KROY K4652/K4653

THERMAL TRANSFER / DIRECT THERMAL BAR CODE PRINTER

USER'S MANUAL

CONTENTS

1. PRODUCT INTRODUCTION

Thank you very much for purchasing the KROY K4652/K4653 bar code printer. The printer comes with a rugged steel construction and durable metal mechanism ensuring the ability to work under extreme industrial applications.

The K4652/4653 is equipped with a 32-bit RISC processor, which offers a print speed of up to 6 ips/4 ips. With a back-lit LCD display, the printer status can be managed more easily and operated in a more user friendly manner. The moveable sensor design can handle a wide range of label media.

All of the most frequently used bar code formats are available with the printer Fonts and bar codes can be printed in any one of four directions. This printer provides a choice of 8 different sizes of alphanumeric font, OCR-A, OCR-B and one true type font. The K4652/K4653 is the most cost-effective and high performance printer in its class!

1.1 Compliances

1.2 Specification

1.2.1 Printer

Item	Specification
Printing Mode	Thermal transfer and direct thermal
Resolution	203DPI (K4652), 300 DPI (K4653)
Max. Print Length	1000 mm (K4652), 460 mm (K4653)
Max. Print Width	108 mm (K4652), 106 mm (K4653)
Print Speed	3,4,5,6 ips K4652); 2,3,4 ips (K4653)

1.2.2 Environment

Operating Environment	
Temperature	5 ~40 ºC
Humidity	30 % ~ 85 %
Storage Environment	
Temperature	-10 ~ 60 ºC
Humidity	20 ~ 95 %
Ventilation	Free air environment

1.2.3 Hardware

Sensors	Label gap sensor, Paper end sensor, Ribbon end sensor, Ribbon near end sensor, Black mark sensor, Head open sensor, Case open sensor, Label taken sensor, Paper near end sensor.
Memory	Flash ROM (2MB), DRAM (2MB) and 8M optional flash ROM (memory module).
Interface	RS-232C (RS422/485 option), Centronics (SPP), USBV1.1 (Option) and Internal LAN adapter (option)
Cutter	4 inch width (Paper thickness up to 0.28 mm).
Power	100-240 V universal switching power supply.
Other	Real Time Clock (option).

1.2.4 Bar Code

Code 39, Code 39C, Code 93, Code128 subsets A.B.C, Code 11, Codabar, Interleave 2 of 5, EAN-8, EAN-13, EAN-128, UPC-A, UPC-E, EAN and UPC 2(5) digital add-on, ISBT 128, LOGMARS, CPOST, MSI, PLESSEY, POSTNET, ITF-14, PDF-417, Maxicode, DataMatrix.

1.3 Optional Items

- Cutter module
- Peel off sensor
- Portable LCD keyboard (KU-007 plus)
- Memory module
- USB, RS-422/485 interfaces,
- Internal Ethernet print server
- 802.11b wireless print server

1.4 Supplies

1.4.1 Label Specification

Item	Specification
Type	Roll and label (Continuous, die-cut, fan-fold, ticket, Tag etc., Tag is option)
Label Width	25.4 ～116 mm (1"～4.4")
Label Length	10 ～999 mm (0.4"～39.33")
Label Thickness	0.06 ～0.25 mm
Label Roll Diameter	203 mm (Max.)
Roll Core Diameter	25 or 77 mm
Black Mark Width	3 mm (Min.)

1.4.2 Ribbon Specification

Item	Specification
Ribbon Width	25.4 ～114.3 mm
Ribbon Length	300 m (Max.)

2. GETTING STARTED

2.1 Unpacking and Inspection

After receiving the bar code printer, carefully inspect the device and its packaging. The printer is specially packaged to withstand damage in shipping. In case of evident damage, contact the carrier directly to specify the nature and extent of the damage. Please retain the packaging materials in case you need to reship the printer.

2.2 Equipment Checklist

- Printer unit
- Ribbon paper core
- Quick installation guide
- Power cord
- Centronics interface cable
- 3" paper core adapter
- Label spindle fixing tab
- Software CD

Separately purchased items may also be included. These additional items may include:

- Cutter module
- Peel off sensor
- KU-007 plus portable LCD keyboard
- Memory module
- USB, RS-422/485 interfaces
- Internal Ethernet print server
- 802.11b wireless print server

