vertical print position. **000**: Entry only, where print is not required.
7, 8, 9	Horizontal Position	**001** to **384** dots: Horizontal print position.
10	Rotation	**0**: 0 degrees **1**: 90 degrees **2**: 180 degrees **3**: 270 degrees
11	Character Pitch	**0** to **9** dots
12, 13	Character Count	**01** to **32**: Number of characters in the field.
14	Vertical Expansion	**1** to **4**: Magnification of horizontal/vertical direction to character.
15	Horizontal Expansion	**1** to **4**: Magnification of horizontal/vertical direction to character.
16	Input Check	**0**: No check **2**: Mandatory entry. **5**: Numeric only. **6**: Numeric in all digits. **7**: Non-zero numeric only; entry is manditory.
17	Title Setup	**0**: Not displayed in a title in printing preset. **2:** Initially displayed as a title in printing preset (for a format, one field set only).
18	Reserved	**0**: Determined
19	0 Insertion (specifies whether a leading or trailing zeroes are inserted)	**0**: No 0 insertion. **1**: 0 insertion in right aligned when copy is required (i.e. 1=001).
20	Preset	**0**: No entry in printing preset (no display). **1**: Entry in printing preset (displayed).
21	Font Color	**0**: Black **3**: Red **4**: Black and White reversal.

Table 4-9b, Normal Field Configuration

TABLE FIELD CONFIGURATION

Fields of tabulated data may be stored in the printer's memory and linked to another field type to be displayed when scanned.

```
┌─────────────────────────┐
│ XX   XX: FLD TYPE       │
│ X: ***********          │
│ 00000000000000000000    │
└─────────────────────────┘
            │
            ▼
┌─────────────────────────┐
│ Enter numeral/s at      │
│ each screen to          │
│ configure.              │
└─────────────────────────┘
            │
            ▼
     ( Numeral             )
     ( will display on     )
     ( bottom row of       )
     ( LCD.                )
```

Column 1:

```
                         ┌─────────────────────────┐
┌──────────────┐         │ XX   01: FLD TYPE       │
│ Press SHFT to│◄────────│ 1: NORMAL            ▽  │
│ scroll options.│       │ X0000000000000000000000 │
└──────────────┘         └─────────────────────────┘

                         ┌─────────────────────────┐
┌──────────────┐         │ XX   02: DATA TYPE      │
│ Press SHFT to│◄────────│ 1: TABLE    2: SEQ   ▽  │
│ scroll options.│       │ XX000000000000000000000 │
└──────────────┘         └─────────────────────────┘

                         ┌─────────────────────────┐
┌──────────────┐         │ XX   03: FONT TYPE      │
│ Press SHFT to│◄────────│ 0: X1   1: X2   2: X3 ▽ │
│ scroll options.│       │ XXX00000000000000000000 │
└──────────────┘         └─────────────────────────┘

                         ┌─────────────────────────┐
                         │ XX   04: V - POSITION   │
                         │                         │
                         │ XXXX0000000000000000000 │
                         └─────────────────────────┘

                         ┌─────────────────────────┐
                         │ XX   07: H - POSITION   │
                         │                         │
                         │ XXXXXXX000000000000000  │
                         └─────────────────────────┘

                         ┌─────────────────────────┐
┌──────────────┐         │ XX   10: ROTATION       │
│ Press SHFT to│◄────────│                      ▽  │
│ scroll options.│       │ XXXXXXXXXX000000000000  │
└──────────────┘         └─────────────────────────┘

                         ┌─────────────────────────┐
                         │ XX   11: CHAR PITCH     │
                         │                         │
                         │ XXXXXXXXXX0000000000000  │
                         └─────────────────────────┘

                         ┌─────────────────────────┐
                         │ XX   12: CHAR COUNT     │
                         │                         │
                         │ XXXXXXXXXX0000000000000  │
                         └─────────────────────────┘

                         ┌─────────────────────────┐
                         │ XX   14: V - EXPANSE    │
                         │                         │
                         │ XXXXXXXXXXXXX00         │
                         └─────────────────────────┘
```

Column 2:

```
                         ┌─────────────────────────┐
                         │ XX   15: H - EXPANSE    │
                         │                         │
                         │ XXXXXXXXXXXXXX0         │
                         └─────────────────────────┘

                         ┌─────────────────────────┐    ┌──────────────┐
                         │ XX   16: INPUTCHECK     │───►│ Press SHFT to│
                         │ 0: NO CHECK          ▽  │    │ scroll options.│
                         │ XXXXXXXXXXXXXXXX        │    └──────────────┘
                         └─────────────────────────┘

                         ┌─────────────────────────┐
                         │ XX   17: SET TITLE      │
                         │                         │
                         │ X00000000000000000000   │
                         └─────────────────────────┘

                         ┌─────────────────────────┐
                         │ XX   18: TABLE No        │
                         │ 1: TABLE 1              │
                         │ XX000000000000000000000 │
                         └─────────────────────────┘

                         ┌─────────────────────────┐
                         │ XX   19: 0 AUTO-INS     │
                         │                         │
                         │ XXX00000000000000000    │
                         └─────────────────────────┘

                         ┌─────────────────────────┐
                         │ XX   20: PRESET         │
                         │  0: OFF     1: OM       │
                         │ XXXX000000000000000     │
                         └─────────────────────────┘

                         ┌─────────────────────────┐    ┌──────────────┐
                         │ XX   21: COLOR          │───►│ Press SHFT to│
                         │ 0: BLACK    3: RED   ▽  │    │ scroll options.│
                         │ XXXXX0000000000000000   │    └──────────────┘
                         └─────────────────────────┘
                                    │
                                    ▼
                         ◇ Copy?  ◇────────► ┌──────────┐
                         ◇ Yes / No ◇        │ Press    │
                                             │ FMT      │
                                             └──────────┘
                                    │              │
                                    ▼              ▼
                         ( Refer to the           )
                         ( relative table &       )
                         ( chart to               )
                         ( continue.              )
```

Figure 4-9c, Table Field Configuration

TABLE FIELD CONFIGURATION		
DIGIT POSITIONS	**DESIGNATED ITEM**	**DESCRIPTION**
1, 2	Table	**11**: Table
3	Font Type	**0**: X1 **1**: X2 **2**: X3 **4**: OCR-B
4, 5, 6	Vertical Position	**001** to **784** dots: Vertical print position. **000**: Entry only, where print is not required.
7, 8, 9	Horizontal Position	**001** to **384** dots: Horizontal print position.
10	Rotation	**0**: 0 degrees **1**: 90 degrees **2**: 180 degrees **3**: 270 degrees
11	Character Pitch	**0** to **9** dots
12, 13	Character Count	**01** to **32**: Number of characters in the field.
14	Vertical Expansion	**1** to **4**: Magnification of horizontal/vertical direction to character.
15	Horizontal Expansion	**1** to **4**: Magnification of horizontal/vertical direction to character.
16	Input Check	**0**: No check **2**: Mandatory entry
17	Title setup	**0**: No display as a title in printing preset. **1**: Initially display as a title in printing preset for a format, one field set only).
18	Table number setup	**1**: Table 1 data 2: Teble 2 data 3: Table 2 data
19	0 Insertion	**0**: No 0 insertion. **1**: 0 insertion in right aligned when copy is required (i.e. 1=001).
20	Preset	**0**: No entry in printing preset (no display). **1**: Entry in printing preset (displayed)
21	Font Color	**0**: Black 3: Red 4: Black and White reversal.

Table 4-9c, Table Field Configuration

SEQUENTIAL NUMBER FIELD CONFIGURATION

This field type allows numerals to be sequentially printed onto a label in the designated location. The make-up of the sequential number may be configured to incorporate other characters in addition to the sequential digits.

```
┌─────────────────────────────┐
│ XX   XX: FIELD TYPE         │
│ X: ***********              │
│ 0000000000000000000000      │
└─────────────────────────────┘
              │
┌─────────────────────────────┐
│ Enter numeral to            │
│ designate field             │
│ number & field              │
│ type.                       │
└─────────────────────────────┘
              │
        ( Numeral
        is displayed
        on bottom
        row of LCD. )
              │
┌─────────────────────────────┐
│ XX   01: FIELD TYPE         │
│ 1: NORMAL              ▽     │
│ X0000000000000000000000     │
└─────────────────────────────┘
              │
┌─────────────────────────────┐
│ XX   02: DATA TYPE          │
│ 1: TABLE   2: SEQ     ▽      │
│ XX000000000000000000000     │
└─────────────────────────────┘
              │
┌─────────────────────────────┐
│ XX   03: FONT TYPE          │
│ 0: X1   1: X2   2: X3  ▽     │
│ XXX00000000000000000000     │
└─────────────────────────────┘
              │
┌─────────────────────────────┐
│ XX   04: V - POSITION       │
│ XXXX0000000000000000000     │
└─────────────────────────────┘
              │
┌─────────────────────────────┐
│ XX   07: H - POSITION       │
│ XXXXXXX000000000000000      │
└─────────────────────────────┘
              │
┌─────────────────────────────┐
│ XX   10: ROTATION           │
│ 0: 0   1: 90          ▽      │
│ XXXXXXXXXX000000000000      │
└─────────────────────────────┘
              │
┌─────────────────────────────┐
│ XX   11: CHAR PITCH         │
│ XXXXXXXXXXX00000000000      │
└─────────────────────────────┘
              │
┌─────────────────────────────┐
│ XX   12: CHAR COUNT         │
│ XXXXXXXXXXX00000000000      │
└─────────────────────────────┘
              │
┌─────────────────────────────┐
│ XX   14: V - EXPANSE        │
│ XXXXXXXXXXXXX00            │
└─────────────────────────────┘
```

```
┌─────────────────────────────┐
│ XX   15: H - EXPANSE        │
│ XXXXXXXXXXXXXX0            │
└─────────────────────────────┘
              │
┌─────────────────────────────┐
│ XX   16: INPUTCHECK         │
│ 6: FULL NUMERIC             │
│ XXXXXXXXXXXXXXX             │
└─────────────────────────────┘
              │
┌─────────────────────────────┐
│ XX   17: SEQ                │
│ 0: SEQUENCE NONE ▽          │
│ X0000000000000000000000     │
└─────────────────────────────┘
              │
┌─────────────────────────────┐
│ XX   18: 0 RESERVED         │
│ XXXX000000000000000        │
└─────────────────────────────┘
              │
┌─────────────────────────────┐
│ XX   19: 0 AUTO - INS       │
│ XXXXX0000000000000         │
└─────────────────────────────┘
              │
┌─────────────────────────────┐
│ XX   20: PRESET             │
│ 0: OFF      1: ON           │
│ XXXXX0000000000000         │
└─────────────────────────────┘
              │
┌─────────────────────────────┐
│ XX   21: 0 RESERVED         │
│ XXXXX0000000000000         │
└─────────────────────────────┘
              │
        ◇ Copy?
          Yes / No ◇ ──→ [ Press FMT ]
              │
        ( Refer to the
        relative table
        & chart to
        continue. )
```

Figure 4-9d, Sequential Number Field Configuration

SEQUENTIAL NUMBER FIELD CONFIGURATION		
DIGIT POSITIONS	**DESIGNATED ITEM**	**DESCRIPTION**
1, 2	Normal	**12**: Normal
3	Font Type	**0**: X1 **1**: X2 **2**: X3 **4**: OCR-B
4, 5, 6	Vertical Position	**001** to **784** dots: Vertical print position. **000**: Entry only, where print is not required.
7, 8, 9	Horizontal Position	**001** to **384** dots: Horizontal print position.
10	Rotation	**0**: 0 degrees **1**: 90 degrees **2**: 180 degrees **3**: 270 degrees
11	Character Pitch	**0** to **9** dots
12, 13	Character Count	**01** to **32**: Number of characters in the field.
14	Vertical Expansion	**1** to **4**: Magnification of horizontal/vertical direction to character.
15	Horizontal Expansion	**1** to **4**: Magnification of horizontal/vertical direction to character.
16	Input Check	**0**: No check **2**: Mandatory entry. **5**: Numeric only. **6**: Numeric in all digits. **7**: Non-zero numeric only; entry is manditory.
17	Title Setup	**0**: Not displayed in a title in printing preset. **2:** Initially displayed as a title in printing preset (for a format, one field set only).
18	Reserved	**0**: Determined
19	0 Insertion (specifies whether a leading or trailing zeroes are inserted)	**0**: No 0 insertion. **1**: 0 insertion in right aligned when copy is required (i.e. 1=001).
20	Preset	**0**: No entry in printing preset (no display). **1**: Entry in printing preset (displayed).
21	Font Color	**0**: Black **3**: Red **4**: Black and White reversal.

