# CLP-1001

# User's Manual

# CITIZEN.

# FCC COMPLIANCE STATEMENT
# FOR AMERICAN USERS

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

> "DESIGNED AND MANUFACTURED TO BE EQUIVALENT TO EUROPEAN STANDARD FOR ITE, EN60950."

# EMI COMPLIANCE STATEMENT
## FOR CANADIAN USERS

This equipment generates and uses radio frequency energy and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio and television reception. This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications. This equipment is designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.

- Increase the separation between the equipment and receiver.

- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

- Consult the dealer or an experienced radio/TV technician for help.


**CAUTION:** Use shielded cables to connect this device to computers.


Any changes or modifications not expressly approved by the grantee of this device could void the user's authority to operate the equipment.




# ETAT DE CONFORMITE EMI A L'USAGE
## DES UTILISATEURS CANADIENS

Cet équipment produit et utilise l'énergie à radiofréquences et s'il n'est pas installé et utilisé correctment, c'esst à dire en accord strict avec les instructions du fabricant, il risque de provoquer des intérferences avec la réception de la radio et de la télévision.

Le présent appareil numérique n'émet pas de bruite radioélectriques dépassant les limites applicables aux appareils numériques de la classe A prescrites dans le Réglement sur le brouillage radioélectrique édicté par le ministère des Communications du Canada.

Cet équipment est conçu pour fournir une protection satisfaisante contre de telles interférences dans une installation résidentielle. Cependant, il n'y a pas de garantie contre les interférences avec les réceptions radio ou télévison, provoquées par la mise en et hors circuit de l'équipment; aussi, il est demandé a l'utilisateur d'essayer de corriger l'interférence par l'une ou plus des mesures suivantes:

- Réorienter l'antenne de réception.

- Installer l'ordinateur autre part, par égard pour le récepteur.

- Brancher l'ordinateur dans une prise de courant différente de façon à ce que l'ordinateur et le récepteur soient branchés sur des circuits différents.

# Important Safety Instructions

1. Read all of these instructions and save them for later reference.

2. Follow all warnings and instructions marked on the product.

3. Unplug this product from the wall outlet before cleaning. Do not use liquid or aerosol cleaners. Use a damp cloth for cleaning.

4. Do not use this product near water.

5. Do not place this product on an unstable cart, stand or table. The product may fall, causing serious damage to the product.

6. Slots and openings on the cabinet and the back or bottom are provided for ventilation. To ensure reliable operation of the product and to protect it from overheating, do not block or cover these openings. The openings should never be blocked by placing the product on a bed, sofa, rug or other similar surface. This product should never be placed near or over a radiator or heat register. This product should not be placed in a built-in installation unless proper ventilation is provided.

7. This product should be operated from the type of power source indicated on the marking label. If you are not sure of the type of power available, consult your dealer or local power company.

8. This product is equipped with a three-pronged plug, a plug having a third (grounding) pin. This plug will only fit into a grounding-type power outlet. This is a safety feature. If you are unable to insert the plug into the outlet, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the grounding-type plug.

9. Do not allow anything to rest on the power cord. Do not locate this product where the cord will be walked on.

10. If an extension cord is used with this product, make sure that the total of the ampere ratings on the products plugged into the extension cord do not exceed the extension cord ampere rating. Also, make sure that the total of all products plugged into the wall outlet does not exceed 15 amperes for 120V outlet and 7.5 amperes for 220–240V outlet.

11. Never push objects of any kind into this product through cabinet slots as they may touch dangerous voltage points or short out parts that could result in a risk of fire or electric shock. Never spill liquid of any kind on the product.

12. Except as explained elsewhere in this manual, don't attempt to service this product yourself. Opening and removing those covers that are marked "Do Not Remove" may expose you to dangerous voltage points or other risks. Refer all servicing on those compartments to service personnel.

13. The mains plug on this equipment must be used to disconnect mains power. Please ensure that the socket outlet is installed near the equipment and shall be easily accessible.

14. Unplug this product from the wall outlet and refer servicing to qualified service personnel under the following conditions:

    A. When the power cord or plug is damaged or frayed.

    B. If liquid has been spilled into the product.

    C. If the product has been exposed to rain or water.

    D. If the product does not operate normally when the operating instructions are followed. Adjust only those controls that are covered by the operating instructions since improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the product to normal operation.

    E. If the product has been dropped or the cabinet has been damaged.

    F. If the product exhibits a distinct change in performance, indicating a need for service.

# Notice

1. Before use, be sure to read this manual. And keep it handy for reference when needed.

2. The contents of this manual may be changed without prior notice.

3. Reproduction, transfer, or transmission of the contents of this manual without prior consent is strictly prohibited.

4. We are not liable for any damage resulting from the use of the information contained herein, regardless of errors, omissions, or misprints.

5. We are not liable for any problems resulting from the use of optional products and consumable supplies other than the designated products contained herein.

6. Do not handle, disassemble or repair the parts other than those specified in this manual.

7. We are not liable for any damage caused by user's erroneous use of the printer and inadequate environment.

8. Data residing in the printer is temporary. Therefore, all data will be lost if power is lost. We are not liable for any damage or loss of profits caused by data loss die to failures, repairs, inspections, etc.

9. Please contact us if there are any mistakes or ambiguities within this manual.

10. If there are missing or incorrectly collated pages in this manual, contact us to obtain a new manual.

Trademarks or registered trademarks of other companies and products are included in this manual.

# SAFETY SIGNS

## — must be strictly observed!

■ To prevent personal injury or property damage, the following shall be strictly observed.

■ The degree of possible injury and damage due to incorrect use or improperly following instructions specified is described below.

| | | |
|---|---|---|
| ⚠ | **WARNING** | Indicates a situation which, if not observed and handled properly, could result in death or serious injury. |
| ⚠ | **CAUTION** | Indicates a situation which, if not observed and handled properly, could result in injury. |

⚠ This is a mark to call attention to the reader.

# ⚠ WARNING

■ Never perform the following. If not avoided, these may cause damage or trouble to the printer or cause the printer to overheat and release smoke and cause burns or an electrical shock. If the printer is damaged or is malfunctioning, be sure to turn the power off and remove the power cord from the outlet, then consult our service personnel.

- Do not jolt or impact to the printer by stepping on, dropping or hitting the printer.
- Do not place the printer in a pooly ventilated area, or shut off the air vent of the printer.
- Do not place the printer where chemical reactions occur, such as in laboratories or where air is mixed with salt or gas.
- Do not use a power voltage or frequency other than those specified.
- Do not plug/unplug the power cord or attach/detach the interface cable by simply grabbing the power cord or interface cable. Do not pull or carry the printer when the tension of the power cord or interface cable is increased.
- Do not drop or put foreign matter such as clips and pins into the printer. This may cause problems.
- Do not plug the power cord into an outlet with many loads.
- Do not spill drinks such as tea, coffee and juice on the printer or spray insecticide on the printer. If drink or water is spilled, first be sure to turn the power off and remove the power cord from the outlet, then consult our service personnel.
- Do not disassemble or modify the printer.

■ Discard or safely store the plastic packing bag. This bag should be kept away from children. If the bag is pulled over a child's head, it may cause suffocation.

# General precautions

1.  Prior to operation, read the safety instructions carefully and observe them.

2.  Be careful when moving or carrying the printer. Dropping the printer may cause injury or property damage.

3.  Make sure if you open the top cover, it is opened all the way. If only partially open, the cover could slam shut, possibly causing injury.

4.  When the cover is open, be careful of the corners of the cover. They could cause injury.

5.  Do not open the printer during printing.

6.  When cleaning the surface of the printer case, do not use the cloth that is soaked in thinner, trichloroethylene, benzine, ketone or similar chemicals.

7.  Do not use the printer where there is a lot of oil, iron particles, or dust.

8.  Operate the control panel properly. A careless, rough handling may cause problems or malfunction. Do not use such sharp-edged tool as a ballpoint pen for operation.

9.  Before attaching the auto-cutter drive board, be sure to unplug the power cord from the outlet.

10. Attaching the auto-cutter drive board must not be done immediately after use of printer.

11. Be careful not to damage the printer's drive pulley and belt.

12. Be careful of the edges of the plates so injury or property damage is possible.

13. If a problem occurs during printing, stop the printer immediately and unplug the power cord from the outlet.

# Precautions when installing the printer

1. Prior to operation, read the the safety instructions carefully and observe them.

2. Do not use or store the printer near fire, excessive moisture, in direct sunlight, near an air conditioner or heater or other source of unusually high or low temperature or humidity or excessive dust.

3. Do not place the printer where chemical reactions occur, such as in a laboratory.

4. Do not place the printer where air is mixed with salt or gas.

5. The printer must sit on a firm, level surface where there is ample ventilation. Never allow the printer's air vent to be blocked by a wall or other object.

6. Do not place anything on top of the printer.

7. Do not place the printer near a radio or television, and do not use the same wall outlet for the printer and radio or television. Radio or television reception could be adversely affected.

8. Do not bundle the power cord when inserting the plug.

9. Grip the plug housing, not the cord, to unplug the power cord.

10. Make certain the interface cable is attached properly. If polarity direction is not correct, this may cause internal damage.

11. Make certain the power is turned off before attaching/detaching the interface cable.

12. Avoid lengthening the signal cable or attaching it to any noise-producing device. If it is unavoidable, use the shielded cable or twisted pair for each signal.

# Chapters in this manual

Chapter 1    Setup

Describes the packed items after opening the carton as well as the names and functions of parts.

Chapter 2    Control panel

Describes the necessary items for operations, such as the control panel, printer settings and indications on the LCD/LEDs.

Chapter 3    Paper

Describes the procedures for loading the paper and includes notes on the use of paper.

Chapter 4    Troubleshooting

Describes corrective actions when problems occur.

Chapter 5    Options

Describes the optional accessories for this printer.

Chapter 6    Specifications

Describes the basic specifications and commands for this printer.

# Table of Contents

# Chapter 1

# Setup

## 1.1 Confirmation of Carton Contents

⚠️ CAUTION:    Be careful when moving or carrying the printer and
               when taking the printer out of the carton. The printer
               may cause injury or property damage if dropped. Be
               sure to grip the printer housing tightly when taking it
               out of the carton. Do not grip the printer by the foam
               packing material which may break, causing the printer
               to drop.

