Chapter 3
USING THE PRINTER

3.1 TESTING THE PRINTER

Now that your printer is fully assembled, you can use the built-in self test function to see that the printer is working correctly even though it is not connected to a computer.

You should perform this test to make sure the printer was not damaged during shipping and to ensure that the ribbon has been installed correctly.

Before carrying out the test, you need to load a sheet of paper into the printer.

☞ CAUTION

Before turning on your printer, be absolutely sure you have removed all protective materials. Turning on the printer while the printhead cannot move may seriously damage the mechanism.

Bevor Sie den Drucker einschalten, achten Sie auf jeden Fall darauf, daß Sie das gesamte Transportschutzmaterial entfernt haben. Wenn der Drucker eingeschaltet wird, während sich der Druckerkopf nicht bewegen kann, könnte der Mechanismus sehr beschädigt werden.

1) Make sure that the power switch is turned off. Next, plug the power cord into a properly grounded electrical outlet.

2) Load a sheet of paper. See section 2.6, "Loading Paper" for how to load paper.

NOTE

The self test is 10/9.5 inches wide on the Pinovia 2430 and 14 inches wide on the Pinovia 2440. Be sure to use wide enough paper.

3) Turn off the printer.

4) While holding down the LF button, turn on the printer. As you release the LF button, the printing starts.

5) The self test does not stop until the printer runs out of paper or you turn off the printer. After checking that everything is operating correctly, turn off the printer to stop the test.

3.2 OPERATING THE CONTROL PANEL

The buttons on the control panel let you control the majority of the printer settings. The control panel also has indicator lights so you can check the current status of the various settings of the printer.

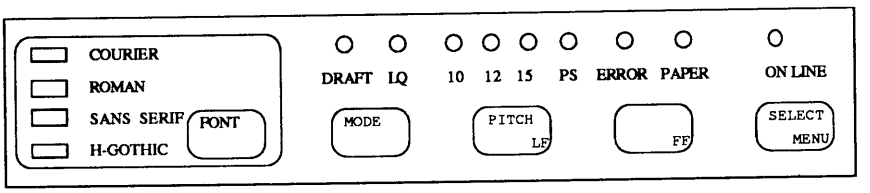

Fig. 3-1

Lights

- ON LINE
  On when the printer is ready to accept data from computer.

- PAPER (orange)
  On when the printer is out of paper.

- ERROR (orange)
  On when the printer is at error status.

- CPI
  Indicates selected cpi(10, 12, 15, PS).

- MODE
  Indicates selected printing mode(Draft, LQ).

- FONT
  Indicates selected Font(Courier, Roman, Sans Serif, H-Gothic).

Buttons

Your printer can produce a wide range of typestyles by combining different fonts, pitches, modes. You can select the typestyles in two different ways: by using software commands, and by pressing the following buttons on the control panel.

- SELECT
  This button controls the printer's on line/off line status. When the printer is on line, the light ON LINE is on and the printer can receive and print data from the computer.

- FF (Form Feed)
  When the printer is off line, press this button to advance continuous paper to the top of the next page or eject a single sheet of paper.

- LF (Line Feed)
  When the printer is off line, press this button to feed the paper one line, or hold it down to feed the paper continuously.

- PITCH
  Press this button to select a character pitch when the printer is on line. You can choose 10, 12, or 15 CPI (character per inch) or PS (proportional spacing). The green indicator light shows the selected pitch.

- MODE
  Press this button to select either DRAFT or LQ (Letter Quality) printing when the printer is on line. The green indicator light shows the selected mode. The draft mode uses fewer dots per character for high-speed printing.

- FONT
  Press this button to select a character font when the printer is on line. Font selection is available when LQ mode is selected. The green indicator light shows which font has been selected. The printer has four built-in fonts of COURIER, ROMAN, SANS SERIF, H-GOTHIC.

Other Control Panel Features

The control panel of the printer also gives you access to several special functions.

- Self test
  By holding down the LF button when you turn on the printer, you can start the printer's self test. This prints out the characters in the printer's ROM (Read Only Memory).

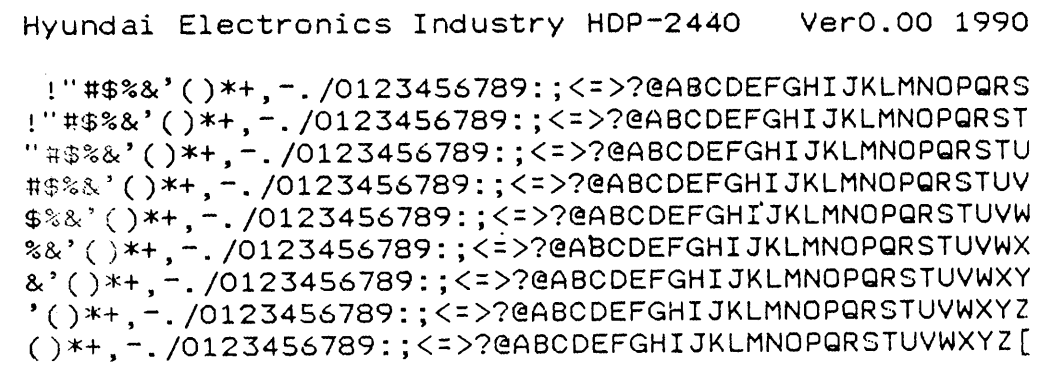

Fig. 3-2 Self Test

- H-pattern
  By holding down the MODE button when you turn on the printer, you can print out the character 'H' consecutively. This is to check the printing position.

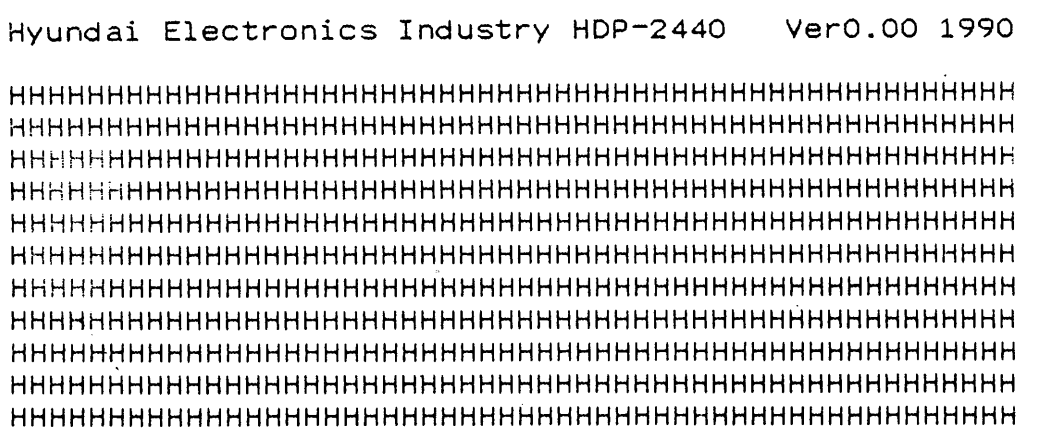

Fig. 3-3 H-pattern

■ Hex dump

By holding down the FF button when you turn on the printer, you turn on the data dump mode. This feature allows advanced users to diagnose many problems. See chapter 4, "Troubleshooting" for further information.

```
HEX DUMP MODE ..... Data will be Dumped in HEX form
20 20 20 20 20 54 68 65 20 50 69 6E 6F 76 69 61        The Pinovia
20 32 34 33 30 2F 32 34 34 30 20 68 61 73 20 74     2430/2440 has t
68 69 73 20 63 61 70 61 62 69 6C 69 74 79 0D 0A    his capability..
20 20 20 20 49 66 20 79 6F 75 20 77 61 6E 74 20        If you want
74 6F 20 6B 6E 6F 77 20 77 68 61 74 20 73 6F 66    to know what sof
74 77 61 72 65 20 70 72 6F 62 6C 65 6D 20 77 61    tware problem wa
73 0D 0A 20 20 20 20 20 68 61 70 70 65 6E 65 64    s..      happened
20 73 6F 6C 75 74 69 6F 6E 20 69 73 20 75 73 69     solution is usi
6E 67 20 74 68 69 73 0D 0A 20 20 20 20 20 22 48    ng this..      "H
45 58 20 44 55 4D 50 69 6E 67 20 22 0D 0A          EX DUMPing "..
```

Fig. 3-4 Hex dump

■ Menu

By holding down the SELECT button when you turn on the printer, you turn on the menu mode. This feature allows users to set many printer settings without DIP switches. See "Setting the Default Values" for further information.