Table 4-9d, Sequential Number Field Configuration

PRICE FIELD CONFIGURATION

This field type allows for a price to be printed onto a label in the designated location and orientation. The price printed will be represented in the currency type selected.

```
┌──────────────────────────┐
│ XX  XX: FIELD TYPE        │
│ X: ***********           ▽│
│ 000000000000000000000     │
└──────────────────────────┘
            │
┌──────────────────────────┐
│ Enter numeral/s at        │
│ each screen to            │
│ configure.                │
└──────────────────────────┘
            │
      ( Numeral
       will display on
       bottom row of
          LCD. )
            │
┌──────────────────┐   ┌──────────────────────────┐
│ Press SHFT to    │───│ XX   01: FIELD TYPE      │
│ scroll options.  │   │ 2: PRICE                ▽│
└──────────────────┘   │ X0000000000000000000     │
                       └──────────────────────────┘
                                  │
                       ┌──────────────────────────┐
                       │ XX   02: DATA TYPE        │
                       │ 0: STANDARD   1: POP      │
                       │ XX000000000000000000      │
                       └──────────────────────────┘
                                  │
┌──────────────────┐   ┌──────────────────────────┐
│ Press SHFT to    │───│ XX   03: FONT TYPE       │
│ scroll options.  │   │ 0: X1  1: X2   2: X3    ▽│
└──────────────────┘   │ XXX00000000000000000      │
                       └──────────────────────────┘
                                  │
                       ┌──────────────────────────┐
                       │ XX   04: V - POSITION     │
                       │                           │
                       │ XXXX000000000000000       │
                       └──────────────────────────┘
                                  │
                       ┌──────────────────────────┐
                       │ XX   07: H - POSITION     │
                       │                           │
                       │ XXXXXXX000000000000       │
                       └──────────────────────────┘
                                  │
┌──────────────────┐   ┌──────────────────────────┐
│ Press SHFT to    │───│ XX   10: ROTATION       ▽│
│ scroll options.  │   │                           │
└──────────────────┘   │ XXXXXXXXXX000000000       │
                       └──────────────────────────┘
                                  │
                       ┌──────────────────────────┐
                       │ XX   11: CHAR PITCH       │
                       │                           │
                       │ XXXXXXXXXXX00000000       │
                       └──────────────────────────┘
                                  │
                       ┌──────────────────────────┐
                       │ XX   12: CHAR COUNT       │
                       │                           │
                       │ XXXXXXXXXXX00000000       │
                       └──────────────────────────┘
                                  │
                       ┌──────────────────────────┐
                       │ XX   14: V - EXPANSE      │
                       │                           │
                       │ XXXXXXXXXXXXX00           │
                       └──────────────────────────┘
```

Right column:

```
┌──────────────────────────┐
│ XX   15: H - EXPANSE      │
│                           │
│ XXXXXXXXXXXXXX0           │
└──────────────────────────┘
            │
┌──────────────────────────┐
│ XX   16: INPUTCHECK       │
│ 5: NUM ONLY               │
│ XXXXXXXXXXXXXXXX          │
└──────────────────────────┘
            │
┌──────────────────────────┐
│ XX   17: INP METHOD       │
│ 0: LEFT     1: RIGHT      │
│ X00000000000000000000     │
└──────────────────────────┘
            │
┌──────────────────────────┐   ┌──────────────────┐
│ XX   18: INSERTION        │───│ Press SHFT to    │
│ 0: NON  1: CM  2: CM&.  ▽ │   │ scroll options.  │
│ XX000000000000000000      │   └──────────────────┘
└──────────────────────────┘
            │
┌──────────────────────────┐
│ XX   19: 0 AUTO-INS       │
│                           │
│ XXX0000000000000000       │
└──────────────────────────┘
            │
┌──────────────────────────┐
│ XX   20: PRESET           │
│  0: OFF     1: ON         │
│ XXXX000000000000000       │
└──────────────────────────┘
            │
┌──────────────────────────┐
│ XX   21: RESERVED         │
│                           │
│ XXXXX0000000000000        │
└──────────────────────────┘
            │
       < Copy?
        Yes / No >───┌──────────┐
                     │ Press    │
                     │ FMT      │
                     └──────────┘
            │
      ( Refer to the
       relative table
       & chart to
       continue. )
```

Figure 4-9e, Price Field Configuration

PRICE FIELD CONFIGURATION		
DIGIT POSITIONS	**DESIGNATED ITEM**	**DESCRIPTION**
1, 2	Price	**20**: Normal **21**: POP

3	Font Type	Normal:
		  0: X1
		  1: X2
		  2: X3
		  5: Price character

		POP:
		  0: POP1
		  1: POP2
		  2: POP3

4, 5, 6	Vertical Position	**001** to **784** dots: Vertical print position. **000**: Entry only, where print is not required.
7, 8, 9	Horizontal Position	001 to 384 dots: Horizontal print position.
10	Rotation	**0**: 0 degrees **1**: 90 degrees **2**: 180 degrees **3**: 270 degrees
11	Character Pitch	**0** to **9** dots
12, 13	Character Count	**01** to **10**: Number of characters in the field. (excludes curency marks, commas, decimals)
14	Vertical Expansion	**1** to **4**: Magnification of horizontal/vertical direction to character (1 to 3 for POP fonts).
15	Horizontal Expansion	**1** to **4**: Magnification of horizontal/vertical direction to character (1 to 3 for POP fonts).
16	Input Check	**5**: Numeric Only. **6**: Numeric in all digits. **7**: Numeric is accepted, but no currency mark. 0 and non-entry are not allowed.
17	Input Method	**0**: Left aligned format. **2**: Right aligned format.
18	Insertion	**0**: None **1**: Currency mark. **2**: Currency mark and decimal point. **5**: Currency mark and comma. **6**: Currency mark, comma, and decimal point. **7**: Comma and decimal point.
19	0 Insertion	**0**: No 0 insertion. **1**: With 0 insertion, right aligned (i.e. 1=001).
20	Preset for general/Euro currency mark.	**0**: General currency mark is not shown. **1**: Entry required. Show general currency mark. **8**: Euro currency mark is not shown. **9**: Entry required. Euro currency mark is shown.
21	Reserved	**0**: Determined

Table 4-9e, Price Field Configuration

CALENDAR FIELD CONFIGURATION

This field type permits a date and/ot time to be printed in the designated location and orientation of a label. Typical applications of this feature is to identify the date of manufacture, inspection, or expiration.
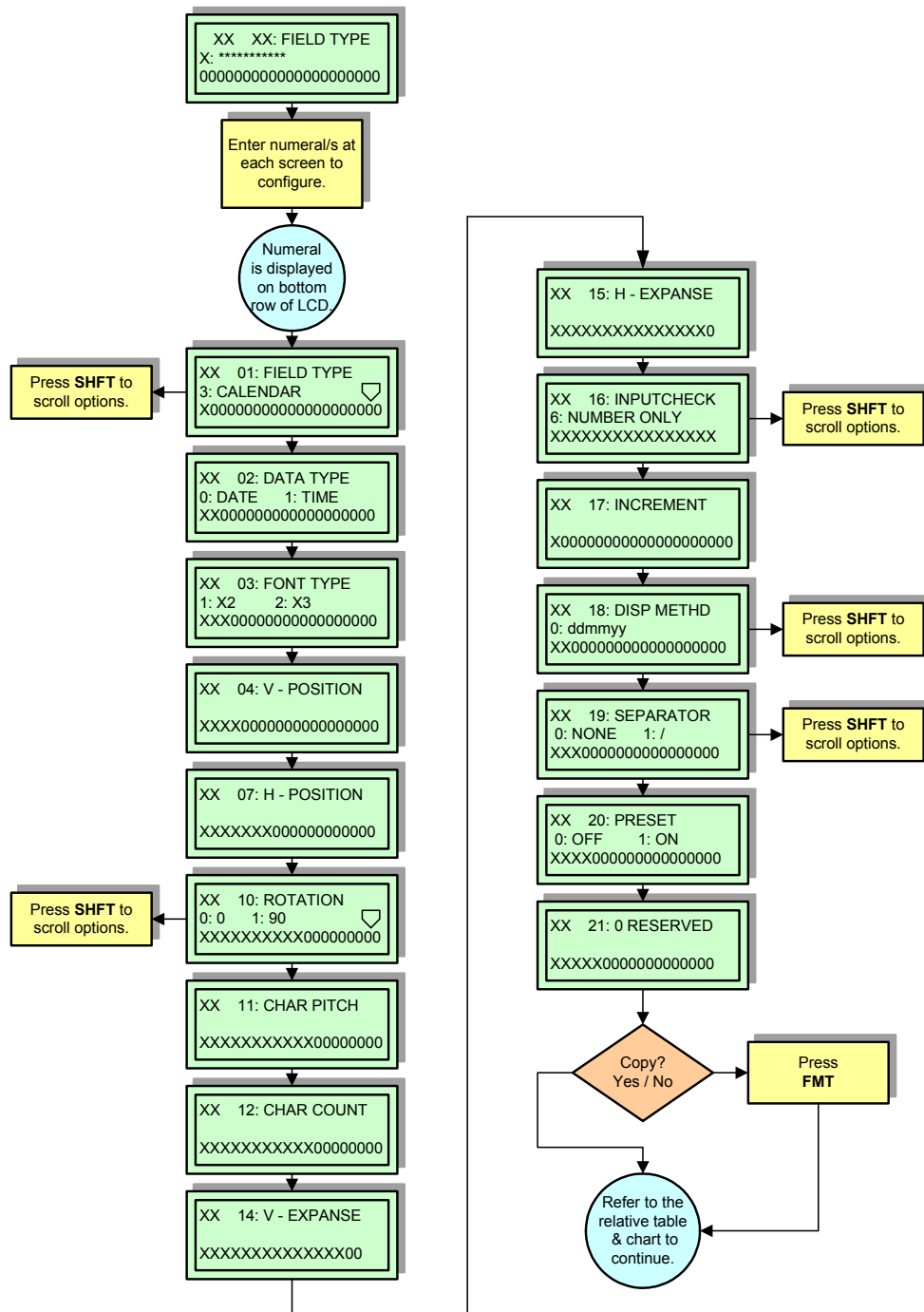
Figure 4-9f, Calendar Field Configuration

CALENDAR FIELD SETUP		
DIGIT POSITIONS	**DESIGNATED ITEM**	**DESCRIPTION**
1, 2	Calendar	**30**: Date **31**: Time
3	Font Type	**1**: X2 **2**: X3
4, 5, 6	Vertical Position	**001** to **784** dots: Vertical print position. **000**: Entry only, where print is not required.
7, 8, 9	Horizontal Position	**001** to **384** dots: Horizontal print position.
10	Rotation	**0**: 0 degrees **1**: 90 degrees **2**: 180 degrees **3**: 270 degrees
11	Character Pitch	**0** to **9** dots
12, 13	Character Count	**01** to **32**: Number of characters in the field.
14	Vertical Expansion	**1** to **4**: Magnification of horizontal/vertical direction to character.
15	Horizontal Expansion	**1** to **4**: Magnification of horizontal/vertical direction to character.
16	Input Check	**6**: Numeric in all digits. **7**: Numeric is accepted, but no currency mark. 0 and non-entry are not allowed.
17	Addition	**0**: No addition. **1**: Addition Date and time should be arranged separately in each field per format.
18	Presentation Format	**0**: ddmmyy **1**: mmddyy **2**: yymmdd **3**: ddmmyyyy **4**: mmddyyyy **5**: yyyymmdd
		0: 24 hour format **1**: AM/PM before time **2**: AM/PM after time
19	Symbol for separating calendarr data	**0**: None **1**: "/" **2**: "-" **3**: "."
20	Preset	**0**: No entry in printing preset (not displayed). **1**: Entry in printing preset (displayed).
21	Reserved	**0**: Determined

Table 4-9f, Calendar Field Configuration

BARCODE FIELD CONFIGURATION

Allows a barcode to be printed onto a label in the specified location and orientation. This menu permits all barcode values and variables to be configured.
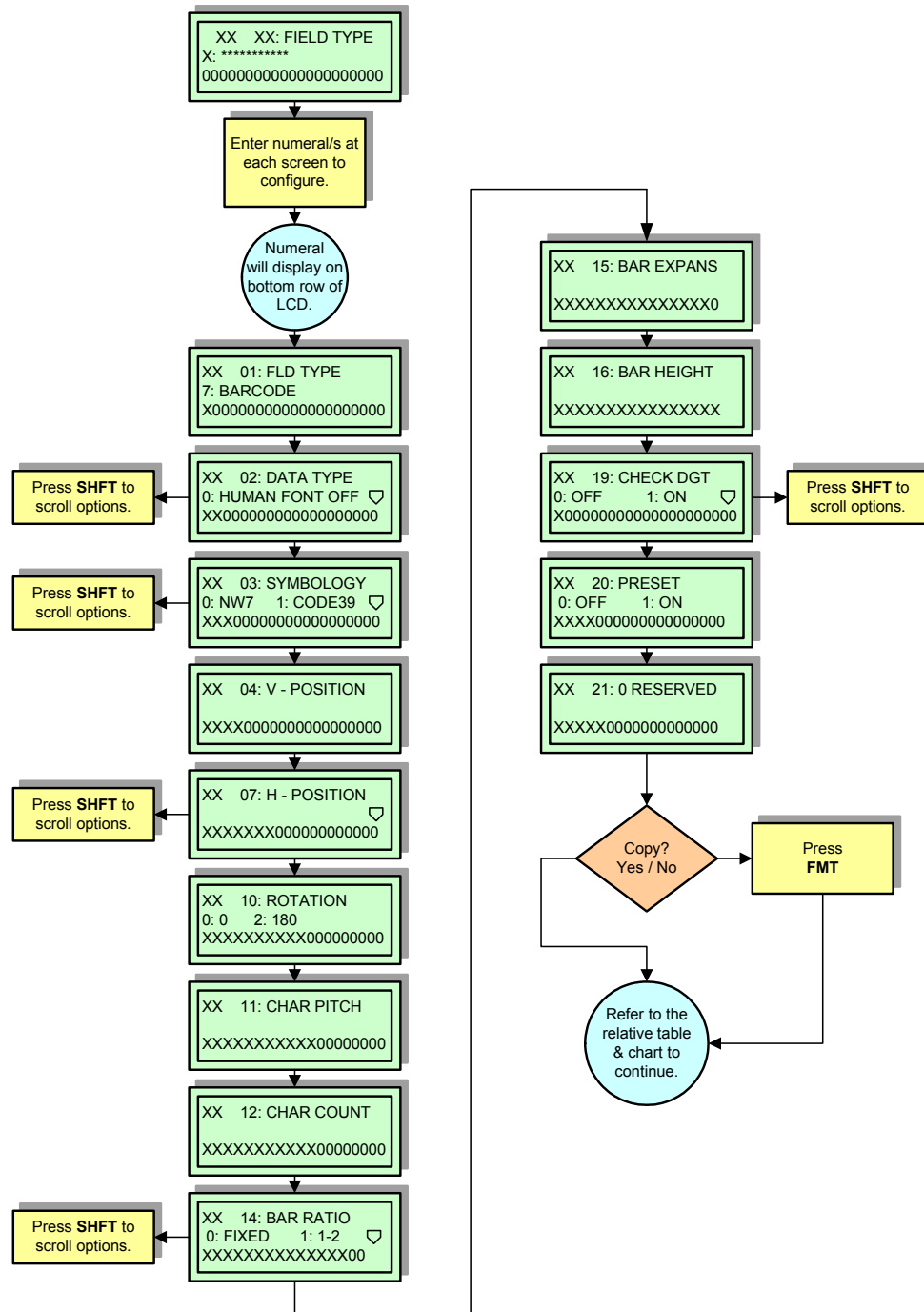
Figure 4-9g, Barcode Field Configuration

BARCODE FIELD SETUP		
DIGIT POSITIONS	**DESIGNATED ITEM**	**DESCRIPTION**
1, 2	Barcode	**70**: Readable> **71**: Not readable.
3	Font Type	**0**: NW-7 **1**: CODE39 **2**: INT2of5 **3**: EAN13 **4**: EAN8 **5**: UPC-E **6**: CODE128 (C Set) **7**: CODE129 (B Set)
4, 5, 6	Vertical Position	**001** to **784** dots: Vertical print position. **000**: Entry only, where print is not required.
7, 8, 9	Horizontal Position	**001** to **384** dots: Horizontal print position.
10	Rotation	**0**: 0 degrees **1**: 90 degrees **2**: 180 degrees **3**: 270 degrees
11	Character Pitch	**0** to **9** dots
12, 13	Character Count	**01** to **22**: Number of digits in the barcode.
14	Bar Ratio	**0**: Invalid (EAN, UPC-A, UPC-E) **1**: 1:2 **2**: 1:2.5 **3**: 1:3
15	Bar Expansion	**2** to **4**: For bar ratio of 1: 2.5, enlargement is restricted to 2x and 4x only.
16, 17, 18	Bar Height	**001** to **240** dots.
19	Check digit (when Code 128 is being set, specify "1").	**0**: No CD **1**: CD creation (computing) **2**: CD Check (with input data) **3**: Price CD (only for EAN13)
20	Preset	**0**: No entry in printing preset (not displayed). **1**: Entry in printing preset (displayed).
21	Reserved	**0**: Determined