Check that the following accessories are included with the printer in the
carton.

- Power cord                          1 pc
- User's manual (this booklet)        1 copy
- 4-inch roll paper holder            1 set

**Note:**    The empty carton and packing materials should be stored for future
             shipping of the printer.

Printer
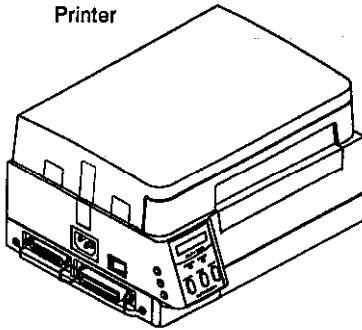
Power cord
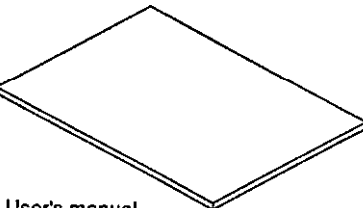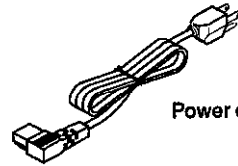
User's manual
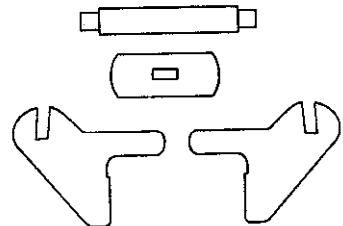
4-inch roll paper holder

## 1.2 Part Names and Functions

### Front view

■ Control panel

The printer has two LED indicator lights and an LCD screen that displays printer messages.

1) LEDs

One LED is the power indicator and the other is the error indicator.

2) LCD

Displays the current printer status, configuration settings, or an error message.

3) Control keys

The Pause, Feed and Stop keys are arranged from left to right to facilitate printer operating. (For details, see Chapter 2 Control Panel.)
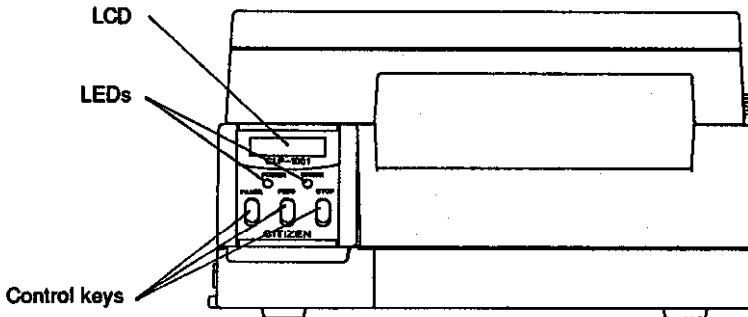
## Inside view

■ Open lever

To swing the print head out of the way when loading paper or cleaning the print head.

■ Paper guides

Guide the edges of paper. The one-side moving paper guide can be adjusted in accordance with the width of the paper.

■ Paper sensor

To detect the presence and position of paper.

■ Platen

To feed paper with this rubber-covered roller.

■ Print head

Generates the print characters.
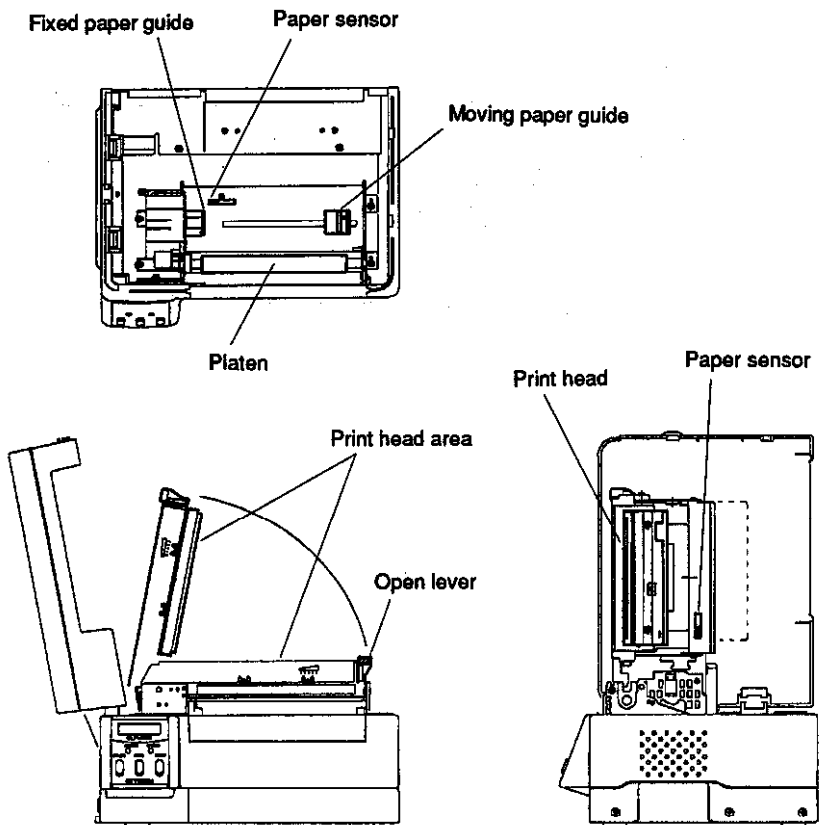
## Side view

■ Interface connectors

To connect the interface cable.

■ PCMCIA memory card cover

To protect the PCMCIA memory card cover from exposure to dust and foreign matter. To install a PCMCIA memory card, first unhook this cover, then slide it out.

■ Power switch

To turn on/off the power.

■ Power inlet

To connect the power cord.



Adjustment controls (paper gap/black line/LCD contrast)

Power switch

Serial interface connector

Parallel interface connector

Power inlet

PCMCIA memory card cover
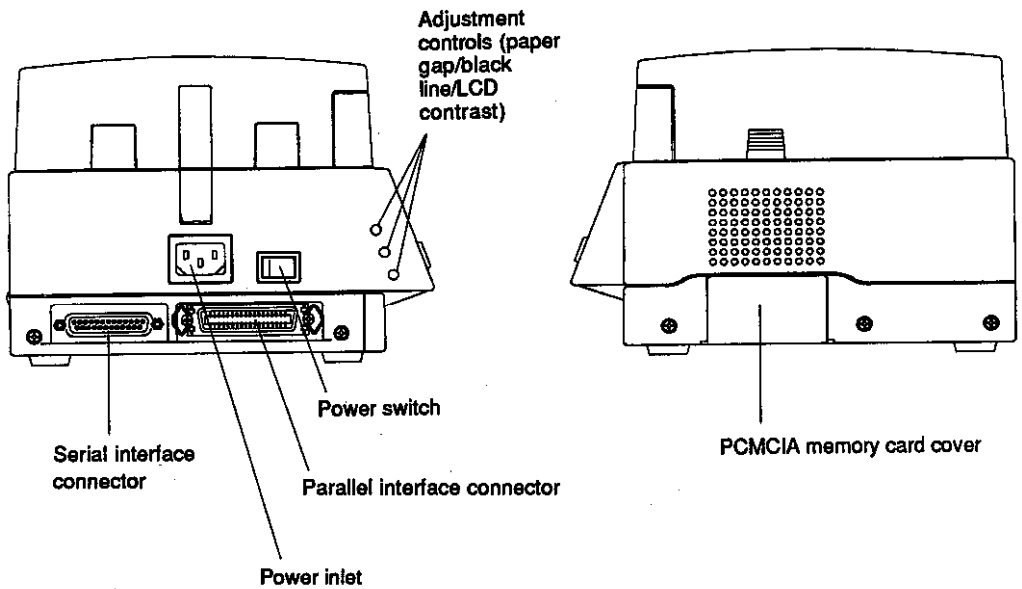
# 1.3 Connection to Power

⚠ CAUTION:  Use an AC outlet that accepts a three-pronged plug.
Otherwise, static electricity may be generated and
there will be danger of electric shock.

Connect to an AC outlet as follows:

1   Check that the power switch on the printer is set to OFF.

2   Connect the connector of the power cord to the power inlet on the printer.

3   Insert the plug of the power cord in the AC outlet.

AC outlet

Power inlet
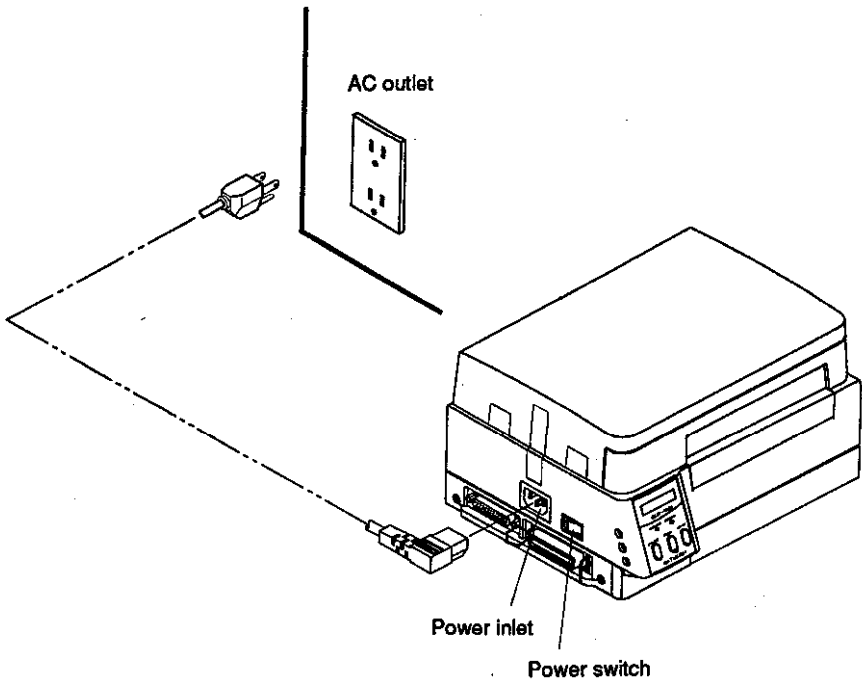
Power switch

## 1.4 Connection to a Computer

An interface cable is necessary for connecting the printer to a computer.