The following table summarizes the function of control buttons.

STATUS / KEY	ON LINE	OFF LINE	POWER ON
FONT	C, R, S, H*	-	-
MODE	DRAFT/LQ		H PATTERN
PITCH/LF	PITCH	LF	SELF TEST
FF	-	FF	HEX DUMP
SELECT/MENU	OFF LINE	ON LINE	MENU

Table 3-1 Function of Control Buttons

* C: Courier
R: Roman
S: Sans Serif
H: H-Gothic

3.3 SETTING THE DEFAULT VALUES

When the printer is initialized, it has the following default settings.

Left Margin	Column 1
Right Margin	• Pinovia 2430: 80 Column • Pinovia 2440: 136 Column
Form Length	11 inches
Form Position	Top of the form
Carriage Position	Column 1
Top Margin	Top of the form
Bottom Margin	Bottom of the form
Horizontal Tab	Each 8th column
Vertical Tab	None

By turning on the menu mode, you can control various default printer features.

To turn on the menu setting mode, first turn off the printer. Then hold down the SELECT/MENU button while you turn on the printer. As you release the SELECT/MENU button, the printer prints out the current settings. Refer to Fig. 3-5(Bold faced menu items are current settings).

☞ CAUTION

Before turning on the menu mode, feed 11 x 8 or wider paper. If there is no paper, the printer exits the menu mode automatically.

When all the menu items have been printed, the printer prints out the last line as shown below and the printhead moves to YES item and waits your control button input.

```
Do you want to change MENU ? ..... YES / EXIT
```

Using the following buttons, you can move around the menu and select an item.

MODE	: Moves the printhead to the next menu item.
FONT	: Selects the item below which the printhead is positioned.
PITCH/LF	: Skip the menu at which the printhead is positioned.
FF	: Exits the menu list before the last item.

```
Switch Function
MODE -- Head Move    FONT -- Decision    LF -- Skip     FF -- Exit

 1.Emulation ..............IBM-P.P. / EPSON  / IBM-A.G.M.
 2.Cut Sheet Feeder .......Enable   / Disable
 3.Paper Sensor ...........Enable   / Disable
 4.Buzzer .................Enable   / Disable
 5.Quality ................Draft    / LQ
 6.Zero Character .........Normal   / Slashed
 7.Weight .................Normal   / Emphasized
 8.Font Generator .........EPSON    / IBM(1) / IBM(2)
 9.Characters per Inch ....10CPI    / 12CPI  / 15CPI
10.International ..........U.S.A  / France  / Germany / U.K.     / Denmark1 / Sweden    / Italy /
                           Spain1 / Japan   / Norway  / Denmark2 / Spain2   / L-America / Cyrillic
11.CR code ................CR       / CR+LF
12.LF code ................LF       / LF+CR
13.CANCEL code ............Enable   / Disable
14.Auto new Line ..........Enable   / Disable
15.Print on Time out ......Enable   / Disable
16.ESC J ..................Feed     / Feed+CR
17.Down load Buffer .......Input    / PCG
18.Form Length <INCH> .....4     / 5.5   / 6     / 7     / 8     / 8.5    / 11    / 12
19.Perforation <INCH> .....0     / 0.5   / 1     / 1.5
20.Lines per Inch..........4     / 6     / 8     / 12
21.SELECT IN ..............Enable   / Disable

                           Do you want to change MENU ? ..............  YES  / EXIT
```

Fig. 3-5 Menu List

■ **Let's change the current settings**

Suppose you want to change the 1. Emulation item.

First turn on the printer while pressing SELECT/MENU button. After all the menu items have been printed (see Fig. 3-5), the printer prints a question as shown below.

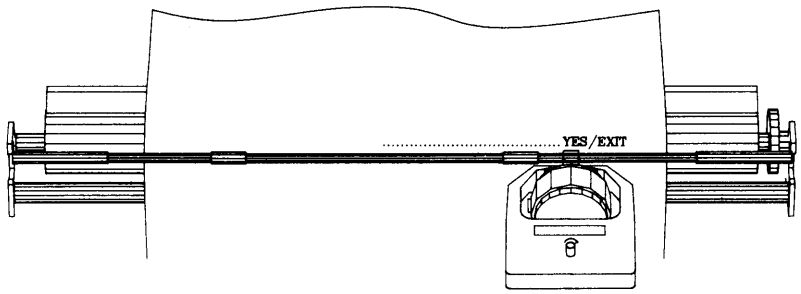

Fig. 3-6

The printer feeds the paper so that this question can be shown above the paper bail roller.

Press the FONT button to change any menu item, or press the MODE and FONT button sequentially to exit menu mode. If you press the FONT button, the printhead moves to the first menu item, "1. Emulation".

The printhead is positioned just below the first menu, "IBM-P.P.". If you want this emulation mode, press the FONT button. To select other emulation mode, move the printhead by pressing the MODE button then select it by pressing the FONT button. The selected menu is marked with an underline. If you want to skip this menu item, press the PITCH/LF button to move the printhead to the next menu item.

Repeat the above procedure until you reach the last menu item, "21. SELECT-IN". If you want to finish changing current settings before the last item then press the FF button. When you finished all the menu items, the printer prints a question as shown below and waits your selection under YES item.

```
Do you want to store changed MENU ? ..... YES / NO
```

If you want to store the changed values as default settings, press the FONT button. Else press the MODE and FONT buttons sequentially to exit menu mode without saving the changed values. The stored values remain valid even after the printer is turned off, and used again when the printer is turned on next time.

■ **Factory setting values**

Factory setting values are shown as follows.

Menu Item	Default	Menu Item	Default
1 Emulation	EPSON	12. LF code	LF
2. Cut Sheet Feeder	Disable	13. CANCEL code	Enable
3. Paper Sensor	Enable	14. Auto new Line	Enable
4. Buzzer	Enable	15. Print on Time out	Enable
5. Quality	Draft	16. ESC J	Feed
6. Zero Character	Normal	17. Down load Buffer	Input
7. Weight	Normal	18. Form Length <INCH>	11
8. Font Generator	EPSON	19. Perforation <INCH>	0
9. Characters per Inch	10CPI	20. Lines per Inch	6
10. International	USA	21. SELECT IN	Disable
11. CR code	CR		

Table 3-2

The method of changing the current settings is summarized on Fig 3-7. It affords good practice in using this feature.

