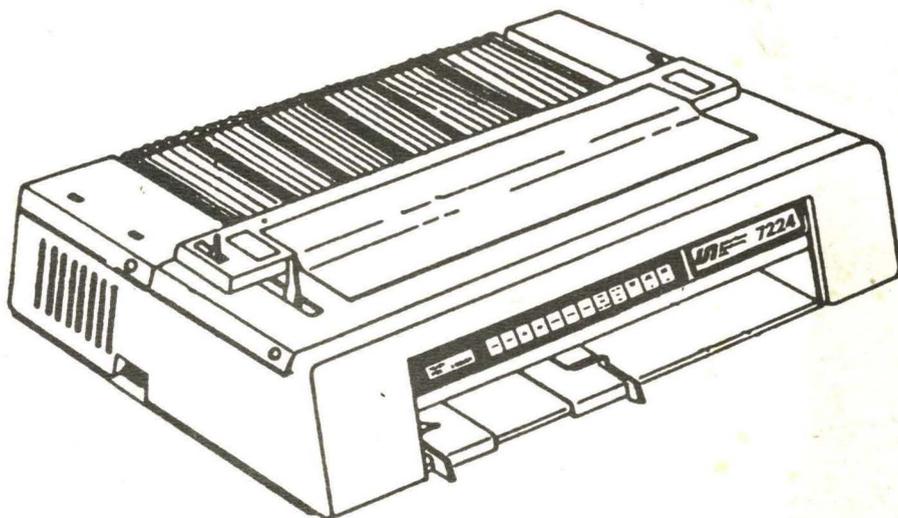


7224

Operator's Guide



7224 Operator's Guide

Coaxial Version

Interface Systems, Inc.
(rev10/7/88ver10/19/88)

**Federal Communications Commission
Radio Frequency Interference
Statement**

This equipment generates and uses radio frequency energy and if not used properly, i.e., in strict accordance with its operating instructions, may cause harmful interference to radio communications. It has been tested and found to comply with the limits for a Class B computing device pursuant to Subpart J of Part 15 of FCC rules, which are designed to provide reasonable protection against such interference when Class B equipment is operated in a commercial environment.

Operation of this equipment in a residential area is likely to cause interference, in which case the user, at his own expense, will be required to correct the interference.

If equipment certified to meet Class B limits 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: a) Reorient the receiving antenna. b) Relocate the equipment with respect to the receiver. c) Move the equipment away from the receiver d) Plug the equipment into a different outlet so that the equipment and the receiver are on different branch circuits.

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This manual will guide you through all the procedures you'll need to set up and operate your ISI 7224. If you are setting up your 7224 for the first time, be sure to read the sections in order. To help you find the information you need quickly and easily, this manual has been divided into eight sections.

-
- Introduction** Gives you a general description of the printer's functions and its parts.
- Chapter 1** *Getting Started:* Tells you all the procedures needed to get your 7224 set up and running. It includes instructions on unpacking, connecting, and powering on the printer, as well as installing and removing the ribbon cartridge.
- Chapter 2** *Loading Forms:* Tells you paper loading instructions for fanfold forms, single sheets, and single sheets with and without fanfold forms installed.
- Chapter 3** *Using the Control Panel:* Tells you how to control and monitor your 7224 by using the LCD and the keys. Also gives general instructions on using the primary, alternate, and option key functions.
- Chapter 4** *Using the Option Menus:* Gives factory default settings, and tells you how to access the option menus to check and change the option values. Detailed instructions are given for setting and saving specific options whenever additional explanations are necessary.
- Chapter 5** *Solving Printer Problems:* Tells you how to run printer diagnostics, and how to place a service call. It also covers solutions for printer problems which may occur during operation.
- Chapter 6** *Serial Operation:* Gives the differences between serial and coaxial operation. This includes information on the menu options, LCD, special data stream escape codes, and error messages.
- Appendix**
- Appendix A Cleaning and Maintenance:* Lists special tips on the care and cleaning of your printer. Also gives print head removal instructions.
- Appendix B The Automatic Sheet Feeder:* Includes installation, forms loading, specifications such as paper specifications and physical dimensions, and hopper selection for the automatic sheet feeder option.
- Appendix C Specifications:* Tells you about paper specifications and a variety of other specifications including physical dimensions and environmental conditions.