If any part is missing, please contact the Customer Service Department of your reseller or distributor where you purchased the printer.
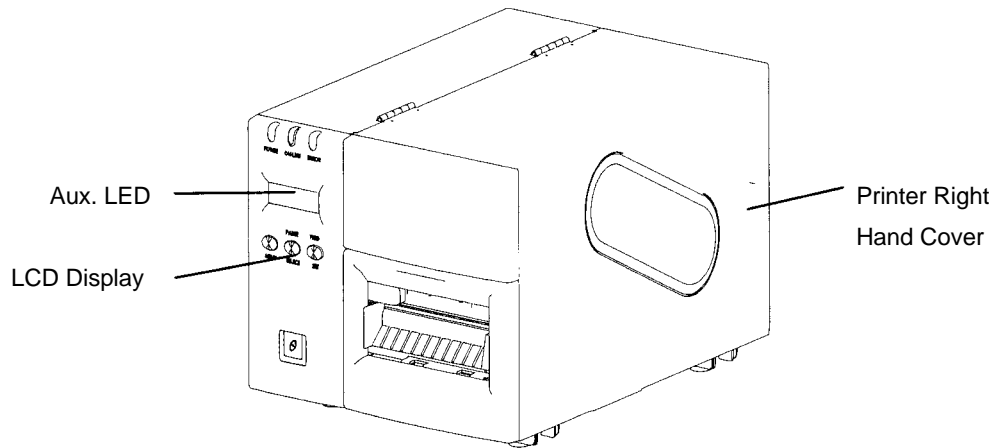
2.3 Printer Parts

Aux. LED

LCD Display

Printer Right
Hand Cover

Figure 1. Top front view

External Label
Feed Opening

Centronics Port

RS-232C Port

Voltage Switch

Power Supply
Connector

Figure 2. Printer rear view

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Ribbon Supply Spindle   Ribbon Tension Knob   Ribbon Rewind Spindle

Label Spindle

Media Guide Bar
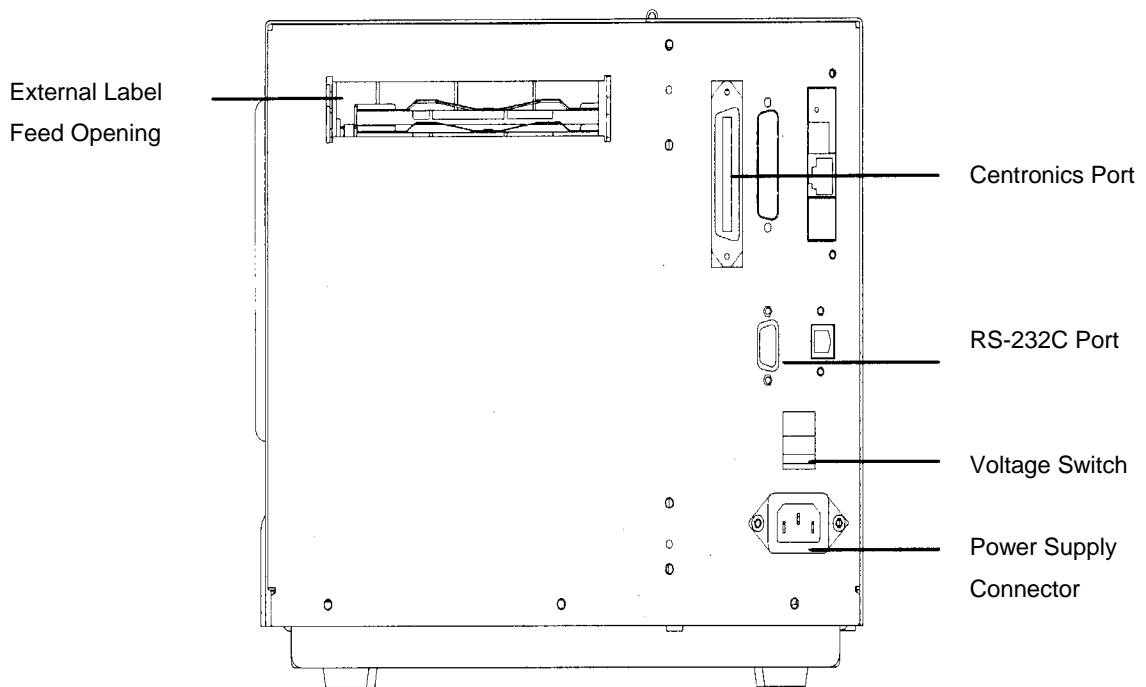
Print Head Pressure
Adjustment Knob