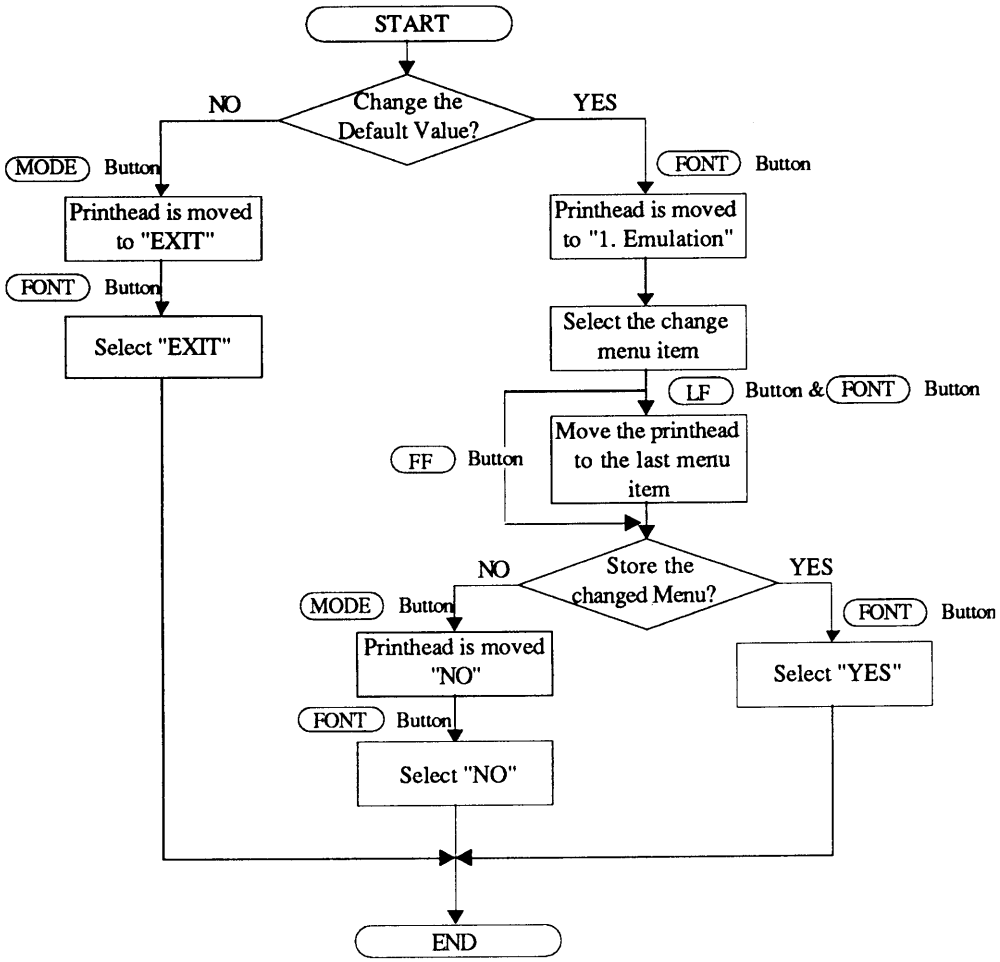

Fig. 3-7

NOTE

If you turn off the printer while the printer is in the menu mode, the changed values are not stored and the previous values are effective.

3.4 INSTALLING OPTIONS

Installing the Serial Interface Card

If you need to use a serial interface, install the optional serial interface card following the next steps.

1) Turn off the computer and the printer.

2) Disconnect the power cord and the parallel interface cable if they are connected.

3) Detach the platen knob and pull out the paper if it is loaded and detach the pull tractor unit.

4) Lift up the front cover to open the front part.

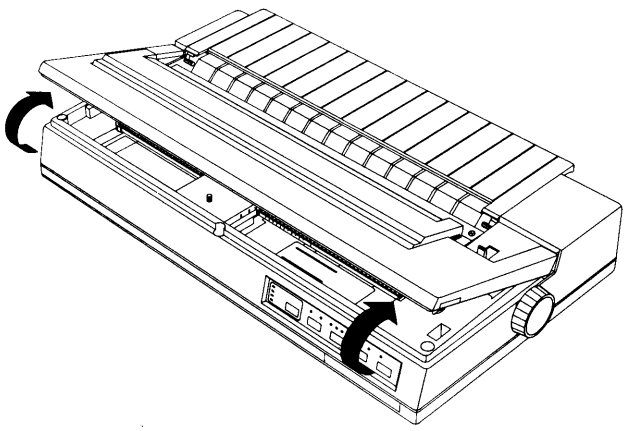

Fig. 3-8

5) Unscrew the 3 screws indicated in the following figure.

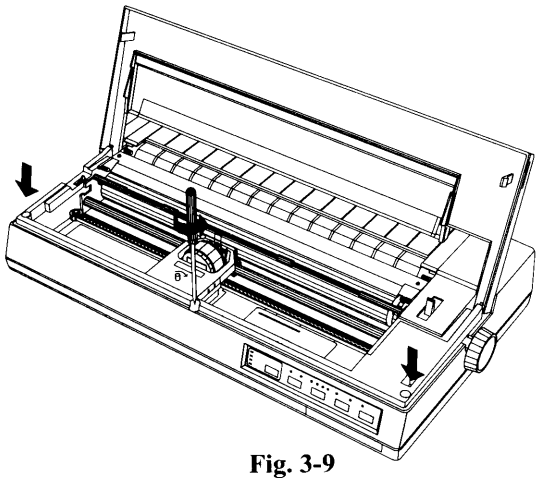

Fig. 3-9

6) Lift the upper printer case and detach it.

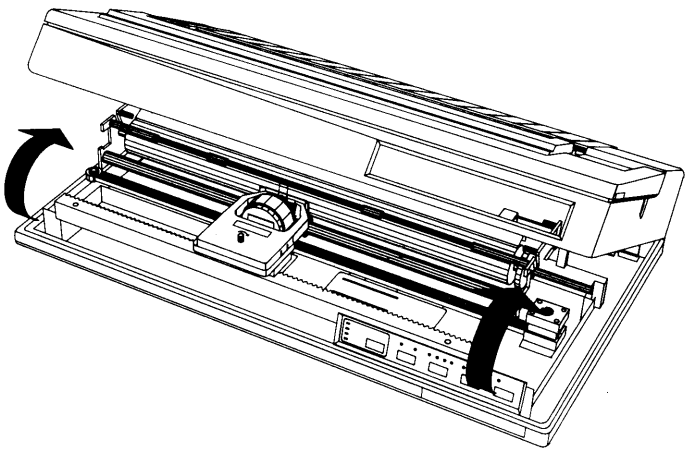

Fig. 3-10

7) Unscrew the 2 screws of the parallel interface card indicated in the following figure. Install the 2 'hexagonal supporting rods' supported with serial interface card into those holes.

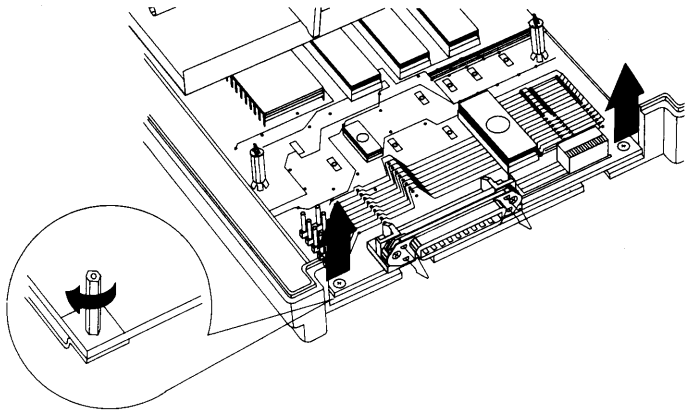

Fig. 3-11

8) Insert the serial interface card, with the serial connector facing toward the front of figure, into the 'Stand Off'. Make sure the female connector of the serial card is correctly and securely inserted into the male pins of the parallel card.