How to Use This Manual

Introduction

In this section you will learn the standard features, functions, and various parts of the ISI Model 7224 printer.

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Your ISI model 7224 is a compact desktop printer that can print in a variety of speeds and printing modes. It is a plug-compatible replacement for the IBM 4224 and is directly compatible with IBM 3174 or 3274/3276 controllers. The list below is a quick overview of the standard features offered by your 7224.

- 400 characters per second (cps) draft printing at 10 CPI
- 200 cps DP-text at 10 CPI
- 100 cps NLQ printing at 10 CPI
- IPDS and APF graphics support
- Single, continuous fanfold, demand document, and single/fanfold paper handling
- Dual coaxial/RS-232 serial port for direct connection to IBM 3174/3274/3276 controllers.
- Plug compatible replacement for the IBM 4224 as well as the IBM 3287, 3268, 4214, and more
- Black, 4-color, or 8-color IBM compatible printing
- Large character and bar code label printing through IPDS or APF
- Text options of: boldface, italics, underscore, superscript, subscript, and more
- Handles up to six part forms
- Bottom feed feature allows feeding of inflexible materials such as card stock and labels
- 32 character LCD reports operating status
- Operates at a quiet 53.7 dBA

It is easy to get to know and use your printer. For best results, read this guide completely before using the printer. Keep the guide handy for reference at all times.

Parts Identification

To facilitate the operation of the 7224 you should be familiar with your printer's parts and their locations *before* you begin operation. The following illustrations show where the parts are located and give a brief description of each part. Refer to these illustrations when identifying parts throughout the manual.

Front View

- | | |
|-------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ① Front Cover | Covers the front part of the printer. Raise by lifting it towards the back of the printer. |
| ② Rear Cover | Covers the tractors and guides the correct insertion of the paper. Remove by lifting off. |
| ③ Paper Load Lever | Used to load fanfold paper. After powering the printer on, feed paper up by pushing the lever towards the back of the printer and releasing it when the paper is correctly positioned. |
| ④ Paper Thickness Lever | Up to ten positions of this lever are available. Select the position that allows easy paper insertion, then adjust to obtain best quality printing. |
| ⑤ Automatic Sheet Feeder Socket | Allows the connection of the Automatic Sheet Feeder (ASF) option. |
| ⑥ Left and Right Front Paper Guides | Aids paper movement and alignment for front loading of cut sheets and fanfold paper. |
| ⑦ Front Paper Entry Slot | For cut sheet and fanfold paper insertion. |
| ⑧ Control Panel | Includes the liquid crystal display (LCD) and the operator keys. Indicates the operating state of the printer and allows the operator to change it as necessary by using the keys and the option menus. |