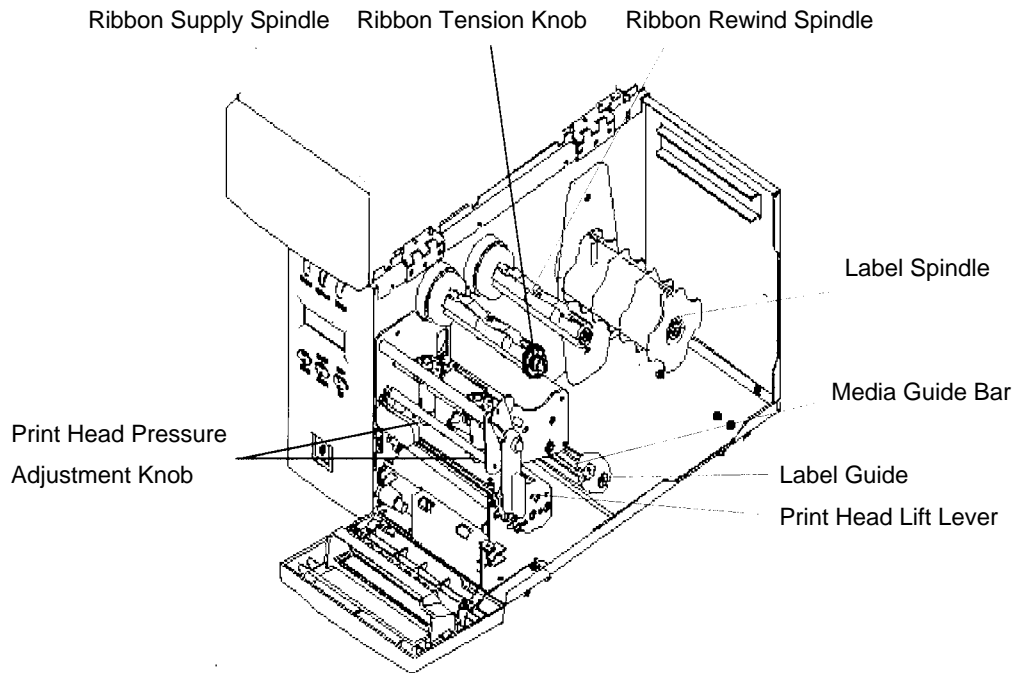Label Guide
Print Head Lift Lever

Figure 3. Printer interior view

2.4 Buttons and Indicators

Power Indicator

When the printer is in the power-on condition, the **Power** indicator is lit.

On-Line Indicator

This green **On-Line** indicator is lit when the printer is ready; the **On-Line** indicator blinks when the **PAUSE** button is pressed.

Error Indicator

The red **Error** indicator illuminates in the event of a printer error, such as memory full, carriage open, cutter error and so forth.

MENU/SELECT Button

The printer, which is provided with a built-in menu, allows the user to directly set printing parameters or view the printer status on the LCD display.

Press the **MENU** button to enter printer setup mode. Press the **MENU** button again to move the cursor to the next option.

The setup is comprised of the following main operations: Printer Setup, Sensor Setup, System Setup, File Setup and Printer Test. For more information, please refer to the Appendix for the structure and operation logic of the menu.

PAUSE/EXE/INC Button

This button enables three functions to be carried out:

A. If the printer status is Ready the **PAUSE** button may be used . By pressing the **PAUSE** button: (1) the printer stops after printing the current label, (2) the **On-Line** LED flashes, and (3) the printer holds all of the data in its memory. This allows for trouble-free replacement of the label stock and thermal transfer ribbon. A second depression of the **PAUSE** button will restart the printer.

B. If the printer is in setup mode the **EXE/INC** button may be used. Press the **EXE/INC** button to increase the value of the parameters, or execute the selected item.

FEED/DEC Button

This button also has dual functions: It feeds one label and decreases the value of the parameters.

Press the **FEED** button and the printer will advance one label.

Press the **DEC** button to change the parameter settings or exit the submenu.

Print Head Lift Lever

When disengaging the **Print Head Lift Lever,** the **On-Line** LED goes out and the LCD display shows "Carriage Open". After engaging the print head lift lever, press the **FEED** button, the printer will re-register the label and then show READY on the LCD display, and the screen will return to the ready condition.

Print Head Pressure Adjustment Knob

This is used to adjust the pressure of the print head. Please adjust the knob to the proper setting to get the best print quality.There are 5 levels for the print head pressure knobs. Some paper material does not allow very good printing, so you may need to improve the printing quality by increasing the print head pressure. If the label width is 4", adjust both the print head pressure adjustment knobs to the same pressure level. If the label width is 2" or less than 2", adjust the left hand print head pressure adjustment knob and release the right hand pressure knob to level 1.

Ribbon Tension Knob

There are 6 levels for the **ribbon tension knob,** which prevents the printing ribbon from wrinkling when it is stretched. Turn the ribbon tension knob clockwise and you will hear a slight clicking sound as the gear changes. The ribbon tension level varies from loose to tight, level 1 to level 6. You will hear a big click for level 1.

3. Set Up

3.1 Setting Up the Printer

1. Place the printer on a flat, secure surface.
2. Make sure the POWER switch is off.
3. Connect the printer to the computer with the RS-232C or Centronics cable provided.
4. Plug the power cord into the power supply connector at the rear of the printer, and then plug the power cord into a properly grounded power point.

3.2 Ribbon Installation

1. Open the cover on the right side of the printer and the lower front panel.
2. Open the turning plank and the spindle support frame.
3. Disengage the print head lift lever.
4. Install a new ribbon spindle on to the ribbon supply spindle.