Table 4-9g, Barcode Field Configuration
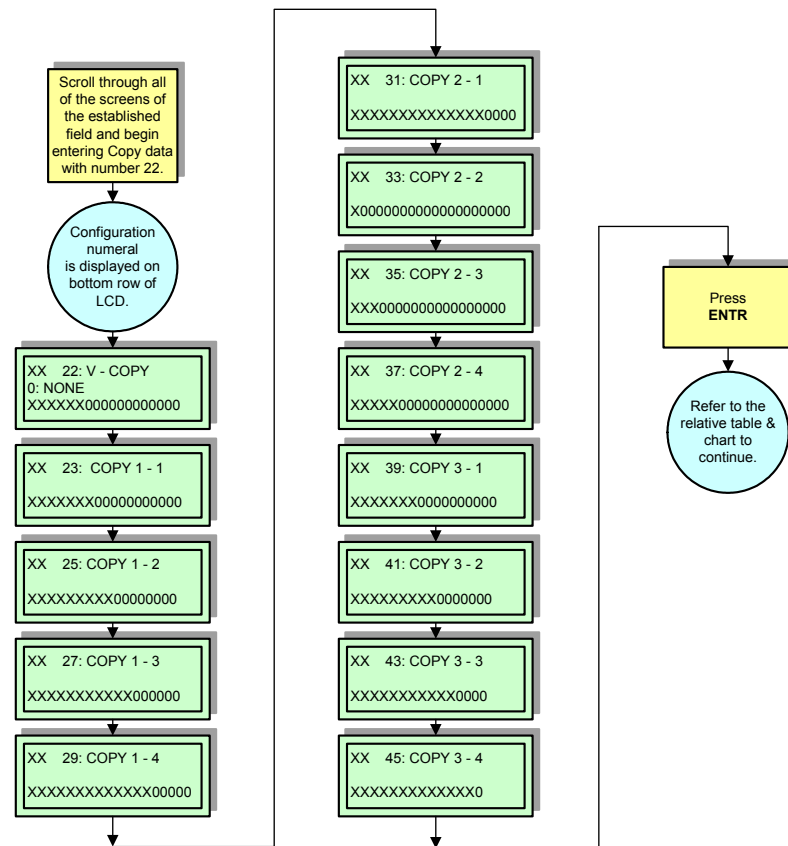
Figure 4-9h, Copy Configuration

COPY SETUP		
DIGIT	**DESIGNATION**	**DESCRIPTION**
22	Copy action	**0**: No copy. **1**: Copy. **2**: Receive a copy.
23, **24**	Copy 1	**01-32**: Specify starting position to begin copying.
25, **26**		**01-32**: Specify number of characters to copy.
27, **28**		**01-29**: Specify where to send the characters.
29, **30**		**01-32**: Starting postion to paste copied characters.
31, **32**	Copy 2	**01-32**: Specify starting position to begin copying.
33, **34**		**01-32**: Specify number of characters to copy.
35, **36**		**01-29**: Specify where to send the characters.
37, **38**		**01-32**: Starting postion to paste copied characters.
39, **40**	Copy 3	**01-32**: Specify starting position to begin copying.
41, **42**		**01-32**: Specify number of characters to copy.
43, **44**		**01-29**: Specify where to send the characters.
45, **46**		**01-32**: Starting postion to paste copied characters.

Table 4-9h, Copy Configuration

PRINT CONFIGURATION

Print Configuration is treated as a field. Thusly, print configuration should always be the last field for that label.

```
┌─────────────────────────────┐
│ XX   XX: FIELD TYPE         │
│ X: ***********              │
│ 00000000000000000000        │
└─────────────────────────────┘
              ↓
┌─────────────────────────────┐
│ Enter numeral to            │
│ designate field             │
│ number & field              │
│ type.                       │
└─────────────────────────────┘
              ↓
         ( Numeral
          is displayed
          on bottom
          row of LCD )
              ↓
┌─────────────────────────────┐
│ XX   01: FIELD TYPE         │
│ 0: QTY                      │
│ X00000000000000000000       │
└─────────────────────────────┘
              ↓
┌─────────────────────────────┐
│ XX   03: FIXED QTY          │
│                             │
│ XX000000000000000000        │
└─────────────────────────────┘
              ↓
┌─────────────────────────────┐
│ Press 0 until the           │
│ following screen is         │
│ displayed.                  │
└─────────────────────────────┘
              ↓
┌─────────────────────────────┐
│ XX   16: DISP COUNT         │
│                             │
│ XXX00000000000000000        │
└─────────────────────────────┘
              ↓
┌─────────────────────────────┐
│ Press 0 until               │
│ through screen 46.          │
│ Press ENTR                  │
└─────────────────────────────┘
              ↓
         ( Refer
          to the relative
          table & chart
          to continue. )
```

Figure 4-9i, Print Quantity Configuration

PRINT QUANTITY CONFIGURATION		
DIGIT POSITIONS	**DESIGNATED ITEM**	**DESCRIPTION**
1, 2	Print Quantity	**00**: Quantity.
3	Quantity	**0**: Not fixed. (default) **1**: Fixed quantity
4 to **15**	Reserved	All remains at **0**
16	Count	**0**: Prints the quantity entered. **Other than 0**: Prints freely.

Figure 4-9i, Print Quantity Configuration

DISCOUNT RATE CONFIGURATION
Where applicable, this menu allows the discount rate to be configured.
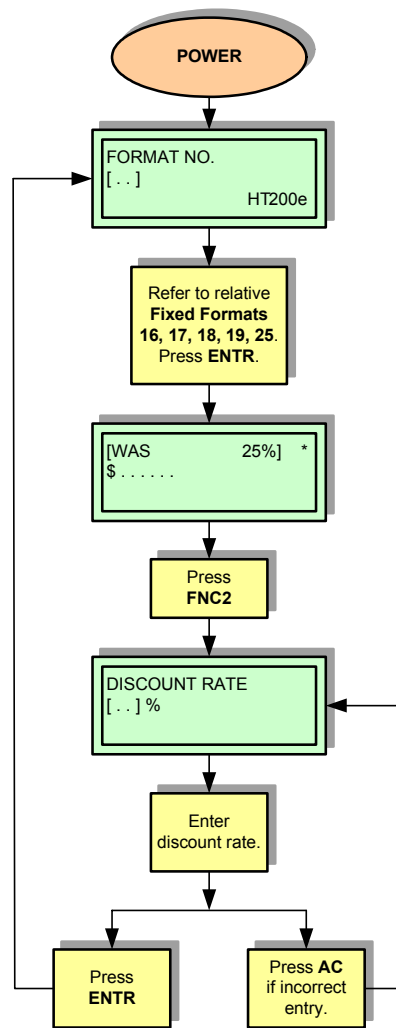
Figure 4-10, Discount Rate Configuration

TAX RATE CONFIGURATION

Where applicable, this menu allows the tax rate to be configured.

```
           ┌──────────┐
           │  POWER   │
           └────┬─────┘
                │
      ┌─────────▼──────────┐
 ┌───▶│ FORMAT NO.         │
 │    │ [ . . ]            │
 │    │            HT200e  │
 │    └─────────┬──────────┘
 │              │
 │    ┌─────────▼──────────┐
 │    │ Refer to relative  │
 │    │ Fixed Formats.     │
 │    │ Enter 23 or 24.    │
 │    │ Press ENTR.        │
 │    └─────────┬──────────┘
 │              │
 │    ┌─────────▼──────────┐
 │    │ [VAT     15.00%] * │
 │    │ $ . . . . . . .    │
 │    └─────────┬──────────┘
 │              │
 │    ┌─────────▼──────────┐
 │    │ Press              │
 │    │ FNC2               │
 │    └─────────┬──────────┘
 │              │
 │    ┌─────────▼──────────┐
 │    │ VAT                │◀────┐
 │    │ [ 17.55 ] %        │     │
 │    └─────────┬──────────┘     │
 │              │                │
 │    ┌─────────▼──────────┐     │
 │    │ Enter four         │     │
 │    │ digit tax rate.    │     │
 │    └─────────┬──────────┘     │
 │        ┌─────┴─────┐          │
 │  ┌─────▼────┐  ┌───▼───────┐  │
 │  │ Press    │  │ Press AC  │  │
 └──┤ ENTR     │  │ if incorrect │
    │          │  │ entry.    ├──┘
    └──────────┘  └───────────┘
```
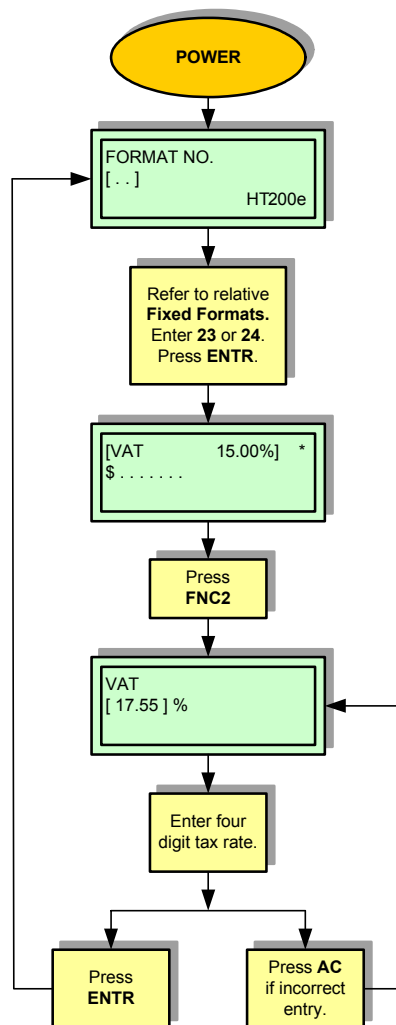
Figure 4-11, Tax Rate Configuration

OPERATIONAL MODES

This unit provides instruction on the various modes used in operation.

ONLINE MODE
This operational mode permits printing activity when the print data is received from the host.
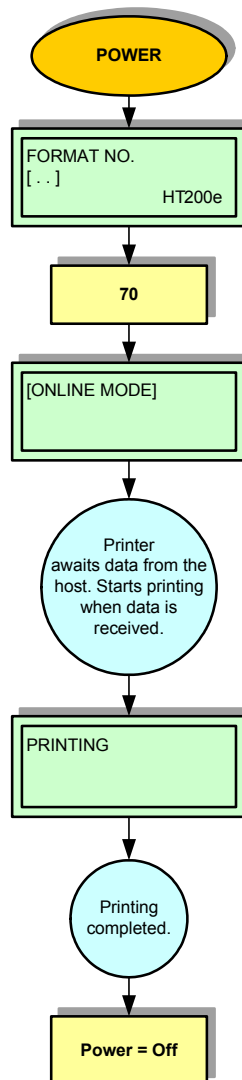
Figure 4-12, Online Mode

TABLE DATA MODE

This operational mode permits the configuration, data entry, modification, and deletion of table data.
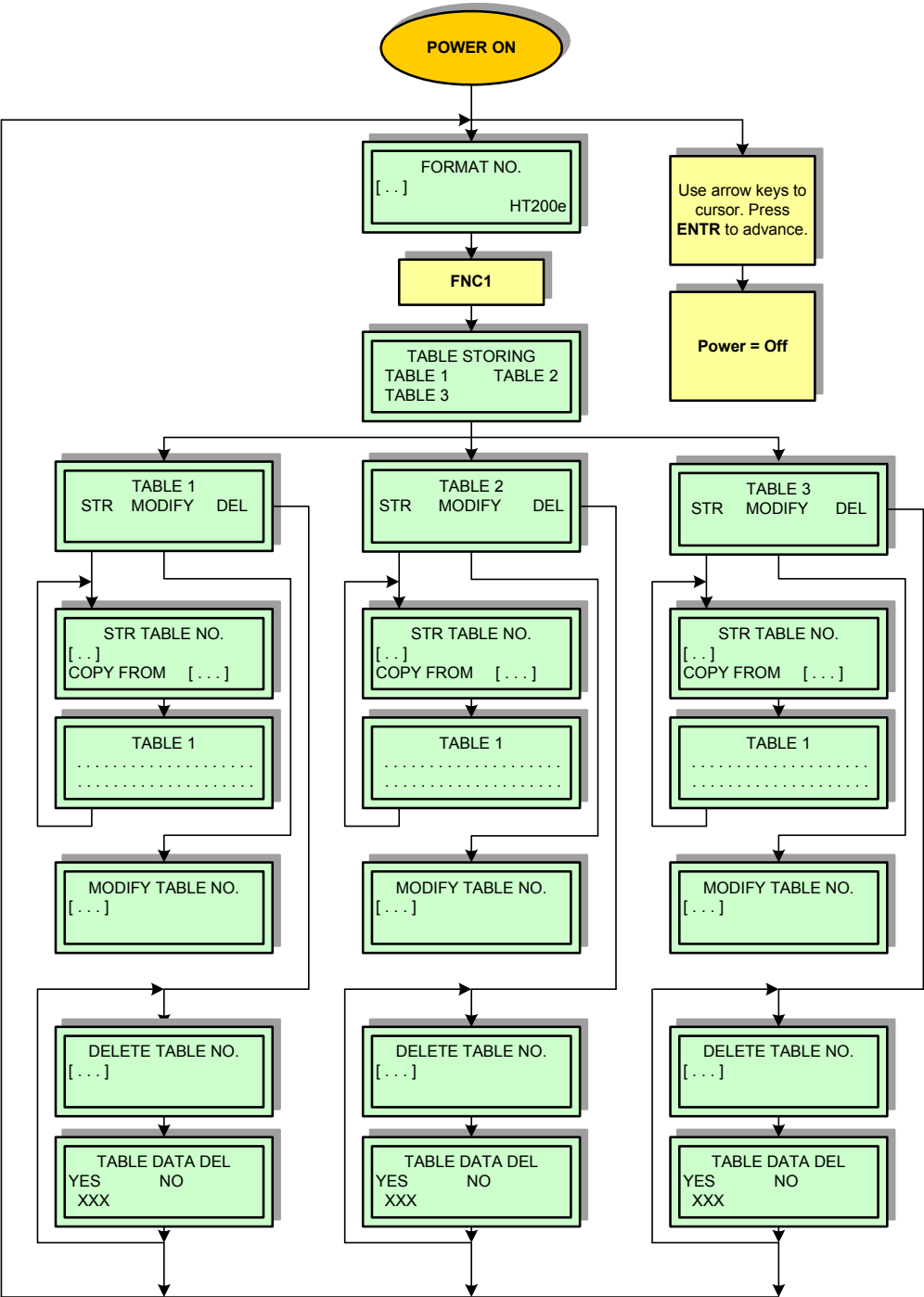
Figure 4-13, Table Data Mode