To connect them, proceed as follows:

1 Turn off both power switches of the printer and the computer.
2 Connect the connector on one end of the interface cable to the interface port at the lower side of the printer and secure it with screws.
3 Connect the connector on the other end of the interface cable to the interface connector on the computer and secure it with screws.
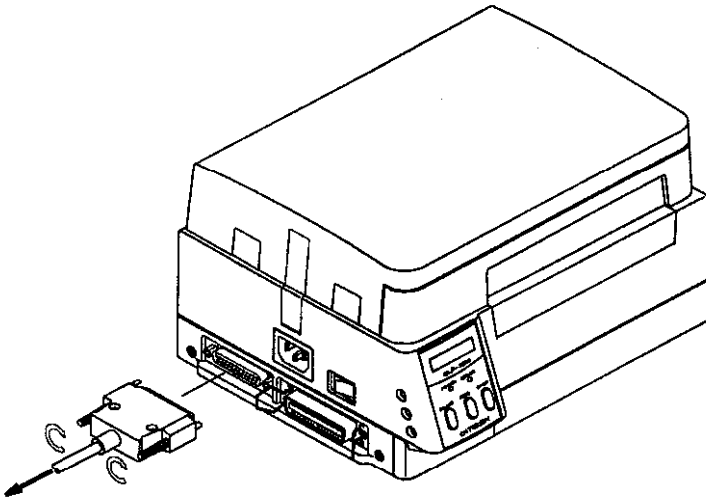
To a computer

# Chapter 2

# Control Panel

## 2.1 Control Panel

The control panel, on the front of the printer, consists of three control keys (Pause, Feed and Stop), two LED indicator lights (Power, Error), and an LCD message screen. On the left side of the control panel there are three adjustment controls (paper gap, black line and LCD contrast).

Exterior view of the control panel

Error LED

Power LED

LCD

Paper gap adjutment control

Black line adjustment control

LCD contrast adjustment control

Stop key

Feed key

Pause key
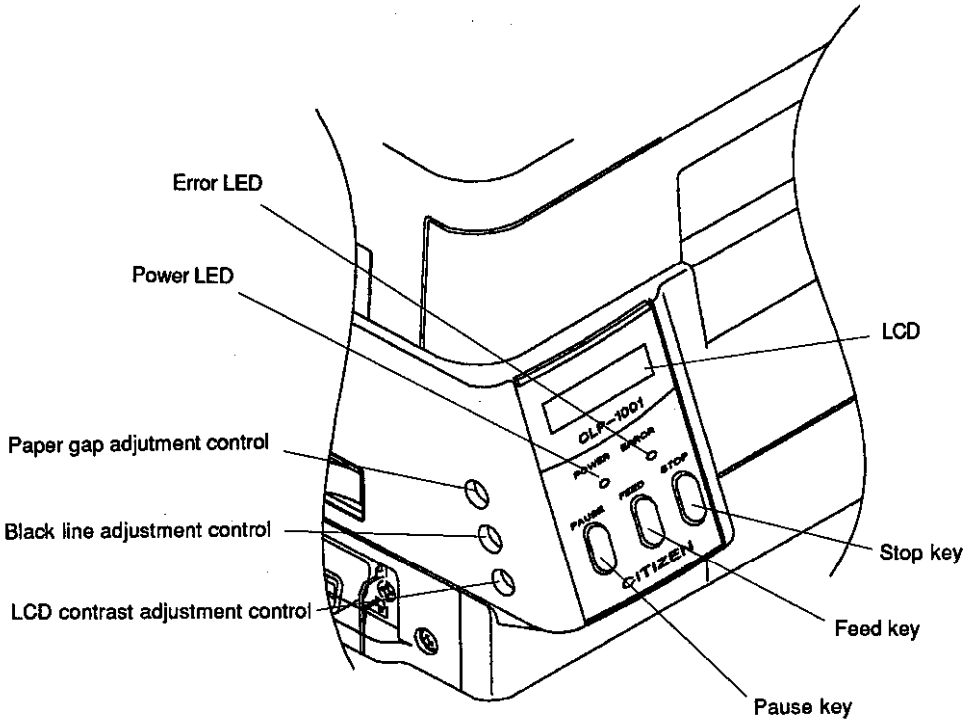
## 2.2 LCD/LED Indications and Adjustment Controls

1   LCD

The eight-character LCD screen displays the current printer status, configuration settings, or an error message.

2   LEDs

Power:   The green LED power indicator goes on when the power is tuned ON.

Error:   The red LED indicator goes on when an error occurs.

3   Adjustment controls

The three adjustment controls are used to adjust the paper gap (transparent type) sensor sensitivity, black line (reflective type) sensor sensitivity, and LCD contrast.

## 2.3 Normal Operating Mode

When the power is turned on, the printer enters normal operating mode.

Control keys function as follows:

■ Pause key

Temporarily pauses printing. "Pause" is displayed on the LCD screen. If pressed during printing, printing will stop after the current label is printed. Press the Pause key again to resume printing.

■ Feed key

Advances to the top of the next label. When using continuous paper, make sure the Sensor selection is set to ContinuP or a Paper Error will result.media (paper) is fed in a certain amount and stopped.

The printer enters self-test mode when the Feed key is pressed and held down while turning on the power. See Section 2.5 Self-Test Mode.

■ Stop key

With this key, the operator can stop and cancel the current print job. Pressing the Stop key during printing stops the printing immediately. Pressing the Stop key again cancels the print job.

## 2.4 Printer Setup Mode

To enter printer setup mode, press and hold down the Pause and Feed keys simultaneously and release both keys. The functions of the control keys are described below.

Changes to the printer configuration are stored in nonvolatile memory. This guarantees that the printer configuration is maintained even after the power is turned off.

[Functions]

Print mode selection, peeling sensor ON/OFF, auto-cutter ON/OFF, etc.

- Pause key:    Selects the mode.
- Feed key:    Selects the mode item.
- Stop key:    Saves settings and returns the printer to normal operating mode.

Mode item                                       Indication

```
  ┌──────────────┐
  │  Peeling sensor        ┌─── Peel OFF → Peel ON →─────┐
  │     ↓                  └                             ┘
  │  Auto-cutter           ┌─── Cut OFF → Cut ON →───────┐
  │     ↓                  └                             ┘
  │  Tearing               ┌─── Tear OFF → Tear ON →─────┐
  │     ↓                  └                             ┘
  │  Sensor selection      ┌─── Edge → Reflect → ContinuP →─┐
  └──────────────┘         └                             ┘
```
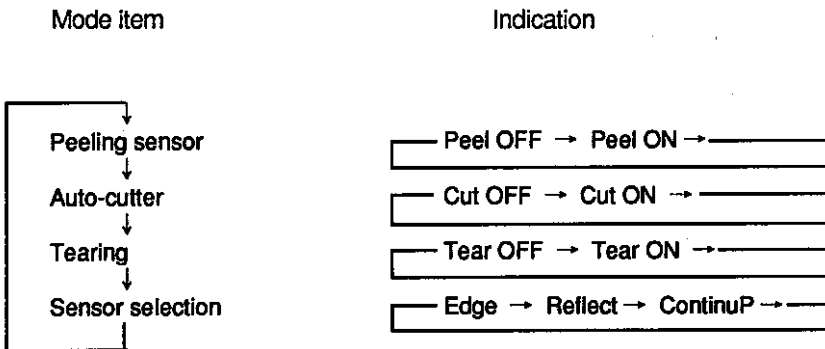
## 2.5 Self-Test Mode

The printer can be placed into self-test mode by pressing and holding the Feed key while turning the printer on.

[Functions]

The printer executes the self-test print or goes to data dump mode (prints out communication data in ASCII code). The printer is returned to normal operating mode when the power is turned off.

## 2.6 System Maintenance Mode

The printer will enter system maintenance mode if the Pause, Feed and Stop keys are pressed and held simultaneously while turning on the power.

[Functions]

To reset memory switches to default settings*, continue to hold down the Pause, Feed and Stop keys simultaneously for an additional four seconds or more after turning on the power.

The printer enters communication parameter setting and paper gap and black line sensor sensitivity adjusting mode.

The mode is selected with the Pause key and the mode item is selected with the Feed key. Changing of the contents is executed as soon as they are displayed on the screen.

Pressing the Stop key returns the printer to normal operating mode.

■ Pause:        Mode selection
■ Feed key:     Item selection

Mode item                                        Indication

Baud rate              9600bps → 19200bps → · · · · · · → 4800bps →

Data length            8 bits → 7 bits →

Voltage setting        PE∗.∗∗V → BL∗.∗∗V →
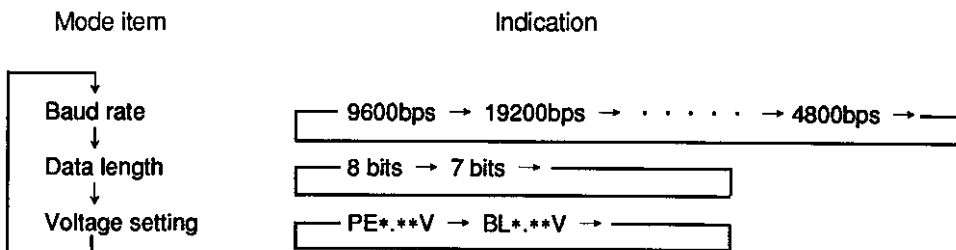
* Default settings

| RS-232C setting | Baud rate: 9600 bps |
|---|---|
|  | Data Length: 8 bit |
| Optional functions | Peeling: OFF |
|  | Auto-cutter: OFF |
|  | Tear-off: OFF |
| Paper sensor setting | Edge |

■ Voltage setting mode

In voltage setting mode, manipulate the paper gap and black line adjustment controls so that the voltages for both "PE" and "BL" displayed on the LCD screen read 3.0 V–3.3 V.