   Notice : The ribbon should be placed at the left end of the spindle.

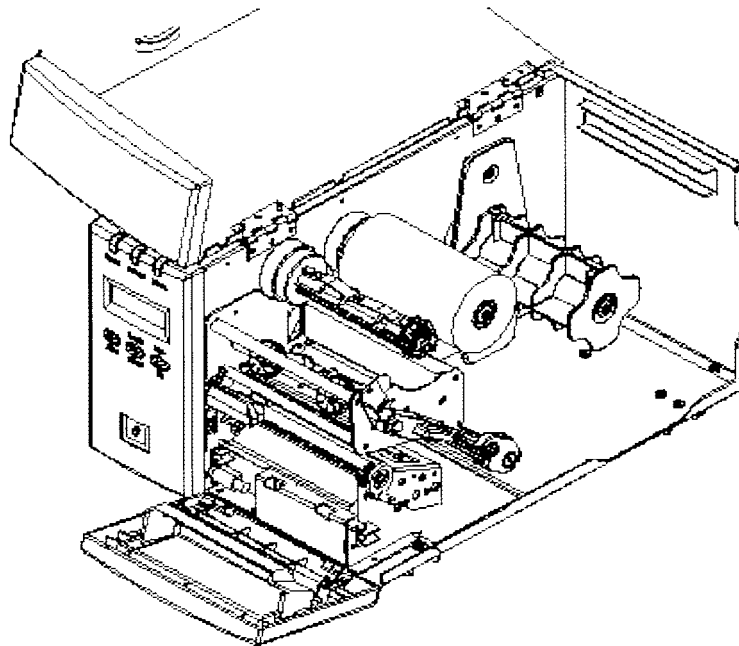**Figure 4. Ribbon supply spindle installation**

5. Place an empty paper core on to the ribbon rewind spindle. (The diameter of empty paper core must be larger then 34 mm)
6. Pull the leading edge of the ribbon roll forward through the ribbon sensor, and attach the leading edge of the ribbon (with a tape) to the empty paper core.
7. Manually rotate the ribbon rewind roll until the ribbon is properly stretched.
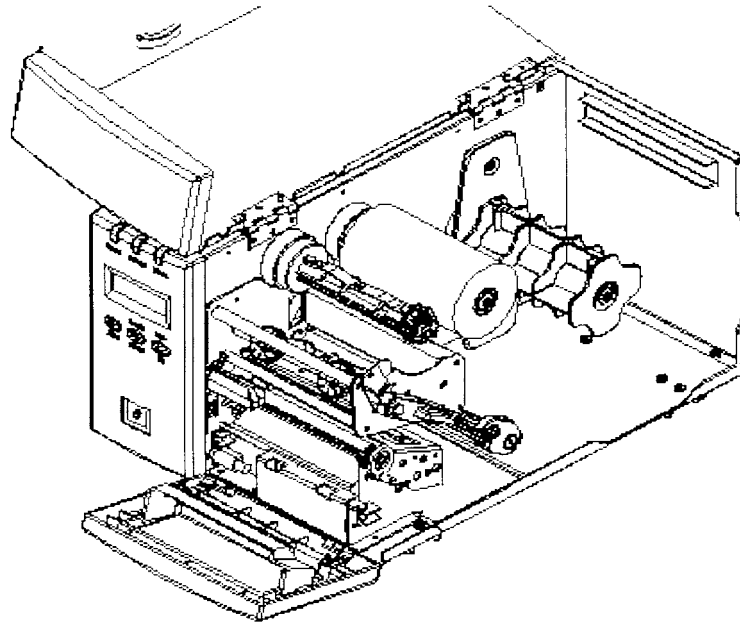
Figure 5. Installation of the thermal transfer ribbon.

3.3 Label Roll Installation

1. Insert a new label roll into the label spindle.
2. Pull the leading edge of the label roll forward through the black media guide bar, gap/black mark sensor and place the leading edge of the label on to the platen roller.
3. Adjust the label guide to meet the width of the label, and buckle it on to the black media guide bar.
4. Engage the print head lift lever.
5. Close the spindle support frame and the turning plank.
6. Close the lower front panel and the printer cover.
7. Switch on the power. Now, the printer is ready to print.
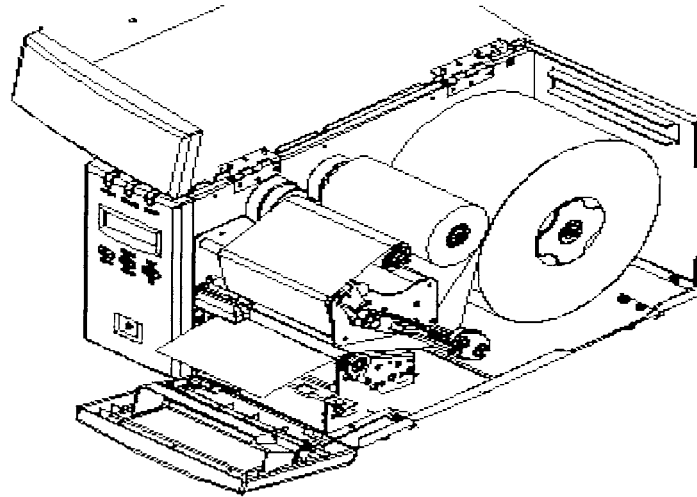
Figure 6. Insert a label roll into the label spindle.