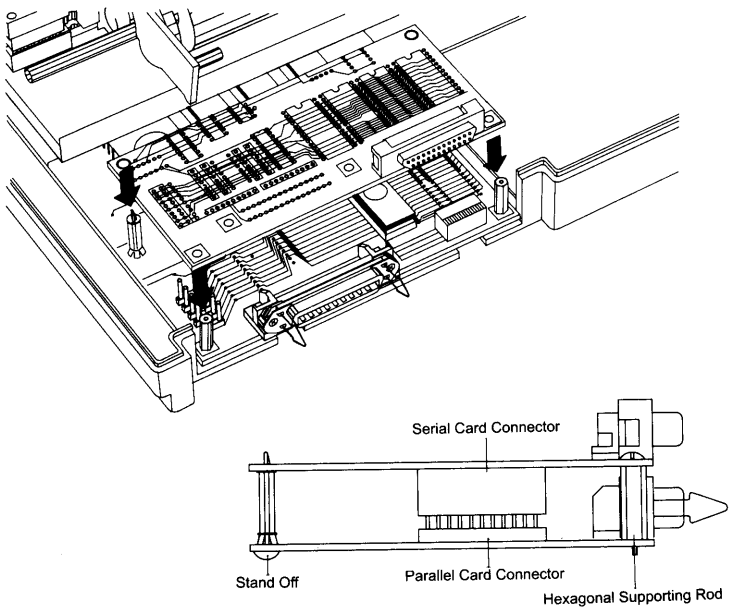

Fig. 3-12

9) Insert the screws that were unscrewed in step 7 into their holes and tighten them.

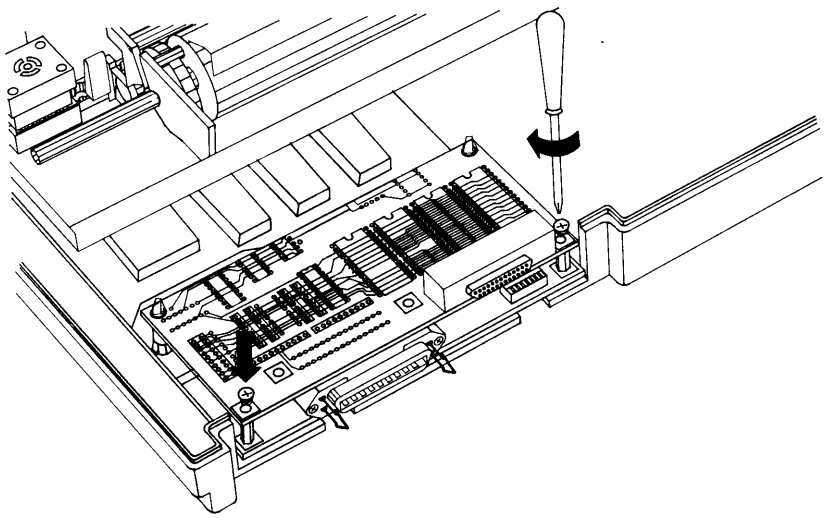

Fig. 3-13

10) Assemble the upper printer case.

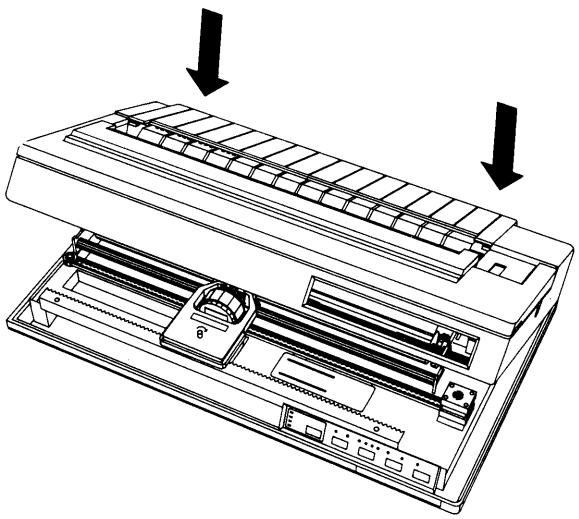

Fig. 3-14

11) Insert the screws that were unscrewed in step 6 into their holes and tighten them.

12) Reattach the platen knob and the pull tractor unit and feed the printer.

13)Cut out the plate of the rear panel cover to make a serial connector access window and reattach the cover.

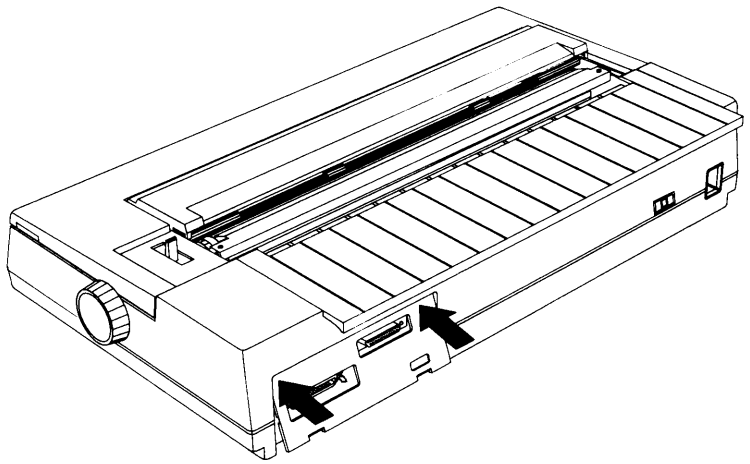

Fig. 3-15

15)Connect the serial interface cable.

The printer accepts either the serial or the parallel data input as connected. You don't have to set the interface type externally.

☞ **CAUTION**

Do not plug more than one interface cable into the printer at one time. This may cause a malfunction.

Stecken Sie nicht mehr als ein Schnittstellenkabel gleichzeitig an den Drucker.Das könnte einen Defekt verursachen.

Installing the Cut Sheet Feeder

The optional cut sheet feeder gives you easier and more efficient handling of single sheet paper on your printer.

The cut sheet feeder is quickly and easily installed onto the printer. No tools or special equipment are necessary.

Single sheets of paper are contained in an adjustable paper feed bin and are individually fed by the feeder to the printer platen. After printing, the feeder automatically ejects the sheet or form into the output stacker of the feeder.

NOTE

You can set the cut-sheet feeder mode either by automation switching-on when installing the cut-sheet feeder or by selecting the "ENABLE" item of the "2. CUT-SHEET-FEEDER" in the menu mode. See "3.3 setting the Default Values" for more information on the menu mode.

- Parts of the feeder

The following figure shows all the parts of the assembled cut sheet feeder.

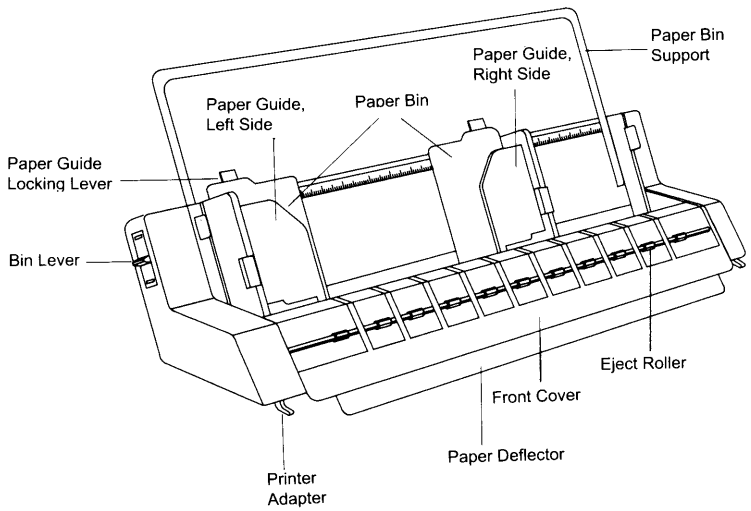

Fig. 3-16

■ Attaching the sheet feeder.

1) Turn the printer power off.

2) Detach the paper support & tractor unit.