Front View

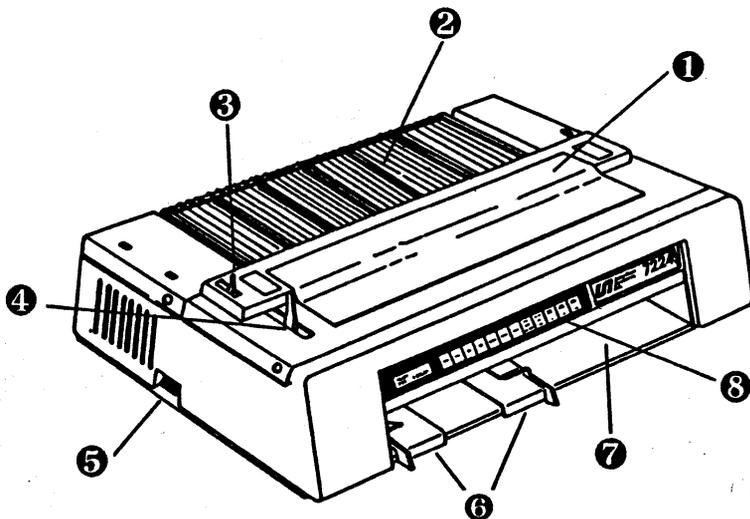


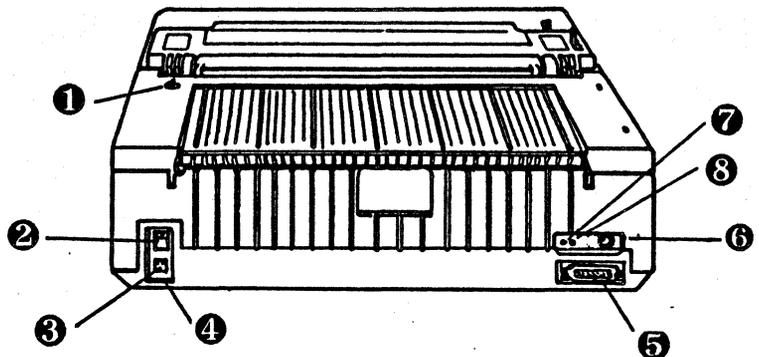
Figure 1-1

Parts Identification

Rear View

- | | |
|--------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| ① Drive Selection Switch | Must be positioned according to type of drive required: Tractors or Friction. |
| ② Power Switch | Turns printer power on and off. |
| ③ Power Socket | To supply power to the printer it is necessary to insert one end of the power cable into the power socket and the other end into a convenient outlet. |
| ④ Power Fuse Holder | Call your service representative for replacement. |
| ⑤ Serial Connector | Allows connection to an alternate host for serial operation. |
| ⑥ Coaxial Connector | Allows connection for coaxial operation. |
| ⑦ Green LED | Indicates the printer is receiving signals from the Host. |
| ⑧ Red LED | Indicates the printer is transmitting a response to the Host. |

Rear View

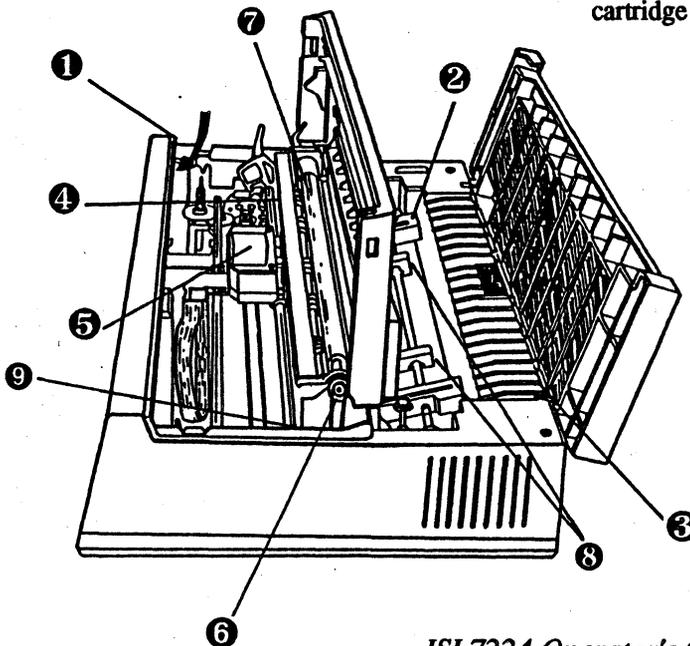


Top Covers Open

- ① Lock Sensor** Causes printing to slow down for safety reasons when the printer is powered on and the front cover is lifted.
- ② Rear Tractors** Enables fanfold paper to be loaded.
- ③ Rear Paper Entry Slot** For fanfold insertion
- ④ Paper Bail** Holds paper against upper feed roller.
- ⑤ Print Head** Printing Mechanism. Fixed at the left side of the chassis by a tie which must be removed before using the printer.
- ⑥ Paper Feed Knob** Used to manually eject the jammed paper if it is not possible via the operator panel.
- ⑦ Upper Feed Roller** Provides tension to paper.
- ⑧ Paper Supports** Aids paper movement.
- ⑨ Bottom Feed Lever** Used to enable the bottom feed option.