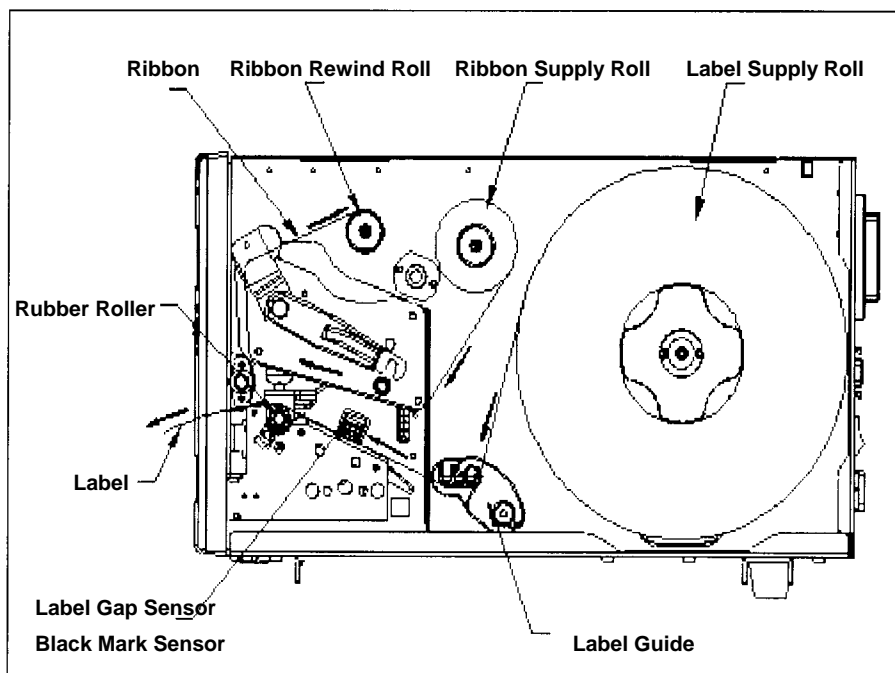**Figure 7. Feed path for the printer media.**

3.4 Cutter Module Installation

1. Uninstall the peel-off sensor.
2. Plug the mini DIN cable into the power connector.
3. Install the cutter module.

    Note : The cutter module bracket should be mounted into the slots.

4. Fix the cutter module on to the printer with a screw.
5. Replace the lower front panel in the cutter module panel.
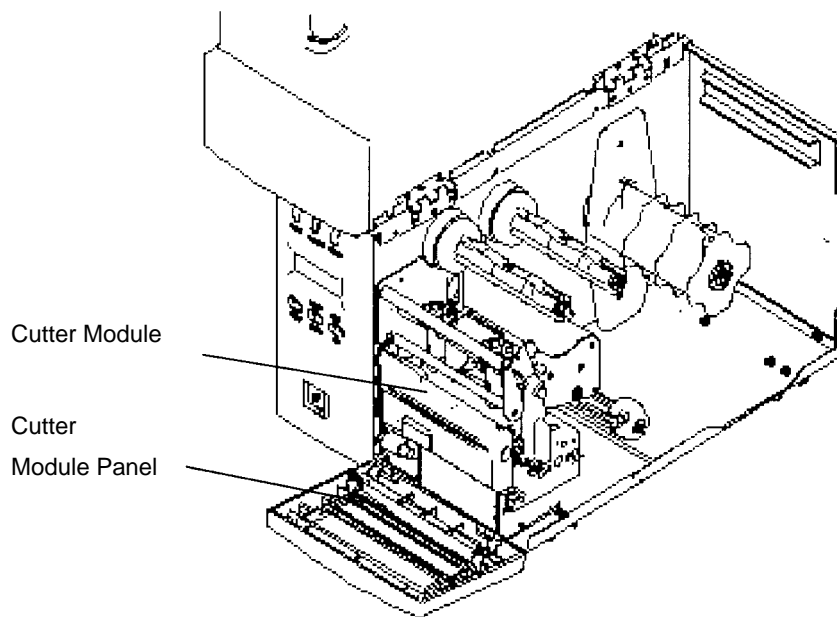
Figure 8. Cutter module installation