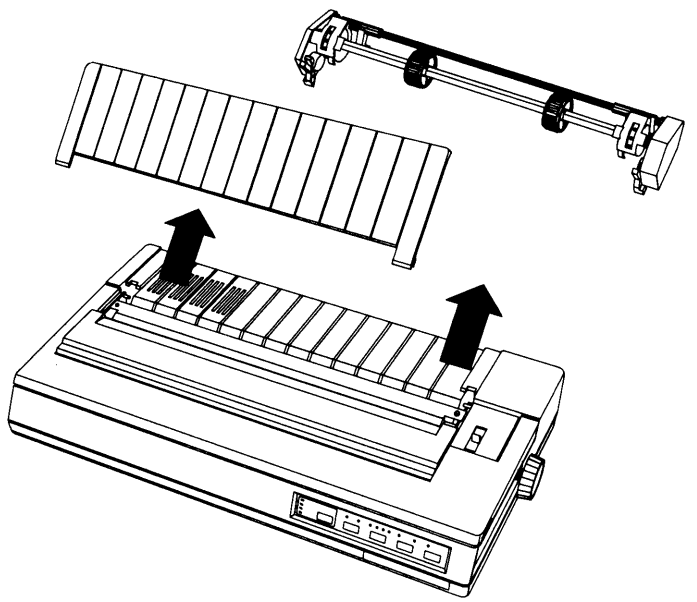

Fig. 3-17

3) Set the paper release lever to the **PAPER SET** position.

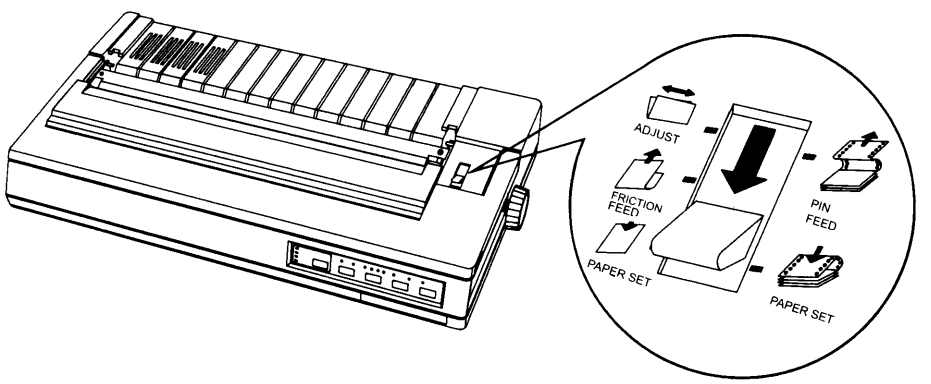

Fig. 3-18

4) Attach the paper bin support to the sheet feeder. For letter size paper set the bin support to its middle position. For legal size paper the bin support should be fit in the top position.

5) Be sure that the margin setter is positioned to determine the far left position of the left-hand paper guide.

6) Attach the additional paper guides to the paper guides.

7) Open the paper cover. Hold the feeder parallel to the platen with the gear at the right side and tilted toward the front of the printer.

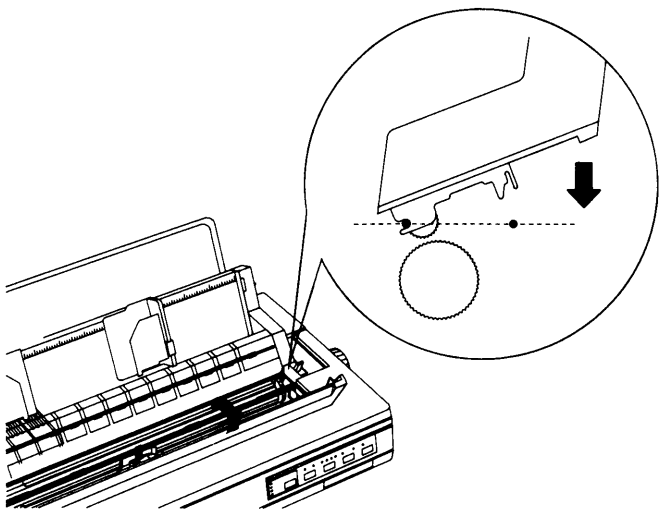

Fig. 3-19

8) Close the paper cover and turn the power on.

- Preparing the paper stack for loading

  1) The paper should be well fanned before stacking into the bin. This keeps the paper from 'sticking', so that only one sheet is fed at a time.

  2) After fanning the paper stack, align its edges by tapping the sides and the bottom of the paper stack on a flat surface.

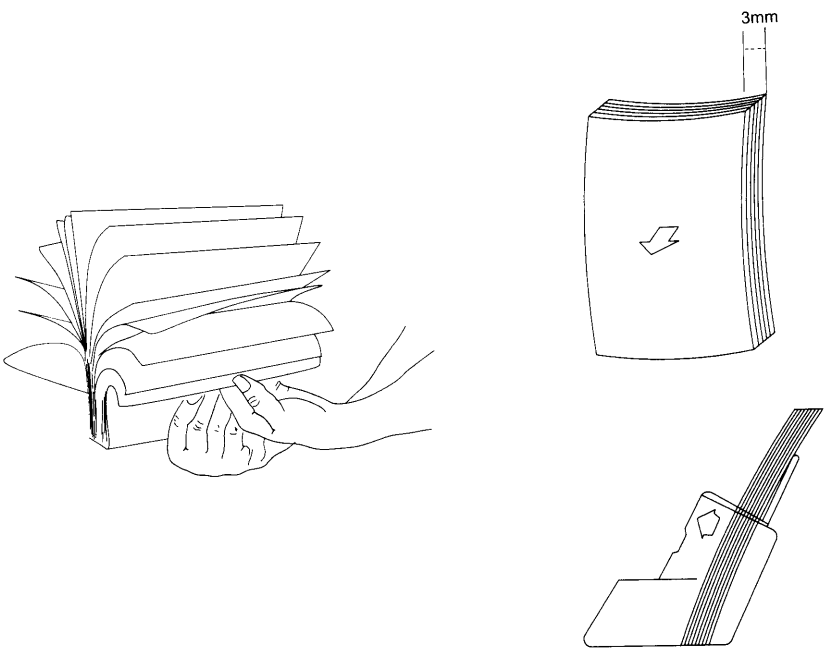

Fig. 3-20

- Be sure that an existing curl does not exceed 3mm(.12"). It is recommended, to load curled paper with the bow towards you.

- Loading the paper

1) Open the paper bin, by lifting up the bin lever located on the left-hand feeder side.

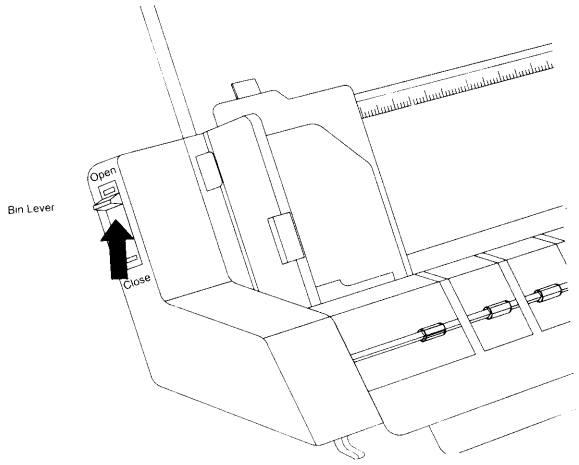

Fig. 3-21

2) Open the paper guide locking levers and adjust the paper bin for left margin and paper width. Use the locking lever to secure the left-hand paper guide. The left margin is factory preset by the margin setter.