Setting procedure:

1   Sets a liner (glassine paper) that has been peeled off the label paper.

2   Sets the paper gap level to 3.0 V–3.3 V (paper gap comes first).

3   Sets the black line level to 3.0 V–3.3 V (then black line).

# Chapter 3

# Paper

## 3.1 Kinds pf Paper

1 Kinds of paper

The printer is capable of printing on direct-thermal paper. The paper must be high quality. Otherwise, good print quality and extended print head life cannot be guaranteed.

2 Type of paper
- Label (continuous, die-cut, fanfold)
- Tag
- Ticket

Both in-wound and out-wound paper rolls may be used.

3 Size of paper

| | |
|---|---|
| Paper width: | 25.4 mm–118 mm (1 in–4.65 in) |
| Paper thickness: | 0.063 mm–0.254 mm (0.0025 in–0.01 in) |
| Max. printing width: | 104 mm (4.1 in) |
| Max. printing length: | 406 mm (16 in) |
| Max. outer diameter of roll paper: | 203 mm (8 in) |

## 3.2 Specification of Label and Tag

The position of a label or tag is detected by the printer's transparent-type and reflective-type photosensors.

| | |
|---|---|
| Transparent-type photosensor: | Detects paper gap between label and tag notch. |
| Reflective-type photosensor: | Detects black line. |

■ Specification of paper

For each measurement of paper gap between label and tag (label) notch and black line, see the figure below. The black line must be aligned with the top edge of label.

| | | Minimum value mm (in) | Maximum value mm (in) |
|---|---|---|---|
| A | Label width | 25.40 (1.0) | 118.00 (4.65) |
| B | Paper width | 25.40 (1.0) | 118.00 (4.65) |
| C | Position of left edge of label | 0 | 2.54 (0.10) |
| D | Length of paper gap between labels | 2.54 (0.10) | 2539.00 (99.96) |
| E | Label length | 12.70 (0.50) | 2539.00 (99.96) |
| F | Label thickness | 0.06 (0.0024) | 0.25 (0.0098) |
| G | Liner thickness | 0.06 (0.0024) | 0.25 (0.0098) |
| H | Position of notch (center) | 6.50 (0.26) | |
| I | Notch width | 3.50 (0.14) | 9.00 (0.35) |
| J | Position of right end of black line | 15.00 (0.59) | — |
| K | Position of left end of black line | 0 | 1.50 (0.06) |
| L | Width of black line | 3.18 (0.125) | 17.80 (0.70) |
| M | Position from black line perforation | 3.18 (0.125) | — |



Front edge

Black line
OD value: 1.5 or more
Carbon black ink

Direction of paper feed

Perforation
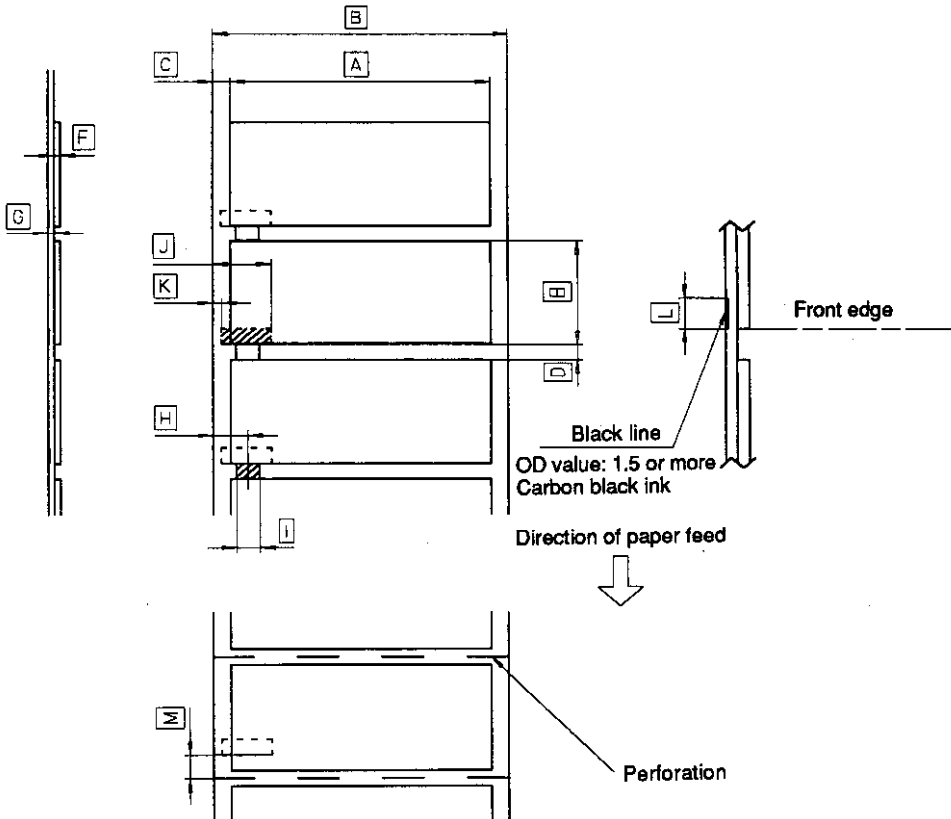
## Units for position and length

Print positions may be specified in either inch or metric system.
Switching between the two systems is accomplished through
software. The print positions can be freely designated within
maximum label size, regardless of which system you wish to use.

■  Inch system

Basic unit (point):    0.01 in (0.254 mm)

The position of each row address (in the direction of main scanning)
and column address (in the direction of subscanning) is designated in
0.01-inch units. In the case of the 203 dpi head, if the print position
changes by 1 point, it changes by 2 dots.

| | | | | |
|---|---|---|---|---|
| 1 point | = | 0.01 in | ≒ | 2 dots |
| 100 point | = | 1.00 in | ≒ | <u>203</u> dots |

■  Metric system

Basic unit (point):    0.1 mm

The position of each row address and column address is designated in
0.1-mm units. Since a slight difference between the main and
subscanning density and the point value exists, the nearest dot
number to the designated address is selected in one dot (0.125 mm)
units.

| | | | | |
|---|---|---|---|---|
| 1 point | = | 0.1 mm | ≒ | 1 dot |
| 100 point | = | 10.0 mm | ≒ | <u>80</u> dots |

The basic unit is common to all label format and system-level
commands. With the label format commands, it is used to specify the
position, length, whole-screen offset, etc. With the system-level
commands, it is used to specify the maximum paper length, home-
position offset, etc.

## Reference line and points

The reference line and points are described here. The position of 2.5 mm from the left edge of the paper is the reference line for paper. Always the left bottom is the reference point for printed characters and bar codes. The concept of this reference point is common to such commands as ruled line and graphic.

Printing reference point

Printing reference point

Left edge of paper

2.5

Paper reference line

Printing reference point

Printing reference point

Direction of paper feed
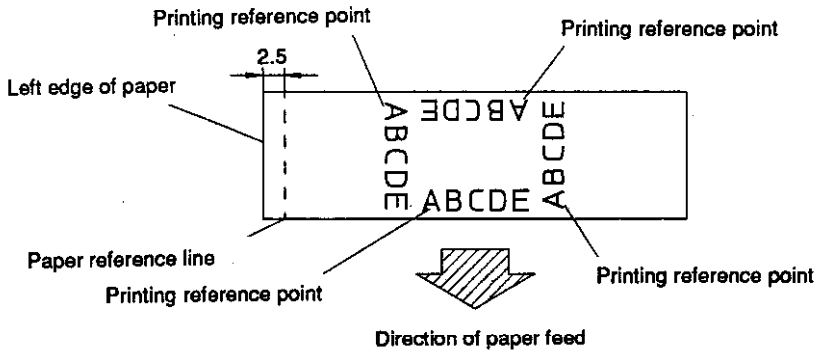
## 3.3 Paper Setting

⚠️ **CAUTION:** Be careful of the edges of the plates so injury or property damage is possible.

The printer is designed for easy loading of paper. After opening the cover, set the register paper as follows:

1  Push down the open lever to move the print head out of the way.

2  Align the left edge of the label paper with the fixed paper guide and the positioning notch. Then hold the label paper and let the moving paper guide slightly contact the right edge of the label paper.

3  After setting the label paper in the above condition, press down the print head until the open lever hook locks.

4  Close the cover.

5  Turn on the power to the printer. The LCD screen on the control panel will display "On line." Press the Feed key. The paper will advance to the next label and stop there.

   **Note:** In the case of fanfold, determine the location of a stack of fanfold by aligning the left edge of the label paper with the positioning line that is marked on the plate at the rear of the printer. Improper alignment will cause the paper to skew.



Label paper

Marked line

Moving paper g

Open lever

Fixed paper guide

Positioning notch
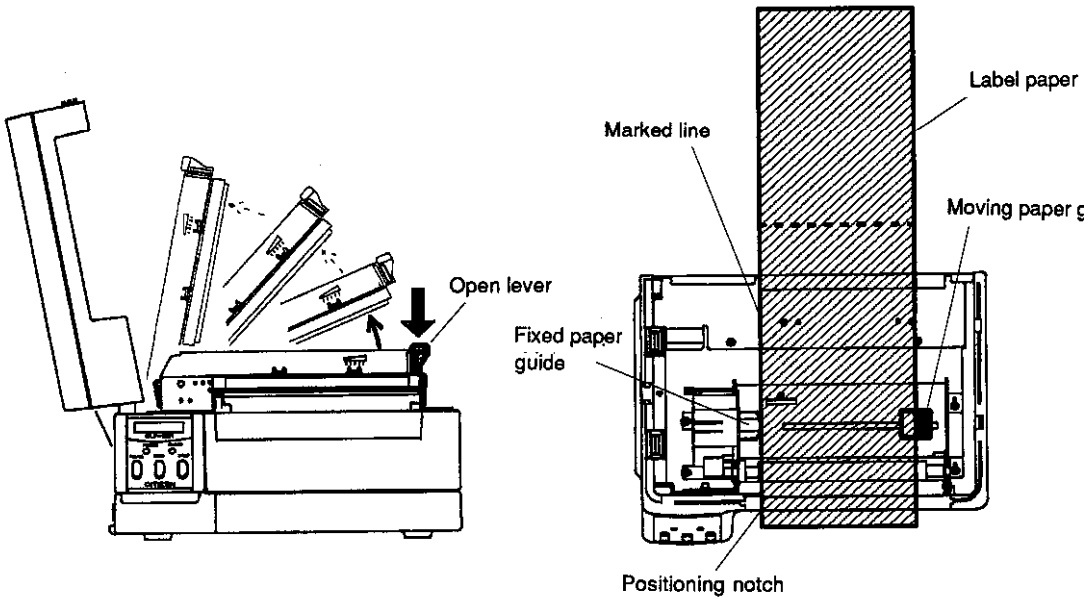
## 3.4 Print Head Offset Adjustments

⚠ CAUTION: Ensure the print head offset adjustments are correct for your type of print media (thickness & width). Incorrect adjustments can cause premature failure of the print head.