3.5 Self-test

To initiate the self-test mode, depress the **MENU** button. Press the MENU button to scroll the cursor to Printer test. Press the EXE button to enter the submenu and press the MENU button to the "Printer Config" option. Press the EXE button to print the printer's internal settings. In the self-test, a check pattern is used to check the performance of the thermal print head. Following the check pattern, the printer prints the internal settings as listed below:

1. Printer model and firmware version
2. Check sum
3. Serial port setting
4. Code page setting
5. Country code setting
6. Print speed setting
7. Print density setting
8. Label size setting
9. Gap (Bline) width and offset setting
10. Backing paper transparence
11. File list
12. Memory available
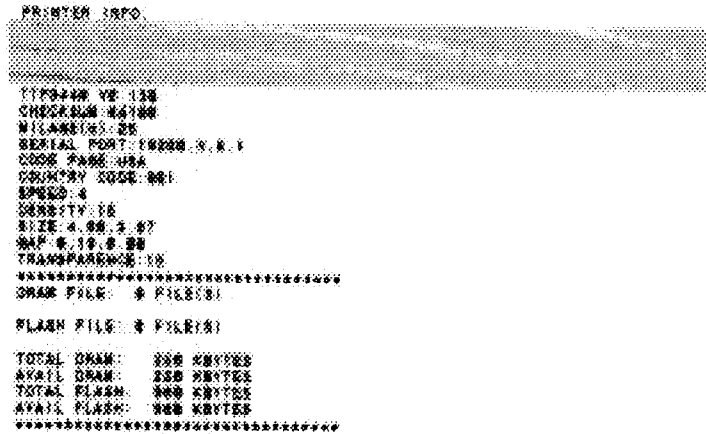
Figure 9. Printout of the self-test

3.6 Dump Mode

To enter dump mode, press the MENU button to scroll the cursor to "Printer Test", then press the EXE button to enter the submenu. Press the MENU button to scroll to dump mode. Press the EXE button to select line dump mode or page dump mode. Press the MENU button to select EXIT to enter dump mode. In this mode, any characters sent from the host computer will be printed in two columns, as shown in Figure 11.

The characters received will be printed in two columns as below :

The characters received are on the left side of the paper, and the corresponding hexadecimal values are on the right side. This is very helpful to users for the verification of programming commands or the debugging of printer programs. Reset the printer by pressing the FEED button.

Figure 10. Printout of dump mode

4. USING THE K4652/K4653

4.1 Power-on Utilities

There are two power-on utilities to calibrate the sensor and initialise the K4652/K4653 hardware. These utilities are activated by pressing the PAUSE button, PAUSE and FEED buttons and turning on the printer power simultaneously. The utilities are listed below :

1. Gap/black mark sensor calibration
2. Printer initialisation

4.1.1 Gap/Black Mark Sensor Calibration Utility

This utility is used to calibrate the sensitivity of the gap/black mark sensor. The gap/black mark sensor must be calibrated whenever **changing the label media** or **executing a printer initialisation.**

Please follow the steps below to calibrate the gap sensor.

1. Install the ribbon and label roll in accordance with the above-mentioned procedures, and engage the print head lift lever.
2. Turn off the printer power.
3. Press the **PAUSE** key and then turn on the printer power. Release the **PAUSE** key when the message "GAP/BLINE sensor calibrating…." is shown on the LCD display. The printer will calibrate the gap/black mark sensor automatically.

4.1.2 Printer Initialisation

Printer Initialisation will restore the printer settings to the defaults.

The default settings are listed below.

Item	Default Value	Cleared by Initialisation	Property Saved when Turning off the Power
Mileage	N/A	No	Yes
Check Sum	N/A	No	Yes
Serial Port	9600,n,8,1	Yes	Yes
Code Page	437	Yes	Yes
Country Code	001	Yes	Yes
Tear Mode	On	Yes	Yes
Peel Mode	Off	Yes	Yes
Cutter Mode	Off	Yes	Yes
Offset	0	Yes	Yes
Reference Point	0,0	Yes	Yes
Print Direction	1	Yes	Yes
Speed	4 inch/sec	Yes	Yes
Density	07	Yes	Yes
Label Size	4 x 2.5"	Yes	Yes
Gap/Bline Sensor	Gap Sensor	Yes	Yes
Gap(Bline)	0.12" (3 mm)	Yes	Yes
Transparency	142	Yes	Yes
Ribbon Sensor Sensitivity	1	Yes	Yes
LCD Language	English	Yes	Yes
Aux. LED	Off	Yes	Yes
Aux. Buzzer	Off	Yes	Yes
Download Files	N/A	No	Yes
RTC	N/A	No	No

Please follow the steps below to initialise the printer:

1. Turn off the printer power.

2. Hold down the **PAUSE** and **FEED** buttons and turn the printer on.

3. Do not release the buttons until the three LEDs flash in turn.

Note [1] : The printing method (thermal transfer or thermal direct printing) will be set automatically when the printer is switched on.
Note 2 : When the printer initialisation is done, please calibrate the gap sensor again.