Top Covers Open

(Shown with ribbon cartridge removed.)



Parts Identification

Additional Parts

❶ Ribbon Cartridge

Three ribbon cartridges are available: black , process, and primary. To order ribbons call 1-800-544-4072; Black ribbon #9107224-01, Process ribbon #9107224-02, and Primary ribbon #9107224-03.

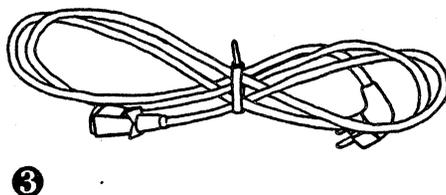
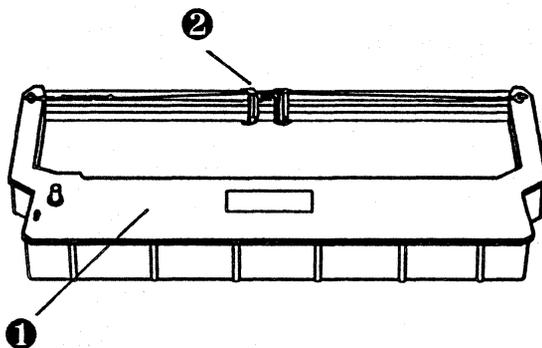
❷ White Plastic Mask

Ensures that ribbon runs smoothly in front of print head. Must be inserted over the pins provided for it at either side of the print head.

❸ Power Cord

Provides power to the printer. The appropriate power cord is provided with each printer.

Additional Parts



Chapter 1

Getting Started

In this chapter you will be performing all the procedures necessary to prepare your 7224 for printing. When you have completed all the procedures in this chapter, you will have your printer completely installed.

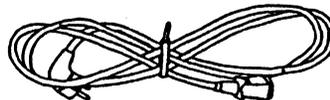
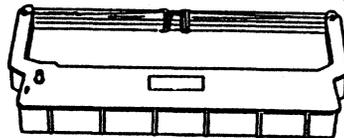
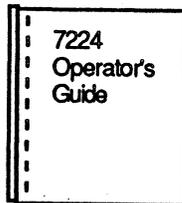
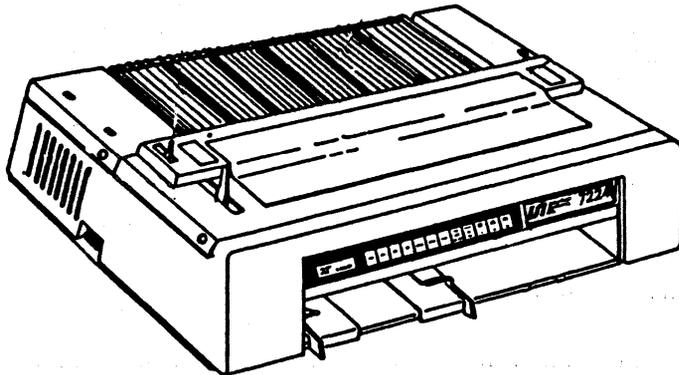
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Inspect the shipping carton and the printer for evidence of damage during shipment. Immediately notify the shipping company of any damage. The following information tells you how to unpack and inspect your printer.

⚠WARNING

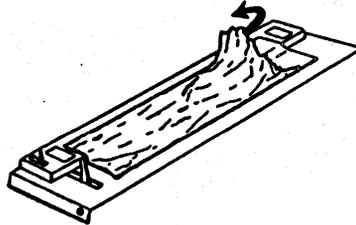
Do not operate a damaged printer. It may cause further damage and can void the warranty.

1. With assistance, lift the printer from the carton and remove the plastic bag that protects the printer from dust.
2. Place the printer on the nearest table, until you have selected a suitable permanent location. See the next section, "*Choosing a Suitable Location*", to help you choose the best location for your printer.
3. Make sure you have all the items shown below. If any are missing, contact your sales representative.



Unpacking Your 7224

4. Peel off the transparent plastic sheets on the front cover of the printer.



◆NOTE

After unpacking, place all the packing materials back in the shipping carton. Save this material and the carton for future storage, shipping, or moving of the printer.