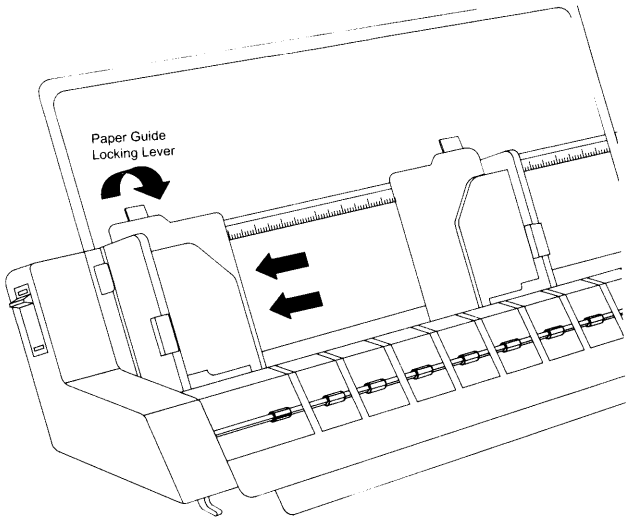

Fig. 3-22

3) Place the paper stack in the bin.
   - Push the paper stack with the right-hand paper guide so that it is evenly aligned against the left-hand paper guide. Then slide the right-hand paper guide to the right by one notch to make an appropriate gap between the paper stack and the paper guide.

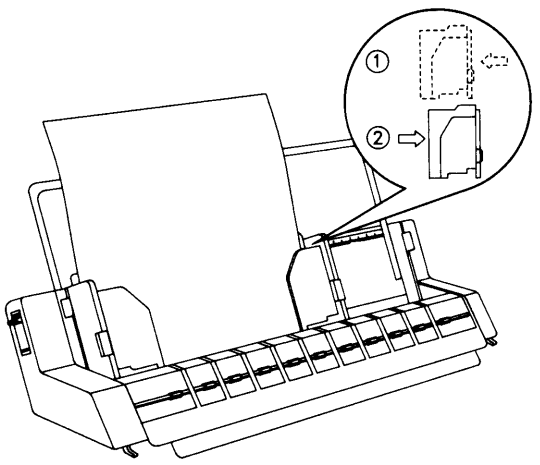

Fig. 3-23

☞ CAUTION

Make sure that the cut sheet paper is neither curled nor damaged, which may cause paper jam or misfeed. The paper stack must be neither too tight nor too loose in the bin. Be sure the amount of paper does not exceed the bin capacity.

4) Close the paper bin.
   - Each time the paper bin is opened the paper must be re-stacked.

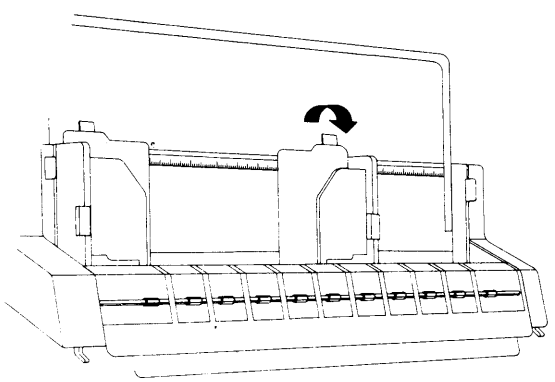

Fig. 3-24

■ Paper insertion/ejection

Paper insertion will be carried out automatically either by the reception of a printable character code or by the input of feed control command(from the keyboard or as one of the instructions in a printing program).

- Each sheet or form inserted will be positioned to the first print line(TOF).

A form detected by the paper sensor will be ejected either when the FF code is received, the amount of feeding reaches the setting of the PAGE LENGTH setting value, or when a feed control command is received.

■ Paper end/Paper jam

If paper end or paper jam occurs, the PAPER indicator on the operator panel will light and the printer will be set to OFF-LINE.

End of paper

1. Load the empty paper bin and press the FF switch(the error indication will be extinguished).
2. Push the SELECT/MENU switch to continue the printing process.

Paper jam

1. Remove the jammed paper. Check that no paper remains in the feeder or printer paper path.
2. Insert a new sheet of paper by depressing the FF switch.
3. Press the SELECT/MENU switch to continue the printing process. To re-start the print program, please refer also to the associated software description.

After power OFF/ON the default paper selection is bin 1(front bin).

■ Manual form insertion

A convenient feature of the Cut Sheet Feeder is the ability to manually insert individual sheets through the empty output stacker.

- Manual form insertion must be controlled by the operator.

1) Remove all paper from the feeder output stacker.

2) Press the SELECT/MENU button to set the printer in the OFF LINE mode.

3) Press the FF button on the printer operator panel. Upon ejection of the form detected by the PAPER OUT sensor, insert the sheet or form set through the manual insertion chute until it rests on the platen. The form will be positioned to the first print line(TOF).
   - To assure accurate print registration the sheet inserted should be parallel to the platen.

4) Press the SELECT/MENU button and start print.

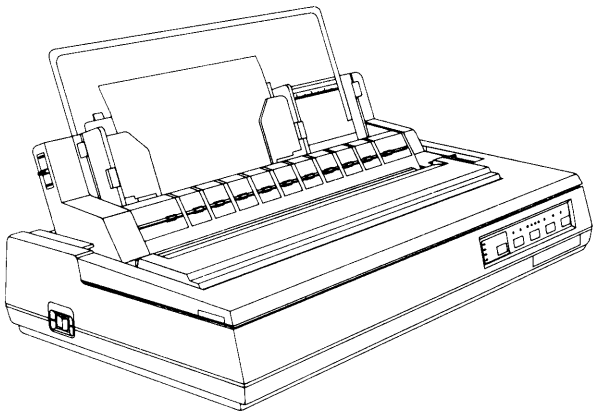

Fig. 3-25

■ Margin setting

When using the cut sheet feeder, the area in which the printhead can print may be reduced, use an escape sequence for left or right margin setting, please refer also to the margin setting procedure described in chapter 6.

■ Platen reverse motion

The Cut Sheet Feeder allows a maximum of 0.67 inches(4 lines) of reverse form positioning.

- Be sure that the form is always controlled by the printer platen. Do not use the area 2 inches from the bottom edge for reverse paper feed.

■ Cleaning the cut sheet feeder

The cut sheet feeder is designed to operate reliably over a long period of time with minimal attention. Preventive maintenance can easily be accomplished by the operation which includes:

- Removing dust from the cut sheet feeder(first removing the feeder from the printer).
- Cleaning all pick-up rollers with a lint-free cloth and platen cleaner.
- Keeping the printer platen clean with a lint-free cloth only.

NOTE

Do not use platen cleaner on the plastic parts of the feeder, because platen cleaner melts plastic.

- Problem solving
  - Try to correct the problem listed in the following trouble-shooting chart.
  - If you are not successful in correcting the problem, contact an authorized service technician.

Trouble-shooting chart

Problem	Cause	Corrective Action
Feeder does not operate	• Paper stack not in operating position • Platen motion is not transferred to feeder • Incorrect printer platen control(program error) • Printer is not in sheet feeder mode	• Set paper to correct operating position • Check feeder mounting for proper gear contact • Refer to printer instructions • Check the feeder mode setting (Printer set-up selection)
No paper feed	• Out of paper • Paper jam • Bin not closed • Paper release lever is not in 'friction-feed' position	• Reload paper bin • Remove jammed paper • Close paper bin. Start print program • Set the paper release lever to 'friction-feed' position
More than one sheet feeds at a time	• Paper not sufficiently fanned • Paper out of specification or damaged • Paper bin misaligned	• Fan and reload paper stack • Replace with new paper conforming to paper specification • Re-adjust and reload paper bin
Paper skew	• Paper damaged • Bin not adjusted properly • Feeder pick-up rollers not gripping paper	• Replace with new paper • Re-adjust paper bin • Check paper surface for defects. Clean the pick-up rollers
Paper eject	• Output stacker full • Paper bail unit not removed • Paper does not conform to paper specification	• Empty output stacker • Remove paper bail unit • Replace with paper conforming to paper specification
Feeder inserts paper correctly to printer platen, but then paper skews	• Printer fault	• Check printer instructions or contact service technician • Clean printer platen

Chapter 4
MAINTENANCE AND TROUBLESHOOTING

4.1 REPLACING THE RIBBON

When your printing becomes too faint you need to replace the ribbon. To replace the ribbon, turn off the printer power and open the front cover.