4.2 Troubleshooting Guide

The following guide lists the most common problems that may be encountered when operating this bar code printer. If the printer still does not function after all of the suggested solutions have been implemented, please contact the Customer Service Department of your purchased reseller or distributor for assistance.

Phenomenon	Reasons	Solutions
No ribbon	1. Running out of ribbon. 2. The ribbon is installed incorrectly. 3. The ribbon sensor has not been well calibrated.	1. Supply a new ribbon roll. 2. Please refer to the steps in section **3.2 Ribbon Installation** to reinstall the ribbon. 3. Please calibrate the ribbon sensor.
No paper	1. Running out of labels. 2. The label is installed incorrectly. 3. The moveable gap/black mark sensor is not placed in the proper location.	1. Supply a new label roll. 2. Please refer to the steps in section **3.3 Label Roll Installation** to reinstall the label roll. 3. Please move the sensor to the proper location.
Poor printing quality	1. Dirt has accumulated on the print head. 2. The density setting has not been set properly. 3. The ribbon and media are incompatible. 4. The pressure of the print head was not set properly.	1. Please refer to the steps in the **section 5.1 Print Head Cleaning** to clear the print head. 2. Adjust the print density and speed. 3. Change to the proper ribbon or proper label roll. 4. Adjust the print head pressure adjustment knob.

Power indicator does not illuminate	1. The power cord was not properly connected. 2. The voltage setting of the power supply in the rear of the printer was set incorrectly.	1. Please check whether the power cord is properly connected between the printer and the mains. 2. Please set the voltage setting of the power supply at the rear of the printer to the proper voltage.
Paper jam	1. The label size was not set properly. 2. Re-calibrate the gap/black mark sensor.	1. Labels may be stuck inside the printing mechanism. 1. a. Reset the label size. b. Re-calibrate the gap/black mark sensor. 2. Remove the jammed label.
Carriage open	The printer carriage is open.	Please close the printer carriage.
Memory full (FLASH / DRAM)	The FLASH/DRAM space is full.	Delete unused files in the FLASH/DRAM.
No printout printing through the serial port	1. The serial port setting is not consistent between the host and the printer. 2. The serial port cable pin configuration is not assigned on a pin to pin basis.	1. Please reset the serial port setting. 2. Please replace the cable with the correct pin to pin assignment.

5. PRINTER CLEANING

The printer should be cleaned regularly to retain high quality and optimum performance.

5.1 Cleaning the Print Head

1. Switch off and unplug the printer.
2. Open the printer cover.
3. Remove the screw by the side of the print head lift lever.
4. Open the printer print head lift lever.
5. Remove the media and ribbon. (If loaded)
6. Using a swab soaked in dilute alcohol, carefully wipe along the print head.
7. Do not close the print head until the alcohol has evaporated.
8. Close the printer cover.

5.2 Cleaning the Printer Cover

1. Switch off and unplug the printer.
2. Using a lint-free cloth soaked in water or mild detergent, lightly wipe the printer cover.
   Do not use a harsh or abrasive cloth and solvent.

5.3 Cleaning the internal parts

1. Switch off and unplug the printer.
2. Open the right side of the printer cover.
3. Remove the media and ribbon (If loaded).
4. Disengage the printer print head lift lever.
5. Using a soft cloth soaked in alcohol or mild detergent wipe the internal parts.
6. The rubber roller should be cleaned with a cloth soaked in water.
7. Install the ribbon and label, engage the print head lift lever.
8. Close the right side of the printer cover.

APPENDIX   LCD Control Panel Operation Map

1. Print Setup				
Speed	2 "/sec	* 3"/sec	4"/sec	
Density	0~15 (*7)			
Direction	0	* 1		
* Tear Mode	Peel On	Cutter On	Cutter Batch	
Offset	0~999 (*0)			
Reference X	0~999 (*0)			
Reference Y	0~999 (*0)			
Exit				