The printer has already been factory-set to the label width of 118 mm. However, the print head offset adjustments may be made to the width of paper and the paper quality. If the print quality is inferior because of the paper used, adjust it as follows:

1 When the print is unclear or blurred because of poor paper quality

Adjust offset between the print head and the platen by turning the offset adjustment screw. The print head offset adjustments are made by changing the inclination of the print head to the platen. This has already been factory-set, but the offset may have changed if the print head was replaced or disassembled. Also, it may change when using a different type of paper. In those cases, make adjustments according to the criteria below.

a) Label paper (slick paper, craft paper, etc.), and thermal paper

b) Thick paper (tag or other similar paper)



Offset adjustment screw (M3)

Offset verification window
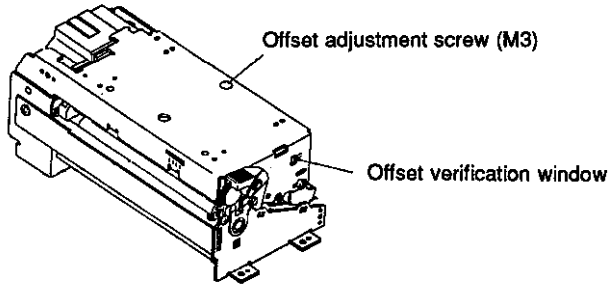
The relationship between the offset adjustment screw and the print head heating element is shown as follows:

a) Print head position for label



Offset adjustment screw

Offset verification window

Heating element

a

b) Print head position for tag



Offset adjustment screw

Offset verification window

Heating element

b
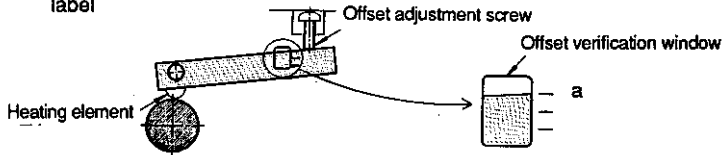
2    When the print on the left and right sides of the label is not of equal darkness

Adjustments may be needed if paper of different width is used. Print darkness is affected by the amount of pressure on the print head so the pressure must be adjusted with the head pressure adjustment screw if necessary.

The pressure on the right side of the print head, viewed from the front panel, is adjusted by turning the head pressure adjustment screw. Turning the screw clockwise decreases the pressure, and turning the screw counterclockwise increases the pressure.

The condition of the right side of the print head can be checked through the upper frame window, which is located at the front of the printer mechanism unit.

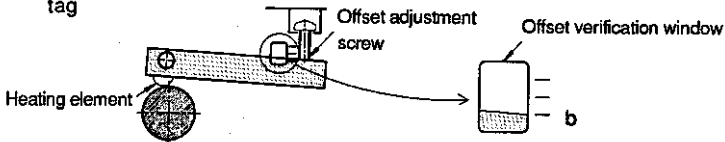■    Adjustments

The pressure on the left and right sides of the print head has already been factory-set to equal loads. The check marks are located under the upper frame window.

Adjustments are needed in the following cases:

1)  When the print on the left side is too light

Turn the head pressure adjustment screw clockwise.

2)  When the print on the right side is too light

Turn the head pressure adjustment screw counterclockwise.

3)  When paper of smaller width is used

In this case, the contact between the print head and the platen becomes large, so the stepping motor will have the heavy load or the print head may scrape the platen. To avoid this, turn the head pressure adjustment screw clockwise to decrease the pressure on the right side of the print head.

In addition, the adjustments will be useful for avoiding paper skew. For details, contact our service personnel.

**Upper frame window condition**

(1)    When 4-inch paper is used
(Factory setting)

Plastic plate

(2)    When 1-inch paper is used

(A plastic plate cannot be observed)

Upper frame window

Head pressure adjustment screw
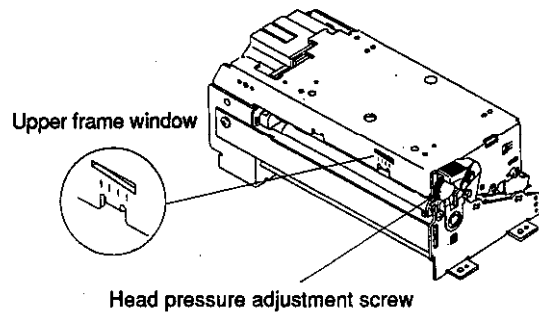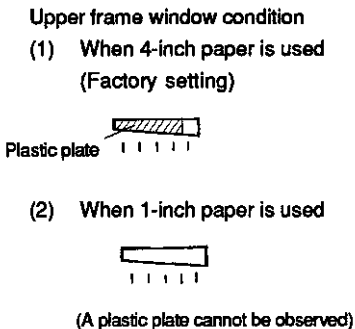
# Chapter 4

# Troubleshooting

# 4.1 Error Messages

When there is a problem with the printer, a buzzer sounds, and the error indicator on the control panel goes on and the error message is displayed on the LCD screen.

Error descriptions and corrective actions are shown below.

## 4.1.1 Error descriptions and indications

| Description | Indication | LED | Buzzer |
|---|---|---|---|
| Battery dead (for clock and backup RAM) | Battery | Lights | Sounds long |
| Low head temperature | ColdHead | Lights | Sounds long |
| Low PCB temperature | Cold PCB | Lights | Sounds long |
| Abnormal head resistance value | | Lights | Sounds long |
|   Error contents and head information repeatedly displayed | Head Err | | |
|   Rank:     Rank of head resistance value | Rank *** | | |
|   Average:  Average of resistance values (A/D reading value decimal system) | Ave.*** | | |
|   Maximum:  Max. value of resistance | Max.*** | | |
|   Minimum:  Min. value of resistance | Min.*** | | |
| Communication error (receive buffer overrun) | OverFlow | Lights | Sounds long |
| Communication error (parity, framing) | S/I Err | Lights | Sounds long |
| Communication error (transmit buffer overflow | HostBusy T.D.Full | Blinks | sounds short 3 times |
| Pause key pressed | Pause | -- | -- |
| Pause command reception (remote control) | Pause | -- | -- |
| Head overheat | OverHeat Cooling | Blinks | Sounds short 3 times |
| Stop key pressed | Stop | -- | Sounds short 3 times |
| Stop command reception (remote control) | Cancel | -- | -- |
| Mechanism head open | HeadOpen | Lights | Sounds short 3 times |
| Paper end (no paper left) | PaperEnd | Lights | Sounds short 3 times |
| Motor overheat | MotorHot Cooling | Blinks | Sounds short 3 times |

| Description | | Indication | LED | Buzzer |
|---|---|---|---|---|
| Paper out (paper position can't be detected) | | PaperErr | Lights | Sounds short 3 times |
| Error contents and sensor information repeatedly displayed | | | | |
| M command: | Sets length for detection miss checking with system command M | M CMND | | |
| Maximum: | Max. value of sensor reading voltage | Max*.**V | | |
| Minimum: | Min. value of sensor reading voltage | Min*.**V | | |
| PCB overheat (PCB or sensor abnormality) | | OverHeat | Lights | Sounds short 3 times |
| Option board abnormality | | OP Err | Lights | Sounds short 3 times |
| Auto-cutter abnormality (such as poor engagement) | | Cut Err | Lights | Sounds short 3 times |
| ROM checksum error | | ROM Err | Lights | Sounds long |
| RAM checksum error | | RAM Err | Lights | Sounds long |

## 4.1.2   Error indications and corrective actions

| Indication | Description | Corrective actions |
|---|---|---|
| Battery | Battery dead | Automatically returned after displaying the error for a certain time.<br><br>Change the lithium battery (CR2032).<br>**Note:** Contact our service personnel to replace the battery<br><br>If the battery runs down, the real-time clock will stop and the contents of memory switch will be lost. |
| ColdHead | Low head temperature | Automatically returned after displaying the error for a certain time.<br><br>Raise the temperature around the printer.<br><br>Print density becomes low and print quality becomes inferior when the head temperature is low. |
| Cold PCB | Low PCB temperature | Automatically returned after displaying the error for a certain time.<br><br>Raise the temperature around the printer.<br><br>Print density becomes low and print quality becomes inferior when the head temperature is low. |
| Head Err | Abnormal head resistance value | Check the contents and clear with the Stop key.<br><br>Replace the print head.<br><br>Print quality is affected in the section with abnormal head resistance value. |
| OverFlow | Communication error (receive buffer overrun) | Check the contents and clear with the Stop key.<br><br>Correct the communication control system or faulty communication cable. |
| S/I Err | Communication error (parity, framing) | Check the contents and clear with the Stop key.<br><br>Correct the communication parameter or faulty communication cable. |
| HostBusy T.D.Full | Communication error (transmit buffer overflow) | Automatically returned if the computer receives data and the buffer becomes empty. |
| Pause | Pause key pressed | Press the Pause key once again to resume printing.<br><br>If the Stop key is pressed, the stored printing contents will be lost and "on line" will turn on. |
| Pause | Pause command reception (communication control) | Same as above. |