PRESET DATA MODE
This operational mode permits the configuration, modification, and deletion of preset data.
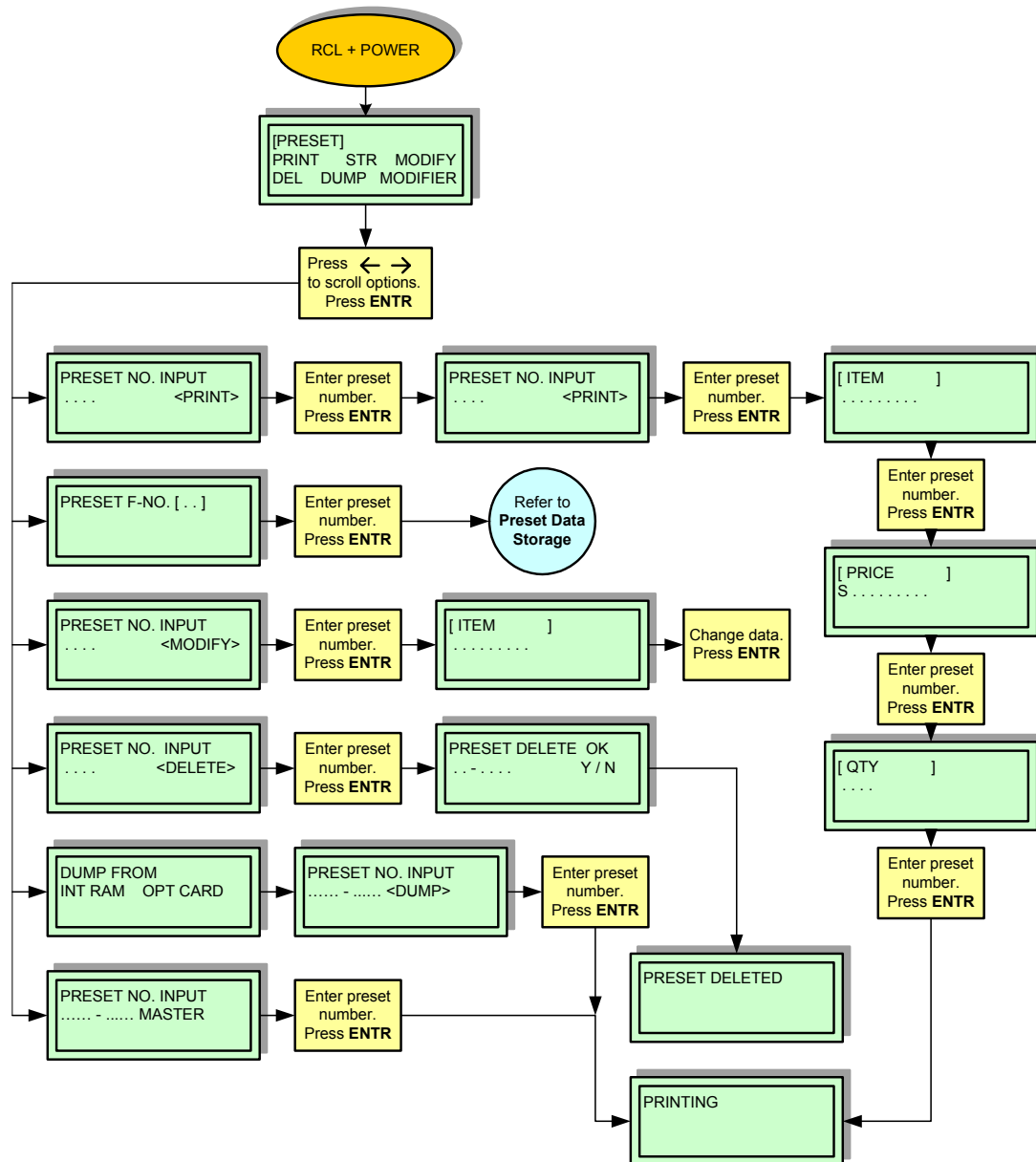
Figure 4-14, Preset Data Mode

PRESET DATA STORAGE
This operational mode permits the storage of preset data.

```
                    ┌──────────────┐
                    │    POWER     │
                    └──────┬───────┘
                           │
              ┌────────────▼─────────────┐
              │    FORMAT NO.            │◄──────────────────┐
              │  [ . . ]                 │                   │
              │              HT200e      │                   │
              └────────────┬─────────────┘                   │
                           │                                 │
                    ┌──────▼───────┐                         │
                    │    Press     │                         │
                    │    RCL       │                         │
                    └──────┬───────┘                         │
                           │                                 │
              ┌────────────▼─────────────┐                   │
              │  [ PRESET ]              │                   │
              │  PRINT   STR   MODIFY    │                   │
              │  DEL   DUMP   MASTER     │                   │
              └────────────┬─────────────┘                   │
                           │                      ┌──────────────────┐
                    ┌──────▼───────┐              │  Enter data as   │
                    │    Press ← → │              │  required. Press │
                    │ to scroll options.          │  ENTR            │
                    │  Press ENTR  │              └────────┬─────────┘
                    └──────┬───────┘                       │
                           │                      ┌────────▼─────────┐
              ┌────────────▼─────────────┐         │    Prompted      │
              │  PRESET F-NO.            │         │ to enter various │
              │  [ . . ]                 │         │  label format    │
              │                          │         │     data.        │
              └────────────┬─────────────┘         └────────┬─────────┘
                           │                                │
                    ┌──────▼───────┐            ┌───────────▼──────────┐
                    │  Enter a label │          │  [ ITEM        ]     │
                    │ format number. │          │  . . . . . . . .     │
                    │  Press ENTR    │          └───────────┬──────────┘
                    └──────┬───────┘                        │
                           │                    ┌───────────▼──────────┐
              ┌────────────▼─────────────┐       │  Enter a number to   │
              │  PRESET NO. INPUT    *   │       │  assign to the       │
              │  . . . .      < STORE >  │       │  following preset.   │
              └────────────┬─────────────┘       │  Press ENTR          │
                           │                     └───────────┬──────────┘
                           └─────────────────────────────────┘
```
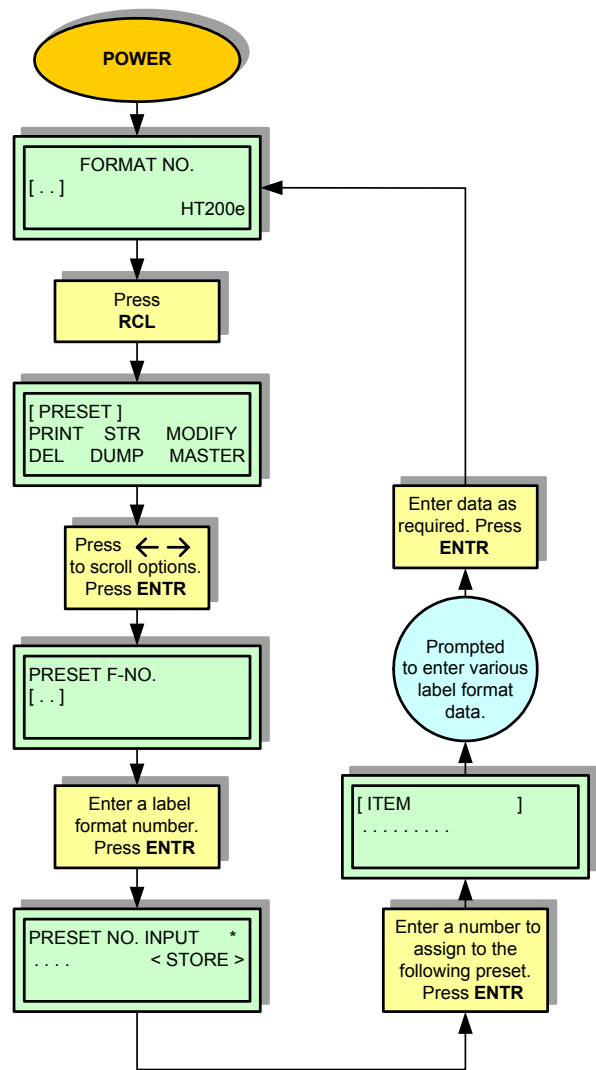
Figure 4-15, Preset Data Storage

SUSPENDING A PRINT JOB
This operational mode provides instruction on how to suspend a print job once initiated.

```
         ┌─────────────┐
    ┌───▶│ PRINTING    │
    │    └──────┬──────┘
    │           │
    │        ╱──┴──╲           ┌────────┐
    │       ╱Continue?╲───────▶│ Press  │
    │   ┌──◀  Yes / No ╲       │  S/S   │
    │   │    ╲       ╱          └───┬────┘
    │   │     ╲─────╱               │
    │   │                          ▼
    │   │              ┌────────────────────┐
    │   │              │ S/S PRINT          │
    │   │              │ REMAIN QTY: 0001   │
    │   │              └─────────┬──────────┘
    │   │                        │
    │   │                      (  Printing  )
    │   │                      (  ceases.   )
    │   │                        │
    │   │                        ▼
  ┌─┴───┴─┐     ╱──────────╲     ┌──────────┐
  │ Press │◀───╱Begin again?╲───▶│Continue to│
  │  S/S  │    ╲  Yes / No  ╱    │  wait.   │
  └───────┘     ╲──────────╱     └──────────┘
```
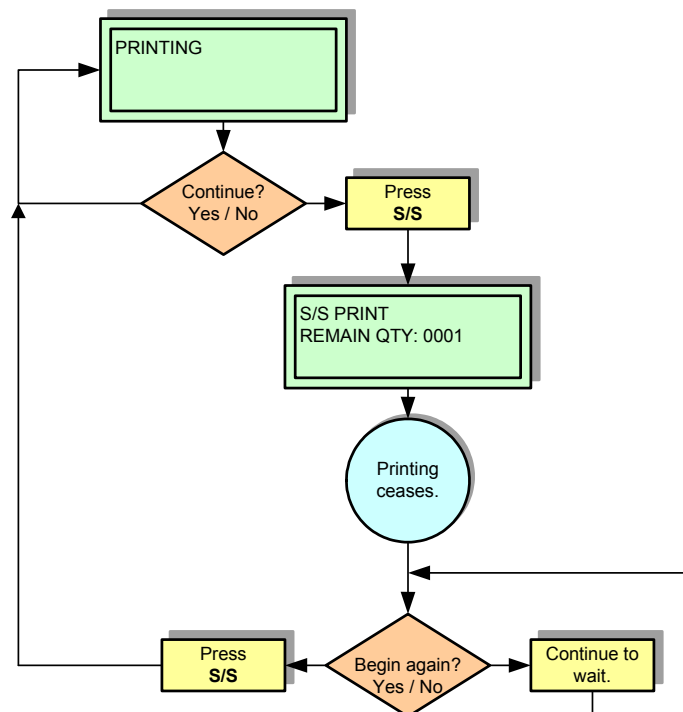
Figure 4-16, Suspending A Print Job

REPRINTING A LABEL

This operational mode provides instruction on how to print a duplicate of a previously printed label.
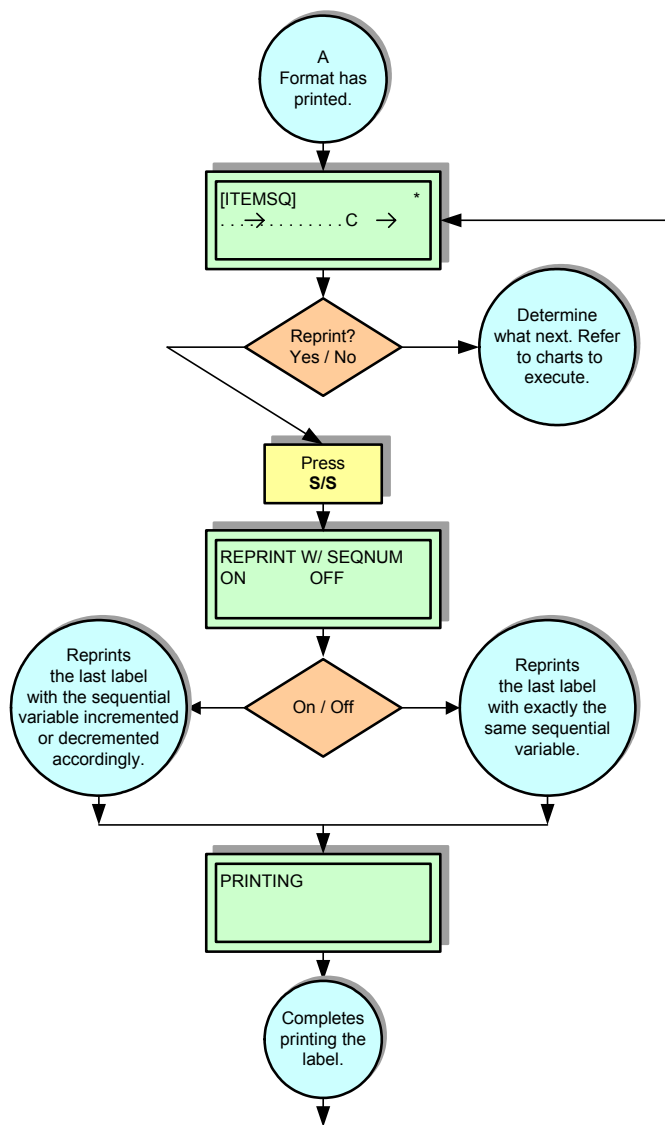
Figure 4-17, Reprinting A Label

DATA ENTRY EDIT

The black blinking cursor indicates where the next typed character will appear. Use the arrow keys on the printer keypad to move the cursor in the direction desired for entry or edit.

If an additional character was accidentally typed, move the cursor to the right of the accidental character and press **DEL** once. The accidental character wil be replaced when the text moves one space to the left.

If an incorrect character is typed, move the cursor onto that character and enter the desired one. The incorrect character will be replaced by the one entered. Any additional charcters entered will replace those to the right.

Use of the **AC** key of the keypad will replace will clear the entire set of characters entered.