2. Sensor Calib.
Auto. Gap
Manual Gap
Auto Bline
Manual Bline
Auto. Ribbon
Manual Ribbon
Exit

3. System Setup				
Lang.	* English			Y
Code Page	USA	BRI	GER	FRE
	SWE	SPA	ITA	DAN
	SWI	* 437	850	852
	865	863	860	
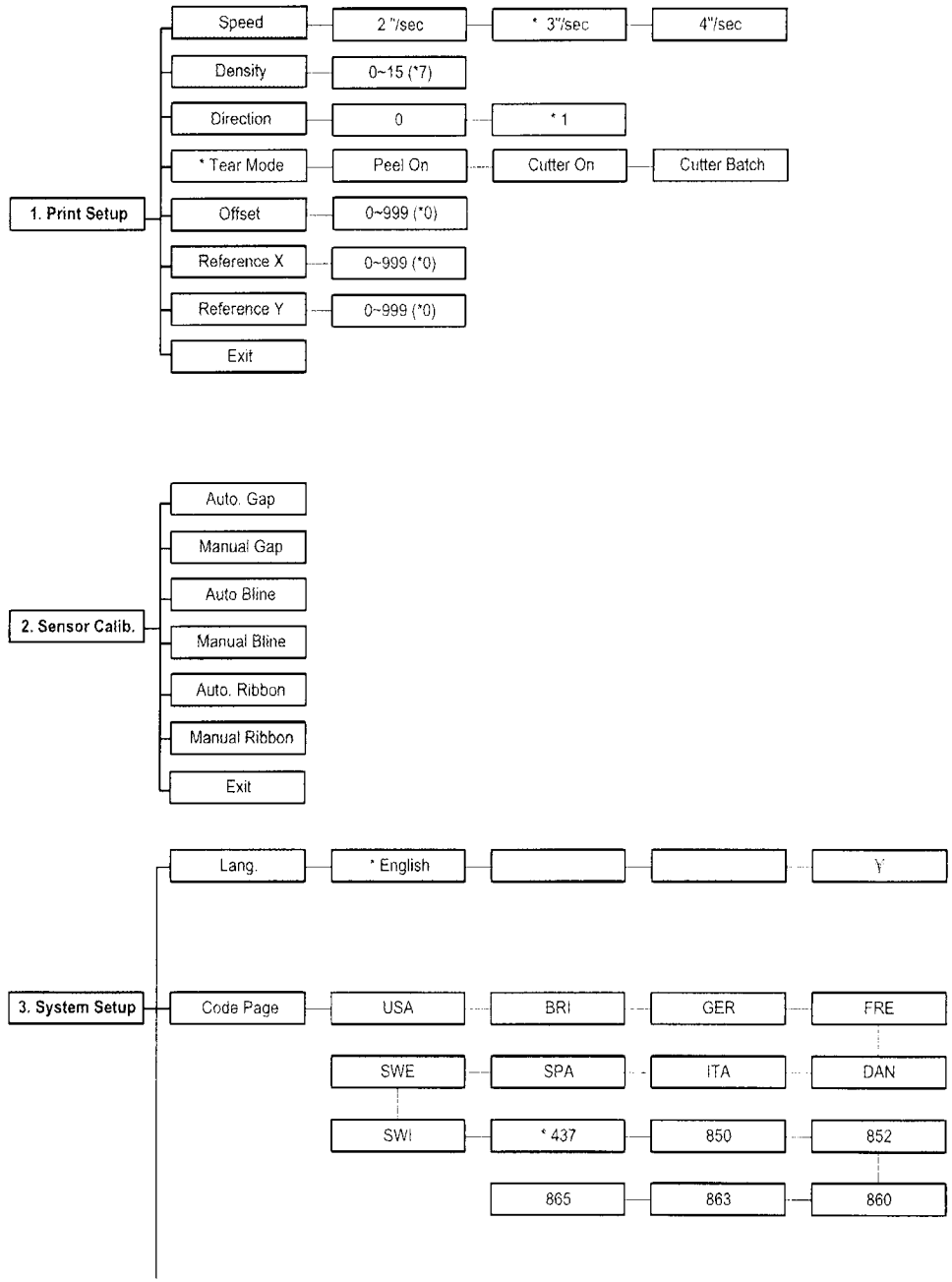
Note:

1. Defaults are marked with an asterisk (*)

2. The parameter of the shaded area can be accessed by
   pressing the INC. or DEC. key to set the value.

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3. System Setup

Country

* 001	002	003	031	032
039	038	036	034	033
041	042	044	045	046
061	055	049	048	047
351	358			

Parity

* None	Even	Odd

Data Bit

7	* 8

Stop Bit(s)

* 1	2

Baud

2400	4800	9600	* 19200
	57600	56000	38400

- Restore Defaults
- Exit

4. File Mngment

- File List
- Avail. Memory
  - DRAM: 512KB free
  - FLASH: 1000KB free
- Delete File(s)
  - PAUSE: Del. All FEED: Exit
- Exit

5. Printer Test

- Self Test
- * Dump Mode Off — Dump Mode On
- Rotate Cutter
  - MENU: Fwd. PAUSE: Rev.
- Mileage Info.
  - Mileage:(m) 000000000
  - Lables:(pcs) 000000000
- Exit

Update History

Date	Content	Editor
2003/9/11	1. Remove Spindle Support Frame 2. Add Ribbon Tension Knob and description 3. Add Print Head Pressure Adjustment Knob Description	Zoe Yeh

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