☞ CAUTION

If a printing have been continued for a long time, the printhead may be hot. Let it cool before attempting to replace the ribbon.

Wenn der Drucker kürzlich benutzt wurde, möge der Druckkopf heiß sein. Lassen Sie ihn auskühlen bevor Sie versuchen, das Farbband auszutauschen.

1) Slide the printhead to the middle of the printer.

2) Remove the old ribbon by grasping the ribbon cassette and lifting it straight up and out of the printer.

3) Unwrap the new ribbon, and turn the ribbon-tightening knob in the direction of the arrow to remove excess slack.

4) For the next steps, follow the procedure described in chapter 2, "Installing the ribbon"(page 2-8).

4.2 CLEANING THE PRINTER

To keep your printer operating at its best, you should clean it thoroughly several times a year. To do this, unplug it from the power, remove any options that may be installed, as well as the ribbon cartridge. Carefully clean the printer using a soft brush and a vacuum cleaner with a small nozzle. Clear away all dust and dirt. Slide the printhead to one side in order to clean beneath it. Be careful not to damage any of the parts inside the printer.

If the outer case is dirty or dusty, clean it with a soft, clean cloth dampened with mild detergent dissolved in water. Keep the printer cover in place to prevent any water from getting inside the printer.

☞ CAUTION

1. Do not use a hard or abrasive brush or cloth. Never use alcohol or thinner to clean the printer, since these chemicals can damage components as well as the case.

2. Do not spray the inside of the printer with lubricants: unsuitable oils can damage the mechanism. Contact your local dealer if you think lubrication is needed.

1. Gebrauchen Sie keinen harten oder kratzenden Pinsel oder Tuch. Auch niemals Alkohol oder Verdünungsmittel zur Reinigung des Druckers benutzen, da diese Chemikalien die Bestandteile sowie das Gehäuses des Druckers beschädigen könnten.

2. Kein Schmiermittel im Inneren des Druckers verwenden. Ungeeignetes Öl könnte den Mechanismus beschädigen.Wenden Sie sich an Ihren Händler, wenn Sie glauben, daß eine Ölung erforderlich ist.

4.3 TROUBLESHOOTING

Problems and Solutions

- **The printer does not print**

  - Make sure that the printer is turned on and the lights on the control panel are on. If the printer is turned on and the lights are not on, see that the printer is fully plugged in and that the electrical outlet is also plugged in.
  - See that the ON LINE light is on. If it is not on, press the SELECT /MENU button.
  - Make sure that the printer is connected the computer. Check both ends of the cable between the printer and the computer.

  If the printer still does not print, try the self test described in chapter 3, "Testing the Printer". If the self test works properly, the printer is all right, and the problem probably lies in the computer, the software or the cable. If the self test does not work, contact your local dealer.

- **The printout is faint or uneven**

  - See that the ribbon is properly installed. See the section on ribbon installation in chapter 2, "Installing the ribbon".
  - The ribbon may be worn out. See the section on replacing the ribbon in chapter 3, "Replacing the Ribbon".
  - The paper thickness lever may be in the wrong position. See the section on setting the paper thickness lever in chapter 2, "Fanfold multipart copy paper".
  - The printhead may be worn out. This is especially likely if parts of printed characters are missing. Contact your dealer to have the head replaced. Never attempt to replace the head yourself because other parts of the printer should be checked at the same time.

- **The printer stops printing**

  - The printer may be out of paper. Check the paper supply.
  - The paper may be jammed.
  - The ribbon may be jammed.
  - If the printer stops, the beeper sounds, turn the printer off and then turn it back on any try to print again. If the printer beeps again and does not print,take it to a qualified service person.

■ **Single sheets do not feed properly**

- The position of the paper release lever may be wrong. Push it back to the single sheet position.
- The paper may be too large or too small.

■ **Continuous paper does not feed properly**

- The position of the paper release lever may be wrong. Push it back to the PIN FEED position.
- See that the sprocket holes of the paper fit correctly over the sprockets.
- The paper supply may be stacked too far from the printer, not aligned with tractor, or there may be some obstacle in the way of the paper.

■ **The printout is not what you expect**

- The wrong international character set may be selected.
- The font or pitch may not be selected properly.
- The software setting may not be correct.

Hex Dump Mode

This printer has a special feature to make it easy for experienced users to find the cause of communication problems between the printer and application programs. In hex dump mode, an exact printout of the codes reaching the printer is produced.

1) To enter the hex dump mode, hold down the FF button while you turn on the printer.

2) Next, run either an application program or one you have written in any programming language. Your printer prints all the codes sent to the printer in hexadecimal format as shown below:

3) To turn off the hex dump mode immediatly turn off the printer. If the last line is not printed after receiving all data, press SELECT button to print it. If you want to use hex dump mode again, press SELECT button to set the printer on line.

```
HEX DUMP MODE ..... Data will be Dumped in HEX form
 20 20 20 20 20 54 68 65 20 50 69 6E 6F 76 69 61        The Pinovia
 20 32 34 33 30 2F 32 34 34 30 20 68 61 73 20 74     2430/2440 has t
 68 69 73 20 63 61 70 61 62 69 6C 69 74 79 0D 0A    his capability..
 20 20 20 20 49 66 20 79 6F 75 20 77 61 6E 74 20       If you want
 74 6F 20 6B 6E 6F 77 20 77 68 61 74 20 73 6F 66    to know what sof
 74 77 61 72 65 20 70 72 6F 62 6C 65 6D 20 77 61    tware problem wa
 73 0D 0A 20 20 20 20 20 68 61 70 70 65 6E 65 64    s..      happened
 20 73 6F 6C 75 74 69 6F 6E 20 69 73 20 75 73 69     solution is usi
 6E 67 20 74 68 69 73 0D 0A 20 20 20 20 20 22 48    ng this..      "H
 45 58 20 44 55 4D 50 69 6E 67 20 22 0D 0A          EX DUMPing "..
```

By comparing the characters printed in right column with the printout of hex codes, you can check what codes are being sent to the printer. If characters are printable, they appear as their true ASCII characters. Non-printable codes, such as control codes, are represented by dots.

If the amount of printing is abundant, the printhead may be overheated and the printing mode is changed to unidirectional 2-PASS or pause printing. Also, currently selected mode's light and ON LINE light are "ON" on the control panel. In this case, you just wait a couple of seconds until the printhead is cooled enough. Then printing resume automatically.

NOTE

If the amount of printing is abundant, the printhead may be overheated and the printing mode is changed to uni-directional 2-PASS or pause printing. Also, currently selected mode's LED and ON LINE LED are "ON" on the control panel.
In this case, you just wait a couple of seconds until the printhead is cooled enough.
Then printing resume automatically.

Chapter 5
TECHNICAL SPECIFICATIONS

5.1 PRINTER SPECIFICATIONS

Printing

■ Printing method

24-pin impact dot matrix

■ Printing speed

Draft Elite(12 CPI) : 264 CPS* (* CPS: Characters per Second)
Draft Pica(10 CPI) : 220 CPS*
LQ Elite(12 CPI) : 88 CPS*
LQ Pica(10 CPI)) : 72 CPS*

■ Printing direction

Bidirectional with logic-seeking(Text Mode). User can select unidirectional printing. In Bit Image Mode, unidirectional printing is useable only.

■ Bit IMAGE Resolution

up to 360(H) x 180(V) Dots Per Inch

■ Line spacing

1/6 inch, or programmable in increments of 1/216" in IBM mode or 1/180" in EPSON mode.