Inspecting

Inspect all items for obvious shipping damage such as dents, scratches, cracks, broken switches, or other broken parts. You should also listen for unusual rattling noises. If an item appears damaged, notify the delivery company immediately.

Equipment Needs

You will also need some equipment in addition to the items supplied in the shipping container. These items are listed below.

The items you will need are:

1. One standard three-prong grounded power outlet per printer.
2. One coaxial cable with a BNC coaxial connector and a compatible controller to attach it to (for host control).
3. One serial connector if you are connecting to an alternate host for serial operation.

After you have unpacked and inspected the printer and its parts, you should find a suitable location for your printer.

Consider the following points when choosing the location for your printer:

- The distance between the printer and the host computer must not exceed the length of the coaxial cable.
- The location must be solid, smooth, horizontal, and stable. A sturdy desk or table is usually sufficient.
- Your printer must not be exposed to direct sunlight, heat, cold, humidity, or dust.
- It must be near a well grounded power outlet.
- Adequate space should surround the unit for hookup of the cables, a user work area, and any additional equipment you may want.

After placing the printer in a suitable place you should cut the tie that secures the print head.

⚠WARNING

***Do not* operate the printer with this tie intact. It may damage the printer and can void the warranty.**

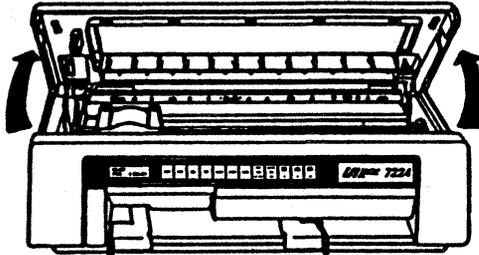
Inserting and Removing the Ribbon Cartridge

The ribbon is supplied in a snap-in cartridge. There are three ribbons available for the 7224: black, process, and primary. For details on ribbons refer to pages 76, 77. You will need to install one of these ribbons when you receive your printer. To order a new ribbon call 1-800-544-4072; Black ribbon #9107224-01, Process ribbon #9107224-02, and Primary #9107224-03. Insert and remove the ribbon as follows.

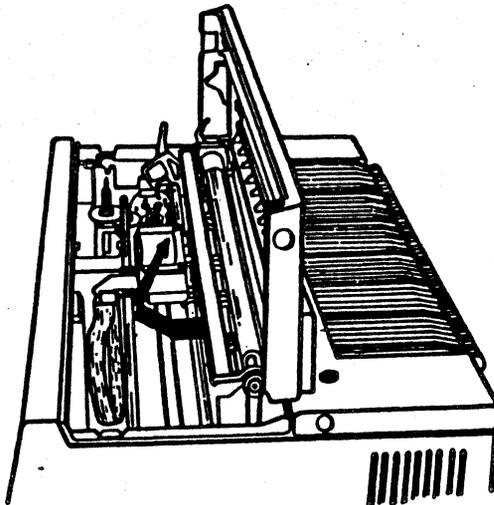
Inserting

Preparing the Printer

1. Raise the front cover.



2. Place one hand on each end of the paper bail, then firmly pull it toward the front of the printer to release it from the pegs, and lift.

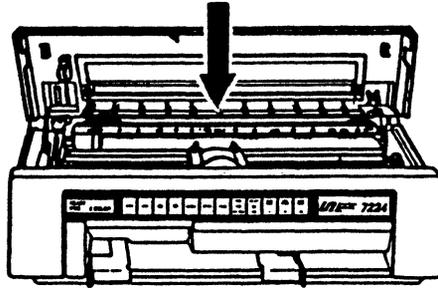


Inserting and Removing the Ribbon Cartridge

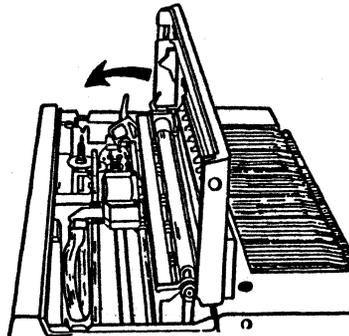
3. Move the printer carriage to the center of the printer.