Press the **ENTR** key to set the entries. Once the **ENTR** key has been pressed, data entry or edit is not possible.

OPERATIONAL ADJUSTMENTS

This unit covers adjustment of printer features and components to ensure proper function and performance.

EYE-MARK SENSOR ADJUSTMENT

The penetrating sensitivity of the eye-mark sensor may be electrically adjusted through a potentiometer integrated into the main circuit board. This potentiometer is externally accessible, thusly dismantling of the printer is not required.

For proper performance, the sensor must have a voltage reading greater than 0.9V. If the following procedure cannot achieve the required voltage, replace the memory backup battery in accordance with its relative procedure located within the Replacement Procedures unit of this manual. Also clean the sensor window located on the base frame assembly and the sensor's eye. If all else fails, the main circuit board will have to be replaced.

This adjustment procedure will require the use of a multimeter and the SATO Test Module. The voltage level may also be checked by connecting the multimeter probes directly to the CH1a (-) and the CH1b (+) pins of the test terminal and following steps 6 through 12 of the procedure below.

Reference Figure 4-18, Test Module Usage

1   Remove the maintenance cover located on the right side of the printer.

2   Connect the test module to the terminal located to the left of the potentiometers.

3   Turn test module dial to position 4.

4   Connect the positive (+) probe of the multimeter to pin SIG on the test module.

5   Connect the negative (-) probe of the multimeter to GRD on the test module.

6   Ensure the multimeter is set for DC reading.

7   Turn the VR3 potentiometer fully clockwise.

8   Press and hold the [9] key while switching on the printer to enter the Service Mode.

9   Place a label without the eye-mark part in position to be read by the sensor and note the multimeter reading.

10   Replace the label without the eye-mark with one that has the eye-mark and note the multimeter reading.

11   Subtract the previous multimeter reading from the last reading. The difference should be greater than 0.9V.

12   Set the difference to the maximum.

13   Disconnect the test module, load printer with media, and test print labels.

DISPENSER SENSOR ADJUSTMENT

The dispenser sensor is comprised of two parts; the transmitter and the reciever. The transmission and reception of the dispenser sensor may be electrically adjusted through a potentiometer integrated into the main circuit board. This potentiometer is externally accessible, thusly dismantling of the printer is not required.

For proper performance, the sensor must have both a low-level and a high-level voltage reading. The low-level voltage must not be greater than 0.4V and the high-level voltage must not be less than 2.0V. If the following procedure cannot achieve the required voltage, replace the two components in accordance with their relative procedures located within the Replacement Procedures unit of this manual. If all else fails, the main circuit board will have to be replaced.

This adjustment procedure will require the use of a multimeter and the SATO Test Module. The voltage level may also be checked by connecting the multimeter probes directly to the CH1a (-) and the CH2b (+) pins of the test terminal and following steps 6 through 12 of the procedure below.

Reference Figure 4-18, Test Module Usage

1   Remove the maintenance cover located on the right side of the printer.

2   Connect the test module to the terminal located to the left of the potentiometers.

3   Turn test module dial to position 4.

4   Connect the positive (+) probe of the multimeter to pin SIG on the test module.

5   Connect the negative (-) probe of the multimeter to GRD on the test module.

6   Ensure the multimeter is set for DC reading.

7   Turn the VR4 potentiometer fully clockwise.

8   Press and hold the [9] key while switching on the printer to enter the Service Mode.

9   Place a label without the eye-mark part in position to be read by the sensor and note the multimeter reading.

10   Replace the label without the eye-mark with one that has the eye-mark and note the multimeter reading.

11   Subtract the previous multimeter reading from the last reading. The difference should be greater than 0.9V.

12   Set the difference to the maximum.

13   Disconnect the test module, load printer with media, and test print labels.

PITCH ADJUSTMENT
The pitch setting determines the print postion on the label in relation to the eye-mark reference. The eye-mark sends a signal indicating the end of the prior label and the pitch adjustment is based on the linear distance of feed from the time the signal was transmitted.

Reference Figure 4-18, Test Module Usage

1   Ensure the printer is turned off.

2   Remove the maintnenace cover located on the right isde of the printer.

3   Connect the test module located to the left side of the printers.

4   Turn test module dial to position 4.

4   Connect the positive (+) probe of the multimeter to pin SIG on the test module.

5   Connect the negative (-) probe of the multimeter to GRD on the test module.

6   Ensure the multimeter is set for DC reading.

7   Turn the VR2 potentiometer to the 12 o'clock position.

8   Press and hold the [9] key while switching on the printer to enter the Service Mode.

9   At the TEST PRINT screen, press ENTR to proceed to the test print options.

10   Use the arrow keys to select the NORMAL option. Press ENTR.

11   Input the correct pitch and width of the label and press ENTR to test print.

12   Press the S/S key to start and stop printing as necessary.

13   Turn the VR2 potentiometer as required to obtain the correct adjustment.

Figure 4-18, Test Module Usage

DISPENSE STOP POSITION

The dispense stop postion determines how far a printed label is fed for dispense. The following procedure provides guidance on this adjustment.

```
┌─────────────────────────────────────┐
│      Load printer with media.       │
│     Remove maintenance cover.       │
│ Set VR1 potentiometer to 12 o'clock │
│              postion.               │
│          Turn printer on.           │
└─────────────────────────────────────┘
                    │
┌─────────────────────────────────────┐
│ FORMAT No.                          │
│ [ 0 0 ]                             │
│                        HT200e       │
└─────────────────────────────────────┘
                    │
┌─────────────────────────────────────┐
│         Press ENTR twice.           │
└─────────────────────────────────────┘
                    │
┌─────────────────────────────────────┐
│ PRINT                               │
│ NORMAL        DEMAND                │
└─────────────────────────────────────┘
                    │
┌─────────────────────────────────────┐
│ Press ←  → to scroll.               │
│ Select DEMAND for the               │
│ dispenser mode.                     │
│          Press ENTR.                │
└─────────────────────────────────────┘
                    │
┌─────────────────────────────────────┐
│ REAL TIME PRINT                     │
│ ON      OFF                         │
└─────────────────────────────────────┘
                    │
┌─────────────────────────────────────┐
│ Press ←  → to scroll.               │
│   Select the OFF option.            │
│        Press ENTR.                  │
└─────────────────────────────────────┘
                    │
┌─────────────────────────────────────┐
│ PRE-EDITED PRINT                    │
│ ON      OFF                         │
└─────────────────────────────────────┘
                    │
┌─────────────────────────────────────┐
│     Press ←  → to scroll.           │
│     Select the OFF option.          │
│ Press ENTR repeatedly until the     │
│    following screen appears.        │
└─────────────────────────────────────┘
                    │
┌─────────────────────────────────────┐
│ FORMAT No.                          │
│ [ 0 0 ]                             │
│                        HT200e       │
└─────────────────────────────────────┘
                    │
┌─────────────────────────────────────────────────────────────────┐
│                        Enter 01.                                 │
│                       Press ENTR.                                │
│ Press the [8] key seven times to set the barcode format. Press ENTR. │
│   Press the [8] key three times to set the code format. Press ENTR.  │
│   Press the [8] key six times to set values for printing. Press ENTR.│
└─────────────────────────────────────────────────────────────────┘
                    │
                  (  Printing
                    commences.  )
                    │
┌─────────────────────────────────────────────────────────────────┐
│ Turn the VR1 potentiometer each time a label prints until the proper │
│                 adjustment is achieved.                          │
└─────────────────────────────────────────────────────────────────┘
```

Figure 4-19, Dispense Stop Adjustment

LCD BRIGHTNESS ADJUSTMENT

The brightness of the LCD panel may be adjusted through a potentiometer integrated into the bottom side of the main circuit board. To access the VR5 potentiometer, remove the battery cover located on the bottom of the printer chassis. Adjust the potentiometer to the desired result and replace the cover.

5

TROUBLESHOOTING

- • **LCD Error Signals**
- • **Troubleshooting Table**
- • **Troubleshooting Procedures**
- • **Test Module Usage**

LCD ERROR SIGNALS

ERROR MESSAGE	CAUSE	CORRECTIVE ACTION
MEDIA PITCH ERROR	Did not detect label edge.	No paper. Improperly loaded paper. Sensor adjustment.
COVER OPEN	Top cover not latched.	Latch cover. Replace sensor.
CHARGE PWR PACK	Main battery low.	Charge battery. Replace battery pack.
PRINT BATT LOW	Memory battery low.	Backup data and replace pcb battery.
CHNG PRINT BATT	Memory battery dead.	Replace battery (data may be lost).
NO CARD SET	PCMCIA Card not detected.	Insert card.
PLS CLEAR CARD	Data found on card.	Clear the card while in the data maintenance mode.
CARD BATT LOW	PCMCIA Card battery is low.	Backup data and replace battery.
CHNG CARD BATT	PCMCIA Card battery is dead.	Replace battery (data may be lost).
WRITE PROTECT ON	Cannot write to PCMCIA Card.	Ensure card is write protected.
CONFIRM CLEAR TYPE	Improper clear procedure.	Clear again.
BLANK FORMAT	Unregistered format number.	Ensure the format is registered in printer.
DATA ERR	Entered data exceeds limits.	Re-enter correct data.
NO UPLOAD DATA	No data to upload.	Re-enter correct check digit.
INTERFACE ERR	RS232C error.	Confirm host & printer RS232C settings.
HEAD ERR	Error in head detected.	Power off, clean head, reapply power.
HEAD OVERHEATED	Overheated head.	Switch printer off and allow to cool.
PRINTER H/W ERR	Problem in printer hardware.	Power off and then back on.
PRESET NO ERR	Invalid preset number.	Check the preset number and re-enter.
PRESET FULL	Preset data at max capacity.	Clear unused preset data.
NO DUMP ERR	Cannot dump presets.	Preset data not registered.
BLANK PRESET NO	Preset number is not registered.	Check preset number and re-enter.

TROUBLESHOOTING TABLE	
IMAGE VOIDS	
Poor label quality.	Use high quality label stock.
Damaged print head.	Replace print head.
Damaged platen.	Replace platen.
LIGHT PRINT IMAGE	
Poor label quality.	Use high quality direct thermal label stock.
Low print head energy/darkness.	Adjust darkness level.
Foriegn material on print head.	Clean print head and platen roller.
Poor head alignment.	Align print head as required.
Excessive print speed.	Reduce print speed setting.
SMEARED PRINT IMAGE	
Poor label quality.	Use high quality direct thermal label stock.
Foreign material on print head and platen roller.	Clean print head and platen roller.
Foreign material on labels.	Use high quality label stock.
Excessive print head energy.	Adjust darkness control.
Excessive print speed.	Adjust speed as required.
FUZZY PRINT IMAGE	
Heat too high.	Adjust as required.
NO LABEL MOVEMENT	
Loose or broken platen drive gears.	Adjust or replace platen drive gears as required.
Incorrect label pitch sensor selected.	Select the correct label sensor type.
NO PRINTED IMAGE	
Print head is disconnected.	Ensure that print head wiring harness is connected on each end.
Low voltage output.	Test power supply voltage and replace as necessary.
Damaged print head.	Replace print head.
Damaged electronics.	Replace circuit board.
WILL NOT GO ON-LINE	
Defective power supply cord.	Ensure proper function or replace.
House power supply discontinued.	Test receptacle.
Battery pack power depleted.	Recharge or replace.

TROUBLESHOOTING PROCEDURES

RS232 SERIAL INTERFACE TROUBLESHOOTING

• Ensure the serial cable is thoroughly connected to the PC and the printer.

> **CAUTION:** NEVER CONNECT OR DISCONNECT INTERFACE CABLES (OR USE A SWITCH BOX) WITH POWER APPLIED TO EITHER THE PRINTER OR THE HOST. THIS MAY CAUSE DAMAGE TO THE INTERFACE CIRCUITRY AND IS NOT COVERED BY WARRANTY.

• Ensure the serial cable is not defective and that it is manufactured to specifications.

• Ensure the RS232 Interface Module is properly installed.

• Ensure the data stream is correct (all letters of command codes are in upper case and without spaces).

• Ensure the Baud Rate, Parity, Data Bits, and Stop Bits are consistent with that of computer. Print a Configuration Test Label to determine the RS232 settings.

• Ensure the printer is recieving from the computer using the Hex Dump Mode. Refer to that procedure for instructions. The printer will print (only once) a hexadecimal dump of everything it has received from the host computer. Each hexadecimal character represents a character the printer received. Analyze and troubleshoot the data stream.

> NOTE: A small label may produce a large amount of data when printed in Hex Dump.

While checking the hex dump printout, look for OD_h OA_h (carriage return and line feed) characters throughout. The command string should be continuous. CR or LF characters are not allowed between the start command (<ESC>A) and the stop command (<ESC>Z). If Basic is being used, it may be adding these characters automatically as the line wraps. Adding a width statement to your program can help suppress these extra OD_H OA_H characters by expanding the line length up to 255 characters.

If not programming in BASIC, check to see if the equivalent statement in language exists to suppress extra carriage returns and line feeds from data being sent to the printer. The data stream must be one complete line going to the printer.