■ Buffer

13K bytes Input Buffer

■ Resident LQ Fonts

Courier, Roman, Sans Serif, H-Gothic

■ Character tables

- EPSON : 96 ASC II and 13 International characters - 13 countries - (Plain and Italics).
- IBM : 158 IBM Special characters sets 1 & 2
  75 Russian Cyrillic Characters (Optional)
- 96 Downloadable characters

Paper

- Paper feed methods
  - Friction Feed
  - Pin Feed : Pinovia 2430 : Push Tractor(Standard)
    : Pull Tractor(Optional)
    Pinovia 2440 : Pull Tractor
  - Auto Paper Loading
  - Auto Cut Sheet Feeder(Optional)

- Paper width

Type of Paper	**Pinovia 2430**	**Pinovia 2440**
Single sheets	4 to 8.5 inches	4 to 16 inches
Continuous	9.5 and 10 inches	4 to 16 inches
	4 to 10 inches(When using a optional Pull Tractor)	

- Paper feed speed

  Approximately 100 ms/line at 1/6 inch line spacing

- Paper thickness

  Fanfold : up to 0.2mm (Single Sheet)
  up to 0.3mm (Multipart)
  Cut Sheet : up to 0.2mm (Single Sheet)

- Number of copies

  With continuous and multipart paper, one original plus up to 3 copies.

- Emulation

  EPSON LQ-1050 and IBM Proprinter XL-24

- Interface

  Centronics Parallel, RS-232C Serial(optional)

Mechanical

- Ribbon

  Cartridge ribbon, available in black only.
  Do not use ribbons for other printers.
  Life expectancy: 2 million characters/cartridge

- Reliability

  - MTBF : 4,000 hours(Power On time)
  - UNIT Life(Excluding Printhead) : 9,600 hours(Power On time) or 5 years.
  - Printhead Life : 200 Million Strokes/Wire.

- Acoustic Noise Level

  Less than 57dBA(ISO 7779 standard).

- Dimensions and weight

	Pinovia 2430	**Pinovia 2440**
Height	4.0 in.(100mm)	4.3 in.(100mm)
Width	15.3 in.(388mm)	22.0 in.(558mm)
Depth	12.2 in.(310mm)	12.2 in.(310mm)
Weight	13.2 lbs(6.0kg)	18.3 lbs(8.3kg)

Electrical

- U.S.A./Canada : 100-120V~, 1.0A, 60Hz
- Europe/U.K./Australia: 220-240V~, 0.5A, 50Hz
- Others : 100-120V~, 1.0A, 60Hz
  or
  220-240V~, 0.5A, 50Hz

☞ CAUTION

Above voltages are selectable. Voltage tolerance is ±10% (Refer to page 2-5 "Selecting AC Input Power").

* Die Netzspannung dieses Geräts ist auswälbar. Die Toleranz der Netzspannung liegt bei +10% (Siehe Seite 2-5 Auswahl der AC-Netzspannung).

Environment

- Temperature
  - Operation : 41°F to 95°F (5℃ to 35℃)
  - Storage : -22°F to 158°F (-30℃ to 70℃)
- Humidity
  - Operation: 10% to 90% RH without condensation
  - Storage: 5% to 90% RH without condensation

5.2 INTERFACE SPECIFICATIONS

Parallel Interface

- Pin description
  Connector pin assignments and a description of their respective interface signals are shown in the following table.

Signal Pin	Return Pin	Signal	Direction	Description
1	19	$\overline{\text{STROBE}}$	IN	Active LOW pulse to read data. Pulse duration should be at least 0.5 micro-seconds for safe data transmission.
2 3 4 5 6 7 8 9	20 21 22 23 24 25 26 27	DATA 1 DATA 2 DATA 3 DATA 4 DATA 5 DATA 6 DATA 7 DATA 8	IN IN IN IN IN IN IN IN	Parallel data bits. DATA 1 is the least significant bit (LSB). Each bit represent logical 1 when the signal is at HIGH.
10	28	$\overline{\text{ACKNLG}}$	OUT	Active LOW pulse to indicate that data have been received and the printer is in ready state. At least 10 microseconds' pulse duration is required.
11	29	BUSY	OUT	Active HIGH signal. This signal goes HIGH on; • data entry • printing • off-line • error-status.
12	30	PE	OUT	Active HIGH signal to indicate paper-out error.
13	-	SLCT	OUT	Pulled up to +5V through 4.7K ohm register.

Signal Pin	Return Pin	Signal	Direction	Description
14	-	$\overline{\text{A.FEED XT}}$	IN	Active LOW signal. Setting this signal to LOW causes the printer to make a line feed automatically after print of each line.
15	-	NC	-	Not used.
16	-	OV	-	Logic ground level.
17	-	CHASSIS GND	-	Printer's Chassis ground.
18	-	-	-	Not used.
19 to 30	-	GND	-	Return signal ground level.
31	16	$\overline{\text{INIT}}$	IN	Active LOW signal. Setting this signal to LOW causes the printer to reset to its power-on state and to clear the print buffer. At least 50 micro-seconds' pulse duration is required
32	-	$\overline{\text{ERROR}}$	OUT	Active LOW signal to indicate: • Paper-out state • Off-line • Error state
33	-	GND	-	Same as for Pins 19-30.
34	-	NC	-	Not used.
35	-	-	-	Pulled up to +5V through a 3.3 kilo ohms resistor.
36	-	$\overline{\text{SLCT IN}}$	IN	Active LOW signal. Setting this signal to LOW during normal operation causes the printer to enter the select status. DC1/ DC3 control is disable if LOW when initializing the printer.

NOTE

1. The column heading "Direction" refers to the direction of signal flow as viewed from the printer. "In" means a direction from the computer to the printer.

2. "Return" denotes the twisted-pair return, to be connected at signal ground level. For the interface wiring, be sure to use a twisted-pair cable for each signal and to complete the connection on the return side.

3. All interface conditions are based on TTL level. Both the rise and the fall times of each signal must be less than 0.2 microseconds.

4. Data transfer must be carried out by observing the $\overline{\text{ACKNLG}}$ or BUSY signal (Data transfer to this printer can be carried out only after receipt of the $\overline{\text{ACKNLG}}$ signal or when the level of the BUSY signal is LOW).

■ Interface timing

The figure below shows the timing for the parallel interface.

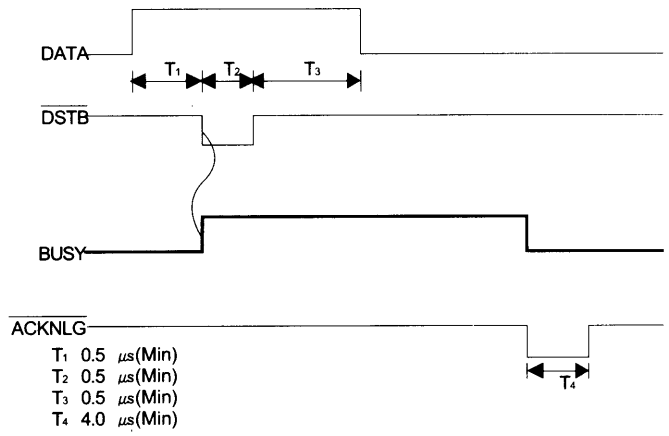

Fig. 5-1

- Signal relationships

The table below shows the relationship between input data processing, the SELECT/MENU switch, and the interface signals.

SELECT	$\overline{\text{SLCT IN}}$	DC1/DC3	$\overline{\text{ERROR}}$	BUSY	$\overline{\text{ACKNLG}}$	Printing
Off Line	HIGH/ LOW	DC1/DC3	LOW	HIGH	No pulse	Data input not possible
On Line	HIGH	DC1	HIGH	LOW (HIGH during input)	Pulse out after input processing completed.	Data input possible, normal processing.
		DC3	HIGH	Same as above	Same as above	Data input possible, but input data is discarded. Printer waits to receive DC1.
	LOW	DC1	HIGH	Same as above	Same as above	Data input possible, normal processing.
		DC3	HIGH	Same as above	Same as above	

The printer always enters the deselect status when an error occurs.

Serial Interface

The printer has an optional RS-232C asynchronous serial interface. Refer the accompanying manual for more technical information.