| Indication | Description | Corrective actions |
|---|---|---|
| OverHeat Cooling | Head overheat | Wait until the head temperature goes down. When the temperature becomes low, the remaining printing resumes. |
| Stop | Stop key pressed | Enters a pause after displaying the stop by the Stop key.<br><br>If the Pause key is pressed, the printing will resume.<br><br>If the Stop key is pressed again, the stored printing contents will be lost and "on line" will turn on. |
| Cancel | Stop command reception (communication control) | Displays the stop by the stop command, discards the stored printing contents, and enters a pause.<br><br>If the Pause key is pressed, "on line" will turn on. |
| HeadOpen | Mechanism head open | Close the mechanism head. |
| PaperEnd | Paper end (no paper left) | Install the paper. |
| PaperErr | Paper out (paper position can't be detected) | Check the contents and clear with the Stop key.<br><br>Correct the faulty setting of the paper detection (paper gap, black line, continuous paper).<br><br>Correct the faulty parameter for paper (max. length, continuous paper).<br><br>Adjust the sensor or change for the paper that accepts the paper position detection.<br><br>Specify the length for the detection miss checking with the M command.<br><br>When the paper position can't be detected during paper feeding by the specified length, it is judged error. Generally specify the length about three times the label length.<br><br>In case of the continuous paper, specify the label length with the C command.<br><br>Difference between the maximum and minimum values of the sensor reading voltage is 0.8 V or more.<br><br>Sensor adjustment and paper characteristic verification (voltage verification) can be performed with the Maintenance mode. |
| MotorHot Cooling | Motor overheat | Wait until the motor temperature goes down. When the temperature becomes low, the remaining printing resumes. |

| Indication | Description | Corrective actions |
|---|---|---|
| OverHeat | PCB overheat | Turn off the power and reset the printer. If this recurs, contact our service personnel. |
| OP Err | Option board abnormality | Turn off the power and reset the printer. If this recurs, contact our service personnel. |
| Cut Err | Auto-cutter abnormality (such as poor engagement) | Check the contents and clear with the Stop key. . <br><br> If this can't be cleared, turn off the power and remove foreign matter from the auto-cutter. <br><br> If this recurs, contact our service personnel. |
| ROM Err | ROM checksum error | Turn off the power and reset the printer. If this recurs, contact our service personnel. |
| RAM Err | RAM checksum error | Turn off the power and reset the printer. If this recurs, contact our service personnel. |
| -- | System error (such as timer or CPU malfunction) | First protect the system, then reset the printer. |

■ Print head replacement and print head removal

⚠ CAUTION: • Push down the open lever to move the print head assy away from the platen.

• Whilst supporting the print head, undo the pan head screw M3 as indicated below to release the print head.

• Disconnect the connector cable from the print head assy.

■ Print head replacement

⚠ CAUTION: • Connect the connector cable to the new print head assy.

• Whilst supporting the print head, locate and screw in the pan head screw M3 into the print head mounting hole. Do not overtighten this screw as it may damage the new print head assy.

• Lock down the print head assy to the platen.

• Align the new print head assy as per Chapter 3 - Print Head Offset Adjustments.

Pan head screw M3

Upper frame

Thermal print head assy

## 4.2 Power Troubleshooting

| Problem | Cause and remedy |
|---|---|
| No power even with power switch turned ON. | • Power cord is not properly connected to the outlet. → Turn off the power switch and properly reconnect the power cord to the outlet.<br><br>• Power cord is not properly connected to the power inlet. → Turn off the power switch and properly reconnect the power cord to the power inlet.<br><br>• Input voltage is not correct; input voltage is greater or less than the rated voltage. → Set input voltage within the rated voltage (puncture voltage may occur. Contact our service personnel).<br><br>• Correct RS-232C cable is not used. → Turn off the power switch and unplug the interface cable. Check that power turns on by turning the power switch to ON and use the correct RS-232C cable. |

## 4.3 Paper Feed Troubleshooting

| Problem | Cause and remedy | |
|---|---|---|
| Paper doesn't feed. | • Paper path is wrong. | → Use correct path. |
| | • Mechanism head is open. | → Close the mechanism head. |
| Paper is skew. | • Paper end is not in contact with the paper guide. | → Slightly push the paper guide against the paper end. |
| | • Roll guide is not in contact with the roll of paper. | → Slightly push the roll guide against the roll of paper. |
| | • Head pressure is not correct. | → Adjust it with the offset adjustment screw according to the paper width. |
| Paper doesn't align with the print position. | • Setting mode is not correct. | → Check whether the setting mode is paper gap or black line sensor and if it is not correct, change it as necessary. |
| | • Paper gap (black line) sensor adjustment failure. | → Adjust the voltage of the paper gap and black line sensor from the voltage setting in the system maintenance mode. |
| | • Transfer data is abnormal. | → If the contents of the transfer data are incorrect, set them properly again. |

## 4.4 Print Troubleshooting

| Problem | Cause and remedy | |
|---|---|---|
| Printing doesn't start. | • Printer power is off. | → Turn the power switch to ON. If power still doesn't turn on, follow steps in Section 4.2 Power Troubleshooting. |
| | • Printer is not properly connected to computer. | → Turn the power switch to OFF and connect it properly. |
| | • Printer setting is not correct. | → Correct the printer setting. |
| Missing lines. | • Print head connector connection failure. | → If the print head connector is not properly connected, insert it correctly. |
| Dropouts when printing. | • Print head is dirty. | → Check the print head heat-generation body for dirt. If it's dirty, wipe the surface of the print head heat-generation body with a soft clean cloth moistened with ethylalcohol etc. |
| | • Platen roller is dirty. | → Remove dirt or label or tape scraps from the platen roller.<br><br>**Note:** If it can't be removed, contact a service center or dealer for general maintenance. |
| Print is too light or dark. | • Paper is not recommended type. | → Change to the specified products after checking the paper maker and identification number list. |
| | • Paper quality doesn't match print head offset. | → Adjust the offset. See Section 3.4 Print head offset adjustment. |
| | • Paper width doesn't match print head offset. | → Adjust the offset. See Section 3.4 Print head offset adjustment. |
| | • Printer setting mode is not correct. | → Check whether the setting mode is direct-thermal or thermal-transfer printing and if it is not correct, change it as necessary. |
| | • Setting for printing energy level is not correct. | → Check the setting value for printing energy level and adjust it as necessary. |

| Problem | Cause and remedy |
|---------|------------------|
| Other printing abnormalities | • Check the error message on the control panel and correct according to the descriptions in Section 4.1.2 Error indications and corrective actions, 4.1 Error Messages. |

# 4.5 Interface Troubleshooting

| Problem | Cause and remedy |
|---------|------------------|
| Printer doesn't print.<br><br>Printout disordered.<br><br>Error message is displayed and printer doesn't print. | The following should be considered as probable causes:<br><br>• Interface cable is not properly connected.  → Check that the interface cable is connected properly.<br><br>• Interface cable is not standard type.  → Replace it.<br><br>• Communication parameter setting is not correct.  → Set the system maintenance mode from the control panel and check/correct the communication parameter value. |

# Chapter 5

# Options

# 5.1 Auto-Cutter Unit

The auto-cutter unit that has been installed on the printer will be available.
See the operation manual of the auto-cutter for details.

■ Specifications

| | |
|---|---|
| • Cutting method: | Circular cutter |
| • Max. thickness of cut paper: | 0.01 in (0.254 mm) |
| • Min. length of cut paper: | 1 in (25.4 mm) |

# 5.2 Peeler Unit

The peeler unit that has been installed on the printer will be available.
See the operation manual of the peeler unit for details.

■ Specifications

| | |
|---|---|
| • Width of paper: | 1–4.65 in (25.4–118 mm) |
| • Max. diameter for roll paper: | 8 in (203 mm) |
| • Inner diameter for roll paper: | 3 in (76 mm) or more |
| • Min. length of label: | 1 in (25.4 mm) |
| • Thickness of paper: | 0.0067 in (0.17 mm), max. |
| • Thickness of liner: | 0.0027 in (0.07 mm), max. |
| • Unusable paper: | Special paper (Whitepet, etc.) or too flexible causing jams |

# 5.3 Adjustable Sensor

The adjustable sensor that has been installed on the printer will be
available. See the operation manual of the adjustable sensor for details.

■ Specifications

• The basic specifications of the adjustable sensor are in accordance with
those of paper.

• Adjustable sensor travel: 59 mm (2.3 in) from the left edge of the paper
(reference line of setting paper). When the adjustable sensor is travelled to
the left edge, the black line sensor cannot detect the position of 2 mm (0.078
in) from the left edge of the paper.

## 5.4 PCMCIA Memory Card

The PCMCIA memory card is used to:

1   Store print format files. Data in the field register area can be stored and loaded.

2   Store graphic data. For example, graphic data such as a corporate logo can be stored and recalled from the PCMCIA memory card and printed.

> **Note:**   The maximum size of storing graphic data is less than 256K bytes.

3   Store downloaded HP Soft fonts.

■ Installation

1   Turn off the power to the printer.

2   Remove the PCMCIA memory card cover at the bottom of the printer

3   Insert the memory card (make sure the card is not inverted).

4   Replace the PCMCIA memory card cover.
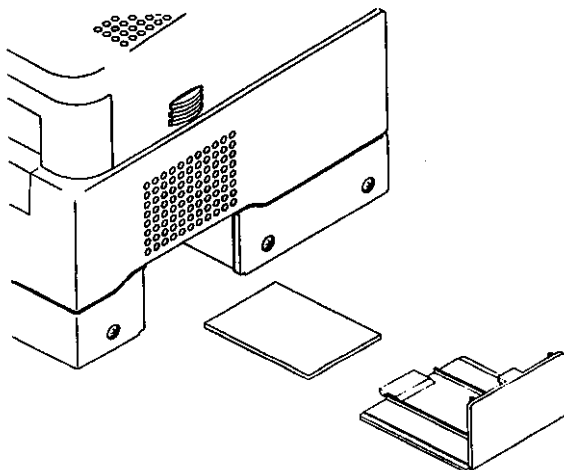


**Notes:**   • Before use, carefully read and understand the instructions regarding the memory card.

   • Never try to insert or remove the PCMCIA memory card before the power to the printer is turned off.

   • Always close the PCMCIA memory card cover to keep out dirt.

   • If a memory card write failure occurs, check the memory card with the test command (STX.w).