HEX DUMP PRINTING

The contents of the Print Buffer can be examined using the Hex Dump mode. In the left column, each line of data received is numbered. The center column provides the data in hexadecimal format. And in the right column, the same data is provided in the ASC II format. Follow the flow chart provided below to perform this activity.

```
         ┌─────────────┐
         │    POWER    │
         └─────────────┘
                │
                ▼
      ┌────────────────────┐
      │   FORMAT NO.       │
      │ [ . . ]            │
      │            HT200e  │
      └────────────────────┘
                │
                ▼
      ┌────────────────────┐
      │                    │
      │        71          │
      │                    │
      └────────────────────┘
                │
                ▼
      ┌────────────────────┐
      │  [HEX DUMP MODE]   │
      │                    │
      └────────────────────┘
                │
                ▼
          ╭──────────╮
          │ Prints   │
          │  Label   │
          ╰──────────╯
                │
                ▼
      ┌────────────────────┐
      │                    │
      │   Power = Off      │
      │                    │
      └────────────────────┘
```
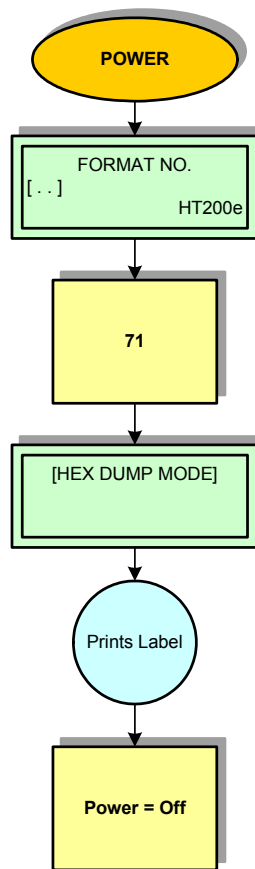
Figure 5-1, Hex Dump Mode

ASCII DUMP MODE

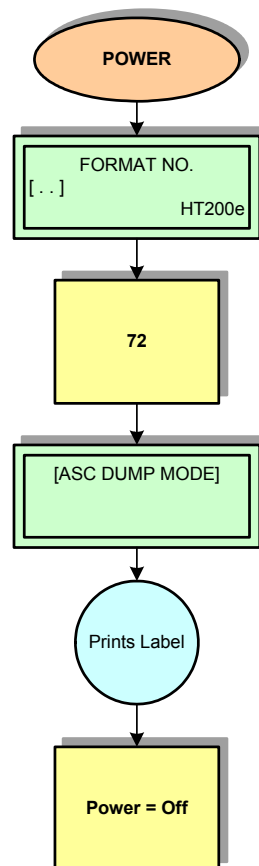The ASCII Dump Mode prints all recieved data in ASCII format. The flow chart below provides guidance.
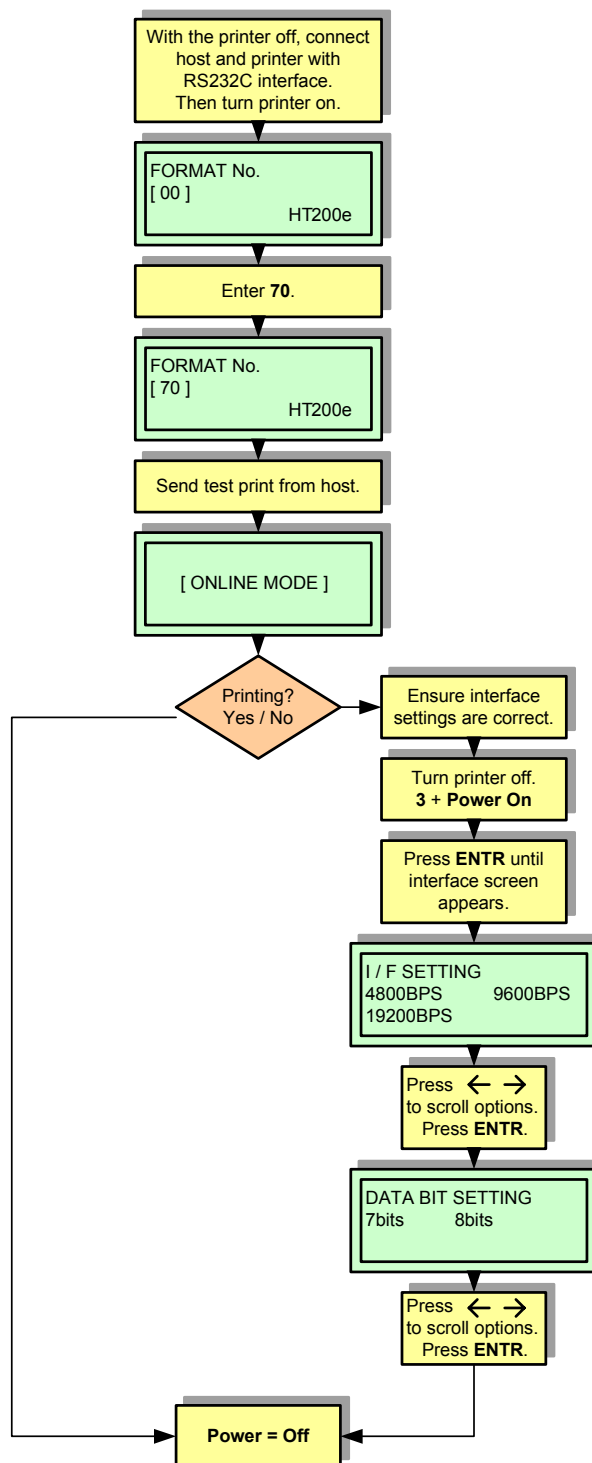

Figure 5-2, ASCII Dump Mode

CHECK ONLINE CONNECTION

```
┌─────────────────────────────┐
│ With the printer off, connect│
│   host and printer with      │
│   RS232C interface.          │
│   Then turn printer on.      │
└─────────────────────────────┘
              │
┌─────────────────────────────┐
│ FORMAT No.                   │
│ [ 00 ]                       │
│              HT200e          │
└─────────────────────────────┘
              │
┌─────────────────────────────┐
│         Enter 70.            │
└─────────────────────────────┘
              │
┌─────────────────────────────┐
│ FORMAT No.                   │
│ [ 70 ]                       │
│              HT200e          │
└─────────────────────────────┘
              │
┌─────────────────────────────┐
│  Send test print from host.  │
└─────────────────────────────┘
              │
┌─────────────────────────────┐
│      [ ONLINE MODE ]         │
└─────────────────────────────┘
              │
         Printing?          ┌──────────────────────┐
         Yes / No ─────────▶│ Ensure interface      │
                            │ settings are correct. │
                            └──────────────────────┘
                                      │
                            ┌──────────────────────┐
                            │ Turn printer off.     │
                            │ 3 + Power On          │
                            └──────────────────────┘
                                      │
                            ┌──────────────────────┐
                            │ Press ENTR until      │
                            │ interface screen      │
                            │ appears.              │
                            └──────────────────────┘
                                      │
                            ┌──────────────────────┐
                            │ I / F SETTING         │
                            │ 4800BPS     9600BPS   │
                            │ 19200BPS              │
                            └──────────────────────┘
                                      │
                            ┌──────────────────────┐
                            │ Press ← →             │
                            │ to scroll options.    │
                            │ Press ENTR.           │
                            └──────────────────────┘
                                      │
                            ┌──────────────────────┐
                            │ DATA BIT SETTING      │
                            │ 7bits     8bits       │
                            └──────────────────────┘
                                      │
                            ┌──────────────────────┐
                            │ Press ← →             │
                            │ to scroll options.    │
                            │ Press ENTR.           │
                            └──────────────────────┘
                                      │
┌─────────────────────────────┐      │
│        Power = Off           │◀─────┘
└─────────────────────────────┘
```

Figure 5-3, Check Online Connection

CHECK SCANNER OPERATION

```
┌─────────────────────────────┐
│ Connect scanner to printer. │
│      Turn printer on.       │
└─────────────────────────────┘

┌─────────────────────────────┐
│ FORMAT No.                  │
│ [ 00 ]                      │
│                    HT200e   │
└─────────────────────────────┘

┌─────────────────────────────┐
│         Enter 20.           │
└─────────────────────────────┘

┌─────────────────────────────┐
│ FORMAT No.                  │
│ [ 20 ]                      │
│                    HT200e   │
└─────────────────────────────┘

┌─────────────────────────────┐
│        Press ENTR.          │
└─────────────────────────────┘

        Scanning
        begins. The
      following screen
     confirms scanner is
        operational.

┌─────────────────────────────┐
│ [ BARCODE ]              *  │
│ . . . . . . . . . . . C     │
└─────────────────────────────┘
```
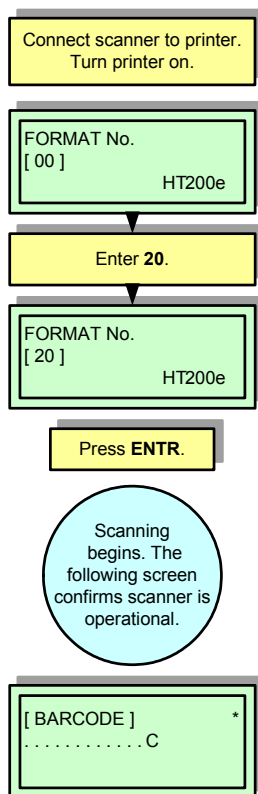
Figure 5-4, Check Scanner Operation

TEST MODULE USAGE

The SATO TP Test Module is a purchase option specially designed and sold by SATO America to assist in troubleshooting SATO Printers. The use of this device will facilitate the identification and isolation of problem circuitry and for voltage adjustment.

1 Connect the harness from Test Module (FIgure 10-3) to the test connector.

2 Connect the multimeter ground probe to the pin identified as GND on the Test Module.

3 Connect the multimeter positive probe to the pin identified as SIG on the Test Module.

> NOTE: The ground and positive probes of the multimeter may also be connected to the Test Module by inserting the probes into their respective connection ports (6) arranged vertically along the right front side of the Test Module. If this method is used, the dial should be set at (0) zero. Refer to Figure 6-2 for connection port identification.

4 Turn on the printer and rotate the Test Module dial to the required position.

> NOTE: Refer to Figure 6-2 for the correct Test Module position.

5 Record the multimeter values and confirm they are within specified tolerences.

> NOTE: Voltage readings must be +/- 10% of specification for proper operation.

6 Troubleshoot and/or replace components as directed in their respective procedures.

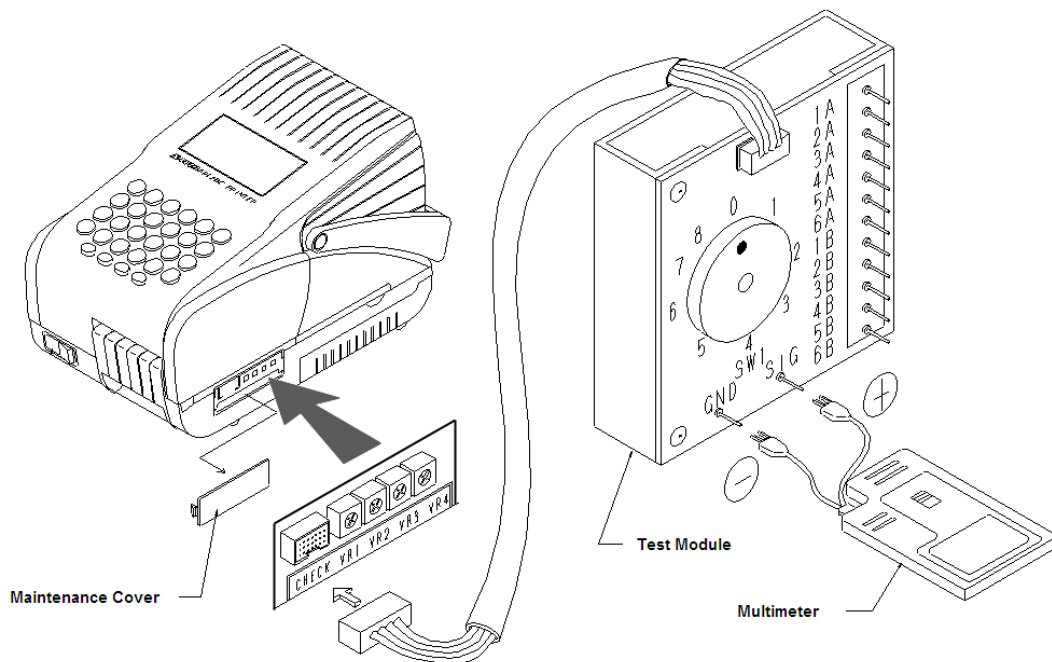**Figure 5-5, Test Module Usage**

TEST MODULE DIAL			
MODULE DIAL	**PIN ASSIGNMENT**	**SPECIFICATION**	**APPLICATION**
0	3A / 1A	+4.8V to +5.3V	+5.0V Power Supply
1	4A / 1A	+3.1V to +3.5V	+2.0V Power Supply
2	5A / 1A	+1.9V to 2.1V	+3.3V Power Supply
3	6A / 1A	+8.2V to +8.7V	+24.0V Power Supply
4			Eye-Mark Sensor

6

MAINTENANCE

- • **Cleaning Procedures**
- • **Replacement Procedures**
- • **Adjustment Procedures**
- • **Service Modes**

CLEANING PROCEDURES

Cleaning of the printer is a necessary maintenance activity to ensure print quality and long printer life. There are two basic types of cleaning involved; the removal of loose debris and the removal of residue.

Use a soft cloth and/or a pneumatic blower (pressurized air) to remove debris from the printer. This process should be performed prior to the removal of residue. To remove residue, apply SATO Solvent or isopropyl alcohol to a clean cotton swab and gently wipe the entire surface of the print head, platen roller, and dispenser roller until clean.

It is recommended that the printer be cleaned after the printing of every two rolls of labels.

> **WARNING: DISCONNECT POWER SUPPLY TO THE PRINTER AND ALLOW TO COOL TO ROOM TEMPERATURE PRIOR TO CLEANING.**

> **WARNING: EXCERSIZE CARE WHEN CLEANING TO PREVENT PERSONAL INJURY. THE TEAR BAR HAS A VERY SHARP EDGE.**

> **CAUTION:** IF USING A PNEUMATIC BLOWER TO REMOVE DEBRIS FROM THE PRINTER, EXCERSIZE CARE TO PREVENT PRINT HEAD DAMAGE.

REPLACEMENT PROCEDURES

The printer contains replaceable components and sub-assemblies that are subject to wear or damage. This section provides step-by-step instructions for the removal and replacement of those primary components and sub-assemblies approved for operator performance.

PRINT HEAD REPLACEMENT

If the print head becomes damaged or worn, it can be easily removed and replaced without having to make critical adjustments. Before replacing the print head, check the head counter values by printing a test pattern. Refer to the Troubleshooting unit for Diagnostic Label Printing guidance.

1   Switch off the printer and disconnect the power supply.

2   Open the top housing cover to access print head (1, Figure 6-1).

3   Remove two screws (2) securing print head mounting plate (3) to top frame assembly (4).

4   Disconnect the print head wiring harness from print head (1).

5   Remove two screws (5) securing print head (1) to mounting plate (3).

6   Lift away damaged print head (1) and install replacement print head (1) in its place.

7   Secure replacement print head (1) to mounting plate (3) using two screws (5).

8   Connect the print head wiring harness to print head (1).

9   Secure mounting plate (3) to top frame assembly (4) using two screws (2).

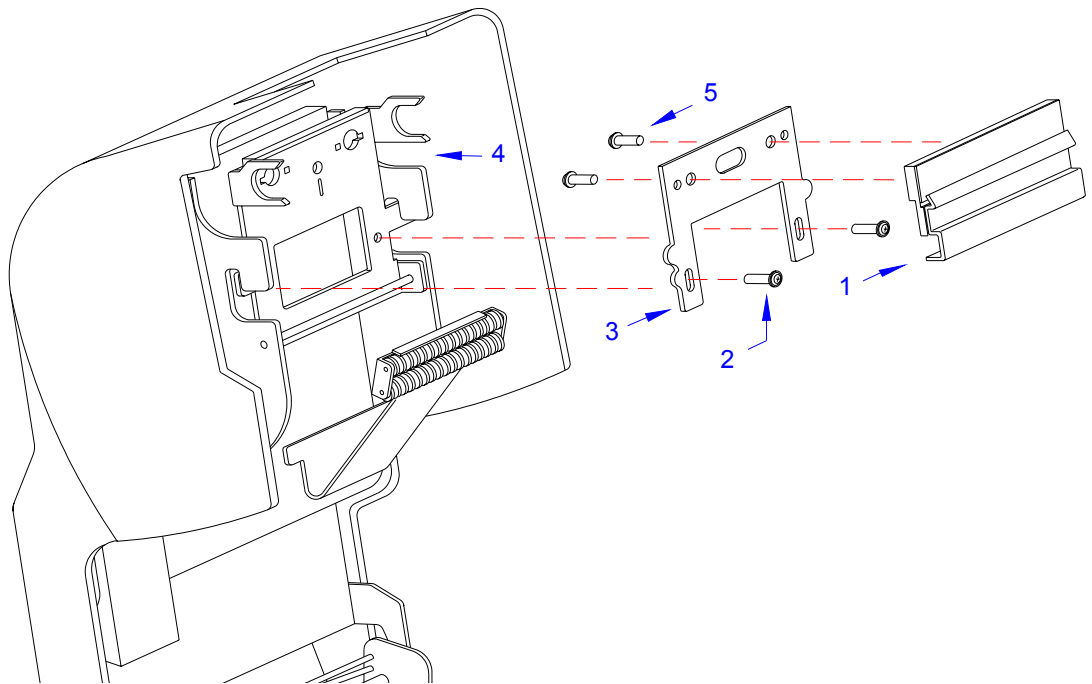10   Load printer with media, restore power, and test print.

Figure 6-1, Print Head Replacement

POWER SWITCH REPLACEMENT

The power switch is located on the front of the printer to the left of the dispenser. The power switch is of a simple on/off variety that completes the circuit when in the "on" position and breaks the circuit when "off". When in the "on" position, electrical current is allowed to flow from the source to the main circuit board where it is regulated and dispensed.

The switch is compression fitted in the printer chassis and may be detached without the removal of attaching hardware. To replace the power switch, simply pry the switch from the printer chassis, mark each of the three leads connected to its terminals located in the rear, and then disconnect them. Connect the leads to the replacement switch oriented as was removed and then insert it into the printer chassis.

MEMORY BACKUP BATTERY REPLACEMENT

To remove the memory backup battery, simply remove the battery cover located on the bottom of the printer chassis. Manually move the battery to the center of its holder and lift outward on the free end.

To install a replacement battery, insert one end of the battery into its holder first, then work the rest of the battery into the holder while centering the battery.

> NOTE: A properly installed battery will be oriented so the writing on the larger flat surface will face outward.

> **WARNING: AN INCORRECTLY INSTALLED BATTERY MAY EXPLODE CAUSING MECHANICAL AND PERSONAL INJURY. ONLY REPLACE THE SUPPLIED BATTERY WITH ONE OF EQUIVALENT SPECIFICATIONS. REFER TO THE TECHNICAL DATA UNIT OF THIS MANUAL OR THE PARTS LIST FOR SPECIFICATIONS.**

> **CAUTION:** DISPOSE OF ALL UNUSED BATTERIES IN ACCORDANCE WITH FEDERAL AND MUNICIPAL REGULATIONS FOR THAT REGION.

ADJUSTMENT PROCEDURES

This printer incorporates a series of sub-assemblies that, in conjunction, comprise the total printer assembly. Many of these sub-assemblies are designed to be adjustable to maintain optimum performance of the printer throughout its life. This chapter of the Operator Manual addresses the proper technique for their adjustment.

It may be necessary to refer to this chapter following component replacement. Use the relative procedure in that chapter to replace the component, test cycle the printer, and then adjust as necessary in accordance to the relative procedures in this chapter.

PRINT HEAD ALIGNMENT

The print head may require alignment following its replacement. Poor alignment of the print head with the platen roller will result in print that will drift from one side toward the opposite side. To achieve print that is perpendicular with the media, slightly loosen the two screws securing the print head mounting bracket to the top frame assembly and alter the position of the print head until it appears to perfectly aligned with the upper perimeter of the top frame assembly. Retighten the two screws with the print head held in that position, then test print labels to ensure a proper alignment.
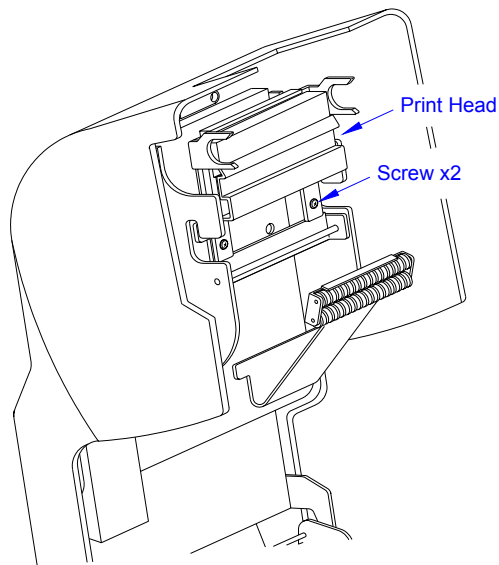
Figure 6-2, Print Head Alignment

PRINT HEAD BALANCE ADJUSTMENT

Many printer models and makes require print head balance adjustment, this one does not. This printer is designed to be self balancing through the utilization of dual torsion springs mounted in the top frame assembly behind the print head. When the top housing cover is latched in the closed position, pressure is applied to the print head against the platen roller. The two springs enable the print head to flex ensuring full contact of the two components across their entire length.

BELT TENSION ADJUSTMENT

The printer has two timing belts that may require adjustment. The belt configuration transfers the timing sequence from the drive motor to the platen roller. If the timing belts become loose enough, media feeding will become erratic affecting print location from label to label. A properly tensioned belt will be tight enough to prevent slippage, but loose enough to avoid undue lateral pressure on the motor spindle and the platen roller shaft. Excessively tightened belts will result in accelerated component wear due to drag and friction.

The methodology of adjustment is determinant on which belt, or whether both, requires adjustment.

Both Belts Loosen the idle gear mounting screw and move the gear upward or downward as required for proper tension and then retighten the screw. The gear may be adjusted by applying vertical pressure on the mounting screw.

Platen Belt Loosen the idle gear mounting screw and move the gear upward or downward as required for proper tension of the platen belt and then retighten the screw. The gear may be adjusted by applying vertical pressure on the mounting screw.

Loosen the motor mount screws and adjust the motor as required to regain proper tension on that belt from the mal-adjustment created by the adjustment of the platen belt. The motor may be adjusted by applying lateral pressure on its mounting screws.

Motor Belt Loosen the two motor mount screws and adjust the motor's position until proper tension is achieved, then retighten the motor mount screws. The motor may be adjusted by applying lateral pressure on its mounting screws.

If timing belt adjustment does not remedy the problem or if the belts have been adjusted to their maximum length machanically allowed, the belts will require replacement. Refer to those relative procedures located in the Replacement Procedures unit of this manual.

EYE-MARK SENSOR ADJUSTMENT

The penetrating sensitivity of the eye-mark sensor may be electrically adjusted through a potentiometer integrated into the main circuit board. This potentiometer is externally accessible, thusly dismantling of the printer is not required.

For proper performance, the sensor must have a voltage reading greater than 0.9V. If the following procedure cannot achieve the required voltage, replace the memory backup battery in accordance with its relative procedure located within the Replacement Procedures unit of this manual. Also clean the sensor window located on the base frame assembly and the sensor's eye. If all else fails, the main circuit board will have to be replaced.

This adjustment procedure will require the use of a multimeter and the SATO Test Module. The voltage level may also be checked by connecting the multimeter probes directly to the CH1a (-) and the CH1b (+) pins of the test terminal and following steps 6 through 12 of the procedure below.

Reference Figure 6-3, Test Module Usage

1   Remove the maintenance cover located on the right side of the printer.

2   Connect the test module to the terminal located to the left of the potentiometers.

3   Turn test module dial to position 4.

4   Connect the positive (+) probe of the multimeter to pin SIG on the test module.

5   Connect the negative (-) probe of the multimeter to GRD on the test module.

6   Ensure the multimeter is set for DC reading.

7   Turn the VR3 potentiometer fully clockwise.

8   Press and hold the [9] key while switching on the printer to enter the Service Mode.

9   Place a label without the eye-mark part in position to be read by the sensor and note the multimeter reading.

10   Replace the label without the eye-mark with one that has the eye-mark and note the multimeter reading.

11   Subtract the previous multimeter reading from the last reading. The difference should be greater than 0.9V.

12   Set the difference to the maximum.

13   Disconnect the test module, load printer with media, and test print labels.

DISPENSER SENSOR ADJUSTMENT

The dispenser sensor is comprised of two parts; the transmitter and the reciever. The transmission and reception of the dispenser sensor may be electrically adjusted through a potentiometer integrated into the main circuit board. This potentiometer is externally accessible, thusly dismantling of the printer is not required.

For proper performance, the sensor must have both a low-level and a high-level voltage reading. The low-level voltage must not be greater than 0.4V and the high-level voltage must not be less than 2.0V. If the following procedure cannot achieve the required voltage, replace the two components in accordance with their relative procedures located within the Replacement Procedures unit of this manual. If all else fails, the main circuit board will have to be replaced.

This adjustment procedure will require the use of a multimeter and the SATO Test Module. The voltage level may also be checked by connecting the multimeter probes directly to the CH1a (-) and the CH2b (+) pins of the test terminal and following steps 6 through 12 of the procedure below.

Reference Figure 6-3, Test Module Usage

1   Remove the maintenance cover located on the right side of the printer.

2   Connect the test module to the terminal located to the left of the potentiometers.

3   Turn test module dial to position 4.

4   Connect the positive (+) probe of the multimeter to pin SIG on the test module.

5   Connect the negative (-) probe of the multimeter to GRD on the test module.

6   Ensure the multimeter is set for DC reading.

7   Turn the VR4 potentiometer fully clockwise.

8   Press and hold the [9] key while switching on the printer to enter the Service Mode.

9   Place a label without the eye-mark part in position to be read by the sensor and note the multimeter reading.

10   Replace the label without the eye-mark with one that has the eye-mark and note the multimeter reading.

11   Subtract the previous multimeter reading from the last reading. The difference should be greater than 0.9V.

12   Set the difference to the maximum.

13   Disconnect the test module, load printer with media, and test print labels.

PITCH ADJUSTMENT

The pitch setting determines the print postion on the label in relation to the eye-mark reference. The eye-mark sends a signal indicating the end of the prior label and the pitch adjustment is based on the linear distance of feed from the time the signal was transmitted.

Reference Figure 6-3, Test Module Usage

1   Ensure the printer is turned off.

2   Remove the maintnenace cover located on the right isde of the printer.

3   Connect the test module located to the left side of the printers.

4   Turn test module dial to position 4.

4   Connect the positive (+) probe of the multimeter to pin SIG on the test module.

5   Connect the negative (-) probe of the multimeter to GRD on the test module.

6   Ensure the multimeter is set for DC reading.

7   Turn the VR2 potentiometer to the 12 o'clock position.

8   Press and hold the [9] key while switching on the printer to enter the Service Mode.

9   At the TEST PRINT screen, press ENTR to proceed to the test print options.

10   Use the arrow keys to select the NORMAL option. Press ENTR.

11   Input the correct pitch and width of the label and press ENTR to test print.

12   Press the S/S key to start and stop printing as necessary.

13   Turn the VR2 potentiometer as required to obtain the correct adjustment.

Figure 6-3, Test Module Usage

DISPENSE STOP POSITION

The dispense stop postion determines how far a printed label is fed for dispense. The following procedure provides guidance on this adjustment.

Load printer with media.
Remove maintenance cover.
Set VR1 potentiometer to 12 o'clock postion.
Turn printer on.

FORMAT No.
[0 0]
HT200e

Press **ENTR** twice.

PRINT
NORMAL   DEMAND

Press ← → to scroll.
Select **DEMAND** for the dispenser mode.
Press **ENTR**.

REAL TIME PRINT
ON   OFF

Press ← → to scroll.
Select the **OFF** option.
Press **ENTR**.

PRE-EDITED PRINT
ON   OFF

Press ← → to scroll.
Select the **OFF** option.
Press **ENTR** repeatedly until the following screen appears.

FORMAT No.
[0 0]
HT200e

Enter **01.**
Press **ENTR**.
Press the [**8**] key seven times to set the barcode format. Press **ENTR**.
Press the [**8**] key three times to set the code format. Press **ENTR**.
Press the [**8**] key six times to set values for printing. Press **ENTR**.

Printing commences.

Turn the VR1 potentiometer each time a label prints until the proper adjustment is achieved.

Figure 6-4, Dispense Stop Adjustment

LCD BRIGHTNESS ADJUSTMENT

The brightness of the LCD panel may be adjusted through a potentiometer integrated into the bottom side of the main circuit board. To access the VR5 potentiometer, remove the battery cover located on the bottom of the printer chassis. Adjust the potentiometer to the desired result and replace the cover.