## 5.5 Command Reference

The command reference is available upon request.

## 5.6 Roll Paper Holder

■ 8-in size

- Max. outer diameter:                    8 in (203 mm)
- Paper core inner diameter:              1.5–3 in (38–76 mm)

# Chapter 6

# Specifications

# 6.1 Basic Specifications

| Item | Description |
|---|---|
| Printing | • Direct-thermal<br><br>• 203 dpi (8 dots/mm) print head<br>(Main scanning line density:   8 dots/mm)<br>(Subscanning line density:   8 lines/mm)<br><br>• Max. print width:   4.1 in (104 mm)<br><br>• Max. paper width:   4.65 in (118 mm)<br><br>• Max. print length:   16 in (406 mm) |
| Print speed | • 2–4 inches/second in one-inch units |
| Print mode | • Batch mode:   Performs normal printing (single or multi sheets)<br><br>• Peel mode:   Prints and peels label from mount<br><br>• Cut mode:   Prints and cuts by the specified number of sheets<br><br>• Tear-off mode: Cuts paper and feeds back to the print starting position |
| Bar code generator | One-dimensional bar code:<br><br>• Code 3 of 9            • POSTNET<br>• Interleaved 2 of 5     • UCC/EAN128 (for K-MART)<br>• UCC/EAN128         • Telepen<br>• UCC/EAN128 Random Weight     • EAN-13 (JAN-13)<br>• Code 128           • HIBC (Modulus 43-used code 3 of 9)<br>• Codabar (NW-7)     • Int 2 of 5 (Modulus 10-used Interleaved 2 of 5)<br>• EAN-8 (JAN-8)      • UPC-E<br>• UPC-A             • CASE CODE<br>• Plessey           • UPC2DIG ADD<br>• Code 93            • FIM<br>• UPC5DIG ADD<br><br>Two-dimensional bar code:<br><br>• UPS Maxi Code      • PDF-417 |

| Item | Description |
|---|---|
| Standard fonts | • Font No. 0–6 (fixed pitch, alphanumeric)<br><br>• Font No. 7–8: OCR-A, OCR-B<br><br>• Font No. 9: CG Triumvirate smooth font; 6 pt, 8 pt, 10 pt, 12 pt, 14 pt, 18 pt, 24 pt, 30 pt, 36 pt, and 48 pt<br><br>Character set is in accordance with code page 850 |
| Media sensors | • Transparent type sensor:<br>Detects paper gap between labels, tag notch and paper end<br><br>• Reflective type sensor:<br>Detects black line on back of paper and paper end<br><br>• Position of top edge of paper (paper home-position) adjustable with software<br><br>• Label peeling sensor (optional) |
| Paper | • Type of paper:     Roll, label<br>                    (continuous, die-cut, fanfold, tag or ticket)<br><br>• Category:        Direct-thermal paper<br><br>• Max. paper width:    4.65 in (118 mm)<br><br>• Min. paper width:    1 in (25.4 mm)<br><br>• Max. print length:   16 in (406 mm)<br><br>• Min. print length:   0.500 in (12.7 mm)<br><br>• Max. paper thickness:  0.01 in (0.254 mm)<br><br>• Min. paper thickness:  0.0025 in (0.063 mm)<br><br>• Roll paper diam.:    max. outer diam.: 8 in (203 mm)<br>                    paper core: 1.5–3 in (38–76 mm)<br><br>• Print density adjustable with software |
| Communication interface | • RS-232C (standard)<br><br>• Centronics (standard) |

| Item | Description |
|---|---|
| Communication interface | • RS-232C (standard)<br><br>• Centronics (standard) |
| Indications, keys and switches | • LEDs:             Power and error<br><br>• LCD:              Displays printer status, error contents, mode switch contents, etc<br><br>• Control panel keys:   Pause, Feed and Stop<br><br>• Mode switch:       For parameter setting for switching between direct-thermal and thermal-transfer, communication, etc.<br><br>• Head up detection switch<br><br>• Power switch |
| Options | By factory or or reseller (dealer):<br>• Auto-cutter unit   • Peeler unit   • Adjustable sensor unit<br>By user:<br>• Command reference   • PCMCIA memory card |
| Appearance and weight | • Height:     6.0 in (154.5 mm)<br><br>• Width:      9.6 in (245 mm)<br><br>• Depth:     8.1 in (207 mm)<br><br>• Weight:    9.9 lbs (4.5 kg) |
| Power | • Input voltage 120V:     -10%+6%, 2.5A, 60Hz (U.S.A., Canada)<br><br>• Input voltage 220V–240V: -10%+6%, 1.2A, 50/60Hz (Europe) |
| Standards | 120V:         UL1950   CSA: No. 950   FCC: Class A<br><br>220V–240V: EN60950, EN55022 Class A, EN50082-1, IEC801-2, IEC801-3, IEC801-4 |
| Environment | • Operating conditions:   Temperature: 5–35°C (41–95°F)<br>                        Humidity:    30–80% (noncondensing)<br><br>• Storage:           Temperature: -20–60°C (-4–140°F)<br>                        Humidity:    5–85%<br><br>• Ventilation:       Convective circulation. Air vent be away from wall etc (to prevent fire)<br><br>• Dust:              Free from conductive or corrosive matter |

## 6.2 Interface

### 6.2.1 System configuration

The printer is connected to a computer and prints labels according to the commands sent from the computer.

Two methods of interface with the computer are as follows:

(1) Serial interface: RS-232C (standard)

| Computer |
| :---: |
| RS-232C interface |

| RS-232C interface |
| :---: |
| Printer |
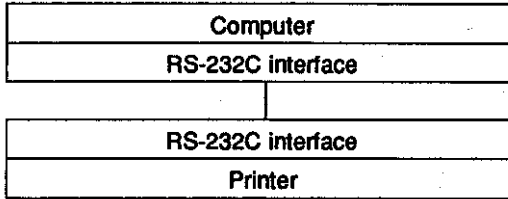
(2) Parallel interface: Centronics (standard)

| Computer |
| :---: |
| Centronics interface |

| Centronics interface |
| :---: |
| Printer |
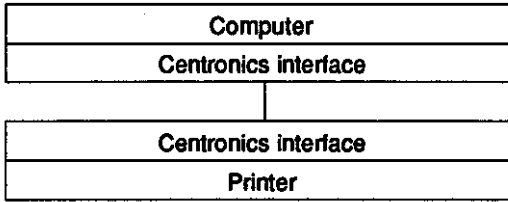
## 6.2.2  Specifications of interface

(1)  Serial interface

| Method | Asynchronous serial interface RS-232C |
|---|---|
| Connector | DSUB 25-pin |
| Protocol control | XON/XOFF and CTS/DTR |
| Receive buffer size | 12K bytes Receiving data stops when the remaining buffer reaches 2K bytes and resumes when the remaining buffer reaches 4K bytes |
| Baud rate | 300, 600, 1200, 2400, 4800, 9600, 19200, 38400 bps |
| Bit length | 7- or 8-bit |
| Stop bit | Fixed  When printer receives data, stop bit is fixed at 1, and when printer transmits data, stop bit is fixed at 2.  But computer can transmit and receive data, regardless of stop bit at 1 or 2 |
| Parity | No |

(2)  Parallel interface

| Method | 8-bit parallel |
|---|---|
| Connector | 36-pin unphenol type |
| Synchronous system | Strobe pulse |
| Handshaking | ACKNLG and BUSY signals |
| Signal level | TTL |

### 6.2.3 RS-232C loopback test

After connector wiring as shown in the figure, the test mode is turned on. The printer will receive data that has been transmitted by printer itself and the test of receiving and transmitting data will be performed.

RS-232C test
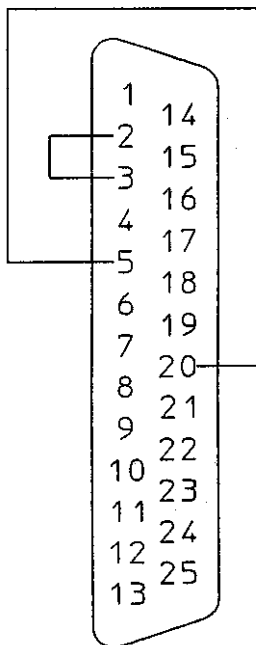


Fig. Loopback test

## 6.2.4 RS-232C protocol

(1) X-ON/X-OFF system (see the figure)

This is a control system in which the data transmission request signal (X-ON (11H) code) and the data transmission stop request signal (X-OFF (13H) code) are output.

Requirements of output of X-ON code:

- When the power is switched to ON.

- When the remaining buffer is 2K bytes or less, the X-OFF is output, and the remaining buffer is 4K bytes or more.

Requirements of output of X-OFF code:

- When printer error occurs.

- When the remaining buffer is 2K bytes or less.

Receive buffer size = 12K bytes

4K bytes

2K bytes

Receiving data

X-ON code output   X-OFF code output
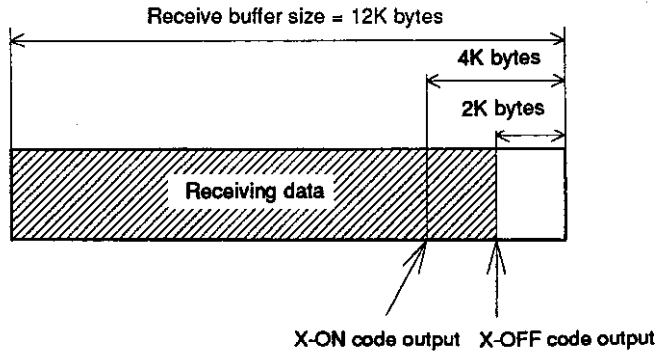
**Note:**   Even if each code is ready for output, the same code cannot be transmitted twice successively (except when the power is turned on or the printer is reset from the control panel).

Fig.  Buffer in use

(2) Ready/Busy system (see the figure)

This is a control system in which the DTR signal is output at Ready (High)/Busy(Low) level.

Requirements of DTR "High":

- When the printer is "on line."
- When the remaining buffer is less than 2K bytes.