SERVICE MODES
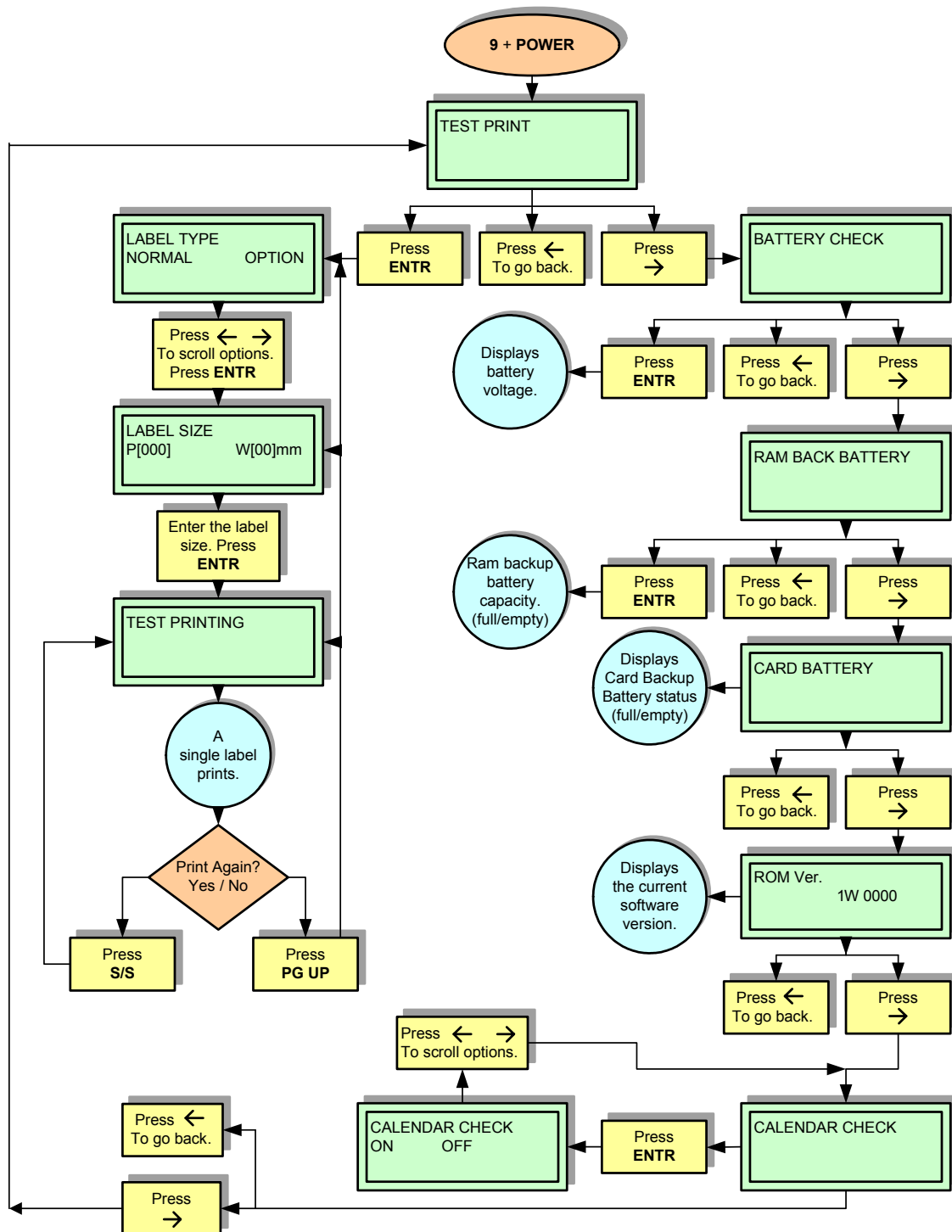
Figure 6-5, Service Mode

HEX DUMP MODE
The contents of the print buffer and the data received before it is placed into the print buffer may be examined through the use of the Hex Dump Mode. Each line of the printed data is inumerated in the first column, the second column contains the data in hexadecimal format, and the right column contains the same data in ASCII format.

```
                    ┌─────────────┐
                    │    POWER    │
                    └─────────────┘
                           │
                           ▼
            ┌──────────────────────────────┐
            │        FORMAT NO.            │
            │ [ . . ]                      │
            │                    HT200e    │
            └──────────────────────────────┘
                           │
                           ▼
                    ┌─────────────┐
                    │             │
                    │     71      │
                    │             │
                    └─────────────┘
                           │
                           ▼
            ┌──────────────────────────────┐
            │      [HEX DUMP MODE]         │
            └──────────────────────────────┘
                           │
                           ▼
                    ╭─────────────╮
                   (  Prints Label  )
                    ╰─────────────╯
                           │
                           ▼
                    ┌─────────────┐
                    │             │
                    │ Power = Off │
                    │             │
                    └─────────────┘
```
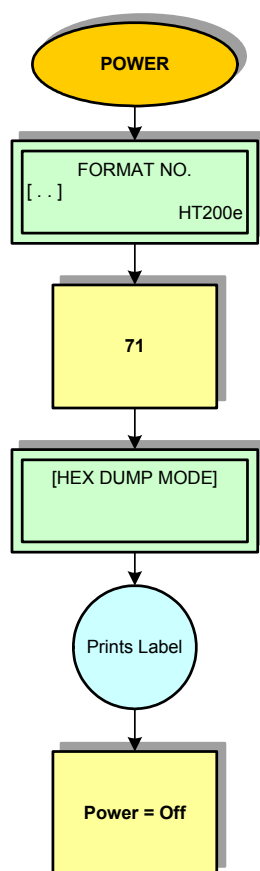
Figure 6-6, Hex Dump Mode

ASCII DUMP MODE
Allows printing of data in the ASCII format.

```
        ┌─────────┐
        │  POWER  │
        └────┬────┘
             │
   ┌─────────▼──────────┐
   │ FORMAT NO.         │
   │ [ . . ]            │
   │            HT200e  │
   └─────────┬──────────┘
             │
        ┌────▼────┐
        │   72    │
        └────┬────┘
             │
   ┌─────────▼──────────┐
   │ [ASC DUMP MODE]    │
   └─────────┬──────────┘
             │
        ┌────▼────┐
        │ Prints  │
        │ Label   │
        └────┬────┘
             │
        ┌────▼──────┐
        │ Power = Off│
        └───────────┘
```
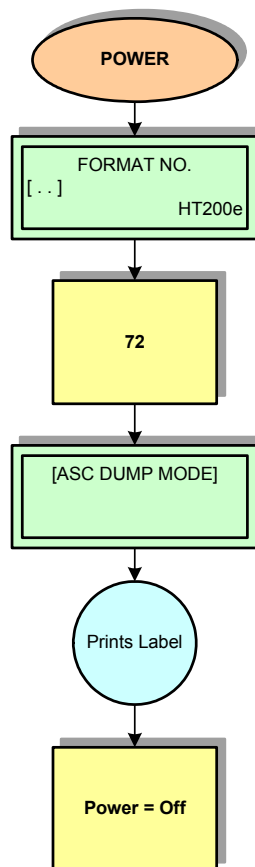
Figure 6-7, ASCII Dump Mode

PRINT HEAD & LIFE COUNTER CLEAR

Permits the print head and/or life counter to be cleared. This is typically performed following component replacement or major service.
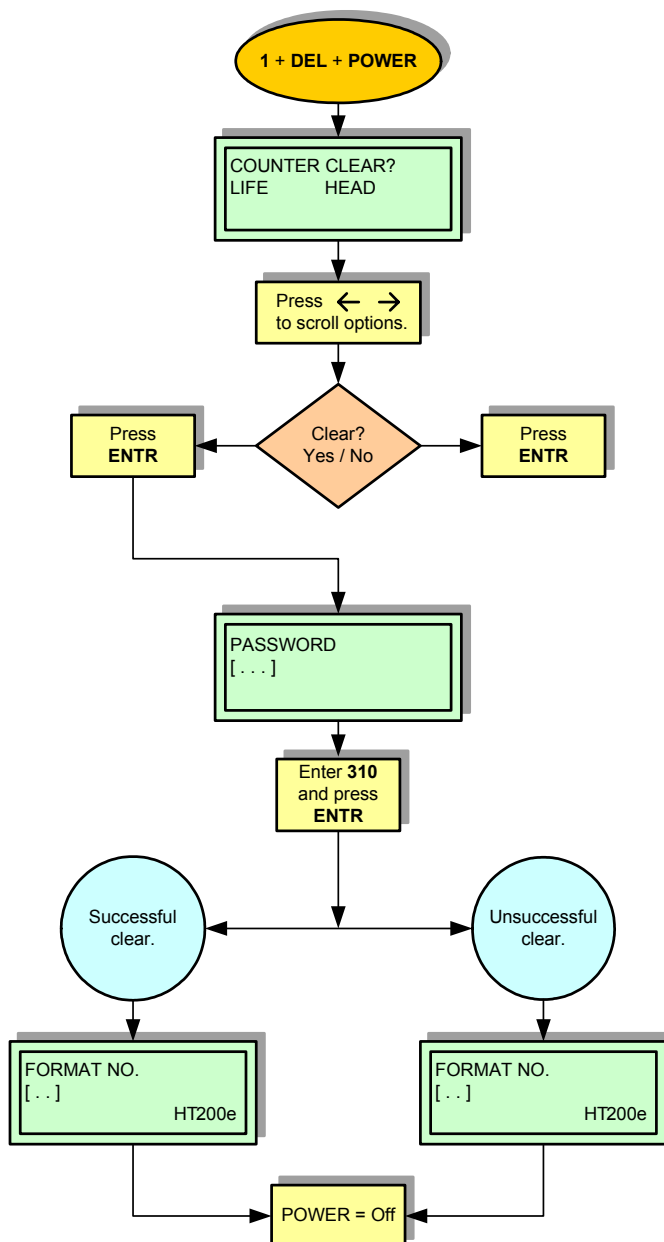
Figure 6-8, Print Head & Life Counter Clear

TEST PRINT MODE

This mode allows the operator or service technician to print test labels for troubleshooting and for verification of configuration settings.

```
                ┌─────────────────┐
                │   9 + POWER     │
                └────────┬────────┘
                         │
                ┌────────▼────────┐
                │ TEST PRINT      │
                │                 │
                └────────┬────────┘
                         │
                ┌────────▼────────┐
                │     Press       │
                │     ENTR        │
                └────────┬────────┘
                         │
                ┌────────▼────────┐
                │ LABEL TYPE      │
                │ NORMAL   OPTION │
                └────────┬────────┘
                         │
                ┌────────▼────────┐
                │ Press ← →       │
                │ to scroll options.│
                │ Press ENTR.     │
                └────────┬────────┘
                         │
                ┌────────▼────────┐
                │ LABEL SIZE      │
                │ P[ 000 ]  W[ 00 ]mm │
                └────────┬────────┘
                         │
                ┌────────▼────────┐
                │ Input label     │
                │ size data.      │
                │ Press ENTR      │
                └────────┬────────┘
                         │
                ┌────────▼────────┐
                │ LABEL SIZE      │
                │ P[ 000 ]  W[ 00 ]mm │
                └────────┬────────┘
                         │
                   ┌─────▼─────┐
                   │     A     │
                   │ single label │
                   │ is printed. │
                   └───────────┘
```
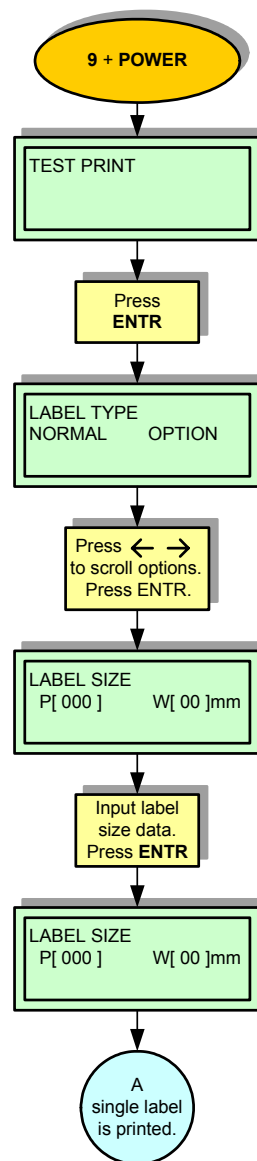
Figure 6-9, Test Print Mode

SRAM CLEAR MODE
Permits SRAM contents to be cleared.

```
                          ┌─────────────┐
                          │  6 + POWER  │
                          └──────┬──────┘
                                 │
                    ┌────────────┴────────────┐
                    │ MEMORY CLEAR?           │
                    │ YES / NO                │
                    └────────────┬────────────┘
                                 │
                         ┌───────┴────────┐
                         │ Press ← →      │
                         │ to scroll      │
                         │ options.       │
                         └───────┬────────┘
                                 │
          ┌─────────┐       ╱─────────╲       ┌─────────┐
          │ Press   │◄─────┤  Clear?   ├─────►│ Press   │
          │ ENTR    │       ╲ Yes / No╱       │ ENTR    │
          └────┬────┘        ╲───────╱        └────┬────┘
               │                                   │
               └──────────┐                        │
                          │                        │
               ┌──────────┴────────────┐           │
               │ PASSWORD              │           │
               │ [ . . . ]             │           │
               └──────────┬────────────┘           │
                          │                         │
                  ┌───────┴───────┐                 │
                  │ Enter 310     │                 │
                  │ and press     │                 │
                  │ ENTR          │                 │
                  └───────┬───────┘                 │
                          │                         │
                      ╱───────╲                     │
                     │ SRAM is │                    │
                     │ cleared.│                    │
                      ╲───────╱                     │
                          │                         │
               ┌──────────┴────────────┐            │
               │ FORMAT NO.            │◄───────────┘
               │ [ . . ]               │
               │              HT200e   │
               └──────────┬────────────┘
                          │
                  ┌───────┴───────┐
                  │ POWER = Off   │
                  └───────────────┘
```
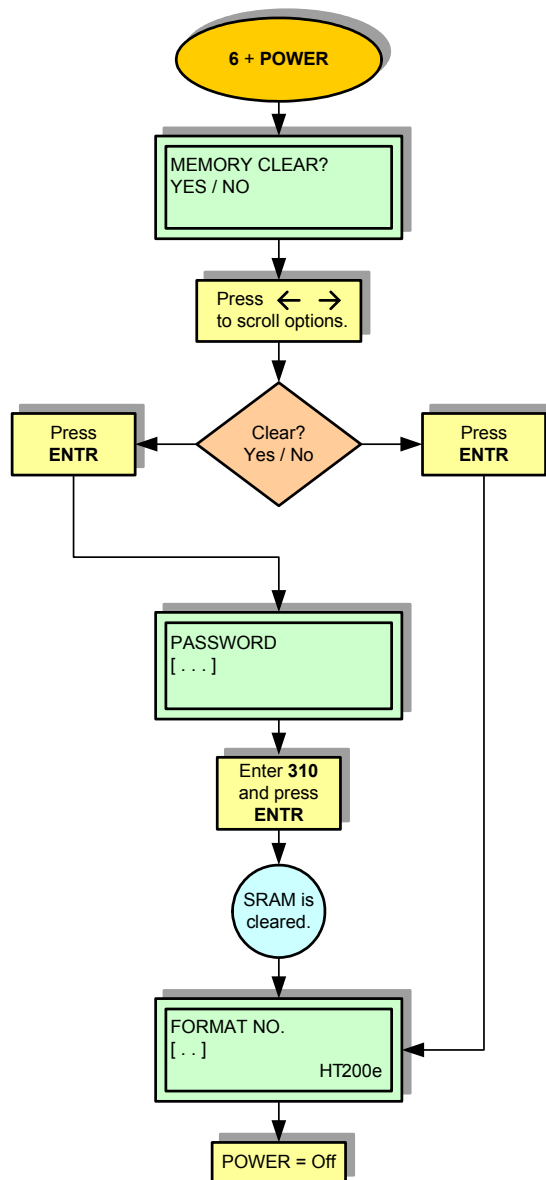
Figure 6-10, SRAM Clear Mode