  However, when the remaining buffer of less than 2K bytes is detected, the printer keeps a "Low" level until the remaining buffer is 4K bytes or more.

- When a printer alarm occurs (i.e. when the printer is switched to "off line").

## 6.2.5 Interface pin assignment

Serial and parallel interface pin assignment tables are shown below.

■ Serial interface pin assignment table

| Pin No. | Signal | Input/Output | Description |
|---|---|---|---|
| 1 | F.GND | – | Frame ground |
| 2 | TXD | Output | RS-232C output data |
| 3 | RXD | Input | RS-232C input data |
| 4 | RTS | – | RS-232C (pull up to +5V with 2 KΩ) |
| 5 | CTS | Input | RS-232C data transmission on computer permitted |
| 6 | NC | – | No connection |
| 7 | S.GND | – | Signal ground |
| 8 | NC | – | No connection |
| 9 | NC | – | No connection |
| 10 | NC | – | No connection |
| 11 | NC | – | No connection |
| 12 | NC | – | No connection |
| 13 | S.GND | – | Signal ground |
| 14 | +5VDC | – | +5 V (max. load 100 mA) |
| 15 | NC | – | No connection |
| 16 | NC | – | No connection |
| 17 | NC | – | No connection |
| 18 | NC | – | No connection |
| 19 | NC | – | No connection |
| 20 | DTR | Output | RS-232C data transmission (busy) on printer permitted |
| 21 | NC | – | No connection |
| 22 | NC | – | No connection |
| 23 | NC | – | No connection |
| 24 | NC | – | No connection |
| 25 | NC | – | No connection |

■ Parallel interface pin assignment table

| Pin No. | Signal | Input/output | Description |
|---------|--------|--------------|-------------|
| 1 | STROBE | Input | Strobe signal for reading 8-bit data |
| 2 – 9 | DATA1-8 | Input | 8-bit parallel signal |
| 10 | ACKNLG | Output | 8-bit data request signal |
| 11 | BUSY | Output | Signal specifying printer busy |
| 12 | PERROR | Output | Signal specifying paper absence |
| 13 | SELECT | Output | Signal specifying printer "on line" (printing) or "off line" (pause) |
| 14 | AUTOFD | Input | Invalidness (ignorance) |
| 15 | NC | – | No use |
| 16 | S.GND | – | Signal ground |
| 17 | FGND | – | Frame ground |
| 18 | P.L.H | Output | Signal specifying peripheral logic high (pull up to +5V with 2 KΩ] |
| 19–30 | GND | – | Ground for twisted pair return |
| 31 | INIT | Input | Printer reset |
| 32 | FAULT | Output | Signal specifying printer error |
| 33–35 | NC | – | No use |
| 36 | SELECTIN | Input | Invalidness (ignorance) |

## 6.3 Outline of Command System

For details about command system, see the Command Reference separately available.

Commands for this printer consist of a string of ASCII codes and end with "CR" (decimal: 13, hex: 0D). Generally, commands are classified into two types, system-level commands and label format commands.

System-level commands are used for system-level operations such as printer status output, sensor selection and memory card maintenance. On the other hand, label format commands are used for definition of printing contents such as character data, bar code data, print speed, and print density.

System-level commands start with ASCII "SOH" ($01) or "STX" ($02). Commands which start with "SOH" are required for real-time execution. When received, they are executed immediately even during printing. Commands which start with "STX" enter the buffer area once and then are executed in the order of data reception.

Label format commands end with "CR", following the system-level commands' "STX" + "L."

| System-level commands<br><br>start with ASCII "SOH" ($01) or "STX" ($02). | Commands that start with "SOH":<br><br>Executed immediately after receiving data<br><br>(e.g. stop of printing, output of printer status, etc.) |
| | Commands that start with "STX":<br><br>Executed in the order of data input to the receive buffer<br><br>(e.g. switching of sensor, memory card maintenance, etc.) |

"STX" + "L" ↓             ↑     "E" (with print)
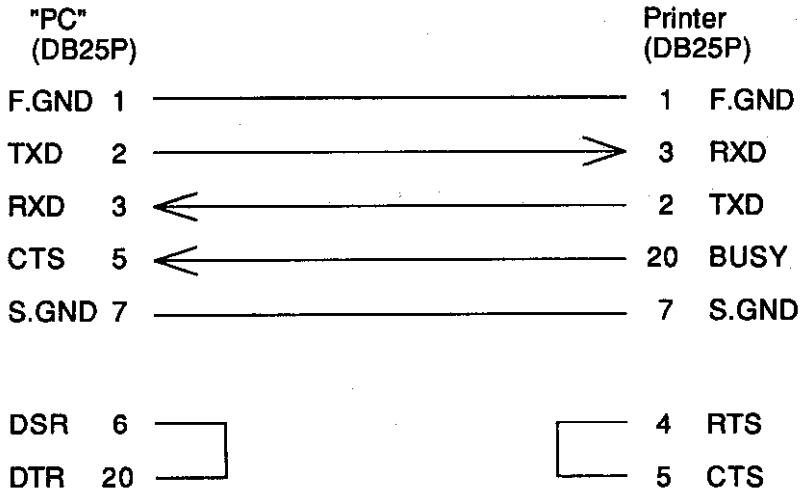                                 "X" (without print)

| Label format commands<br><br>end with "CR" | Print parameter control |
| | Character data definition commands |
| | Bar code definition commands |
| | Graphic commands |
| | Other commands |

## 6.4 Example of Connection to a Computer

When RS-232C is used:

IBM PC compatible

Communication control: XON/XOFF or CTS/DTR

```
"PC"                                        Printer
(DB25P)                                     (DB25P)

F.GND  1  ─────────────────────────────── 1   F.GND

TXD    2  ───────────────────────────────▷ 3   RXD

RXD    3  ◁─────────────────────────────── 2   TXD

CTS    5  ◁─────────────────────────────── 20  BUSY

S.GND  7  ─────────────────────────────── 7   S.GND


DSR    6  ─┐                          ┌─ 4   RTS

DTR    20 ─┘                          └─ 5   CTS
```

"PC" (DB9P) to Printer

```
"PC"                                        Printer
(DB9S)                                      (DB25P)

          NC  ──────── SHIELD ──────────  1

TXD    3  ───────────────────────────────  3   RXD

RXD    2  ───────────────────────────────  2   TXD

CTS    8  ──────────── CTS ───────────── 20  BUSY

       5  ─────────── GROUND ────────────  7


DSR    6  ─┐                          ┌─ 4   RTS

DTR    4  ─┘                          └─ 5   CTS
```
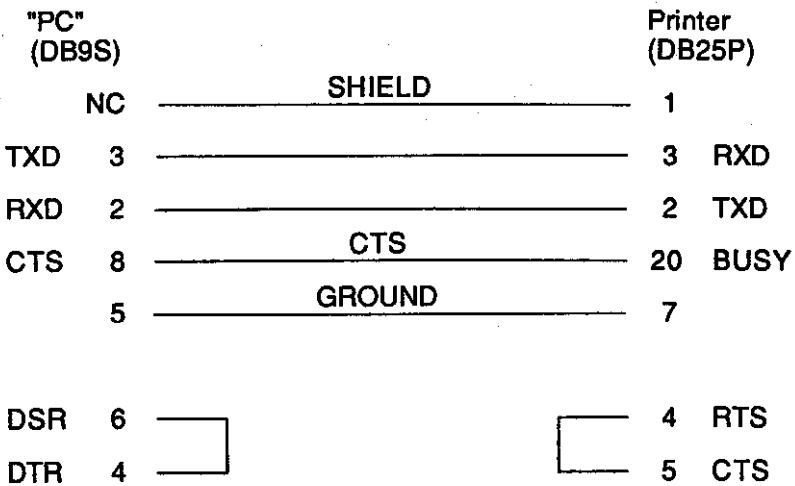
## 6.5 Tear-Off Function

The tear-off function eliminates the waste of labels when tearing manually. It allows the paper to automatically advance to the tear position after printing.

When this function is turned on, paper will be fed to the manual tear position after printing. The printer will feed back paper to the start print position when the next print job is sent.

If data is transmitted continuously from the computer, the tear-off function will be suppressed to increase throughput.

### 6.5.1 Turning Tear ON/OFF

Tear can be turned ON or OFF from the control panel. Default is OFF.

Indications on the control panel are as follows:

| LCD | |
|---|---|
| Tear-off invalid | Tear-off valid |
| "Tear OFF" | "Tear ON" |

### 6.5.2 Tear-off when printing

If set, the tear-off function will start if no data is transmitted for 0.5 second after printing. If data is transmitted continuously from the computer, the tear-off function will be suppressed.

Tear-off is only performed for the final label of each batch processing.

(The tear-off is not performed until the specified number of print sheets is completed.)

- Initialization parameter values

Initialization values for print or cut position are described below by each operating mode.

Unit: mm (inch)

|  | Normal print | Auto-cutter | Peeling | Tear-off | Minimum value |
|---|---|---|---|---|---|
| Print position (Onnnn, form offset) | 55.9 (2.2) | 55.9 (2.2) | 55.9 (2.2) | 55.9 (2.2) | 12.7 (0.5) |
| Cut position (fnnn, feed offset) | 55.9 (2.2) | * | * | 73.3 (2.89) | 12.7 (0.5) |

If value lower than the minimum value is set, the initialization value will be set.

(For values with mark *, see the separate option operation manuals.)

### 6.5.6 When "fnnn" command is executed while Tear is OFF

Even with Tear OFF, the paper will be fed to the "fnnn"-specified position after printing if an "fnnn > Onnnn" value is set by using the "fnnn" command.

This function will be used in such cases as another device is incorporated in the printer.

To perform operation with the FARGO, the following is different from those in tear-off function ON:

- The paper feeds immediately after printing, whereas, in Tear ON the paper feeds when no data is transmitted for 0.5 second after printing.

  However, if next print data is transmitted during printing, the printer will start printing without feed or back-feed.

### 6.5.7 Priority order

The following three functions (optional) cannot be performed simultaneously.

If commands for three functions are received simultaneously, they will be executed in the following priority:

1st:    Auto-cutting

2nd:    Peeling

3rd:    Tear-off