◆NOTE

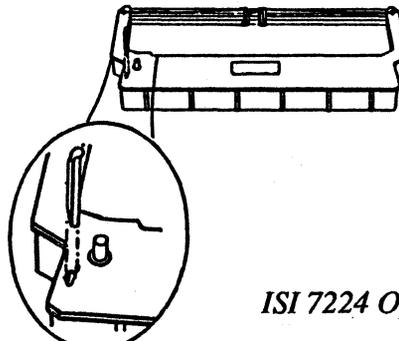
The ribbon cartridge can be inserted when the printer is powered off or when the display shows **01 Paper Empty** or **Stopped**.



4. Pull the paper thickness lever towards the front of the printer to facilitate ribbon insertion.



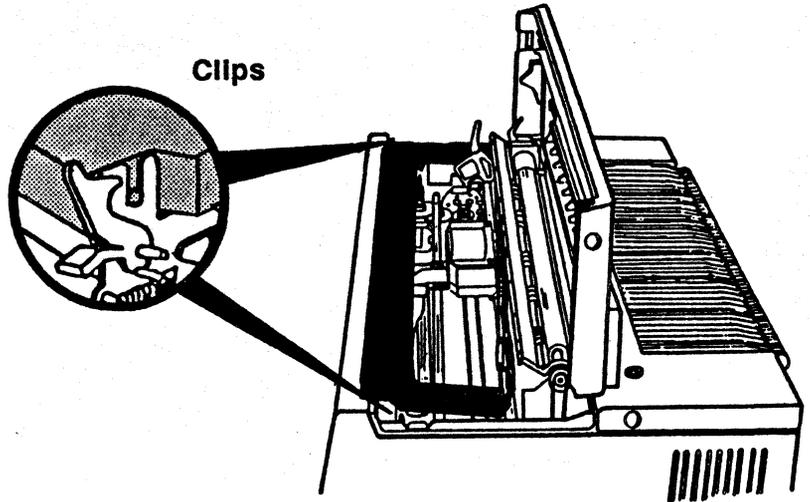
5. Remove the new ribbon cartridge from its shipping container. Remove the holding pin from the cartridge and discard.



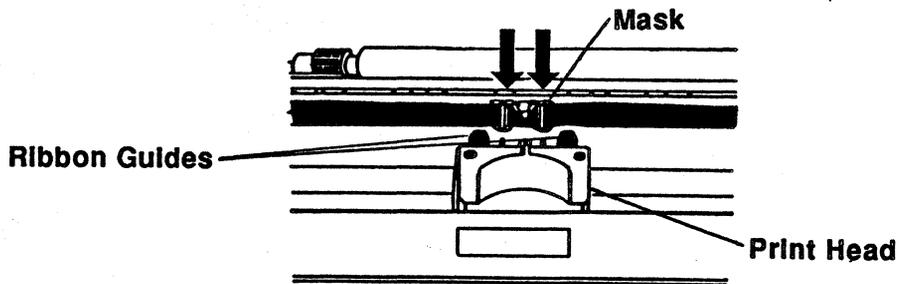
Inserting and Removing the Ribbon Cartridge

Inserting the Plastic Mask

1. Align and position the cartridge over the retaining clips. Make sure the white plastic mask on the ribbon is positioned to one side of the print head.



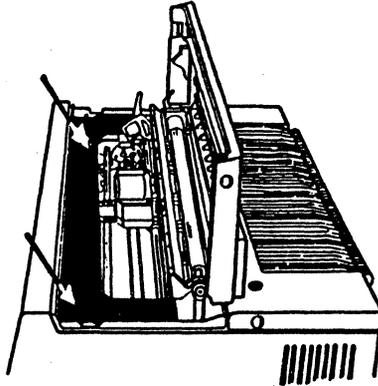
2. Slide the white plastic mask on the ribbon until the mask is aligned with the print head.
3. Slip the mask onto the pins at either side of the print head. The ribbon should be between the print head and the ribbon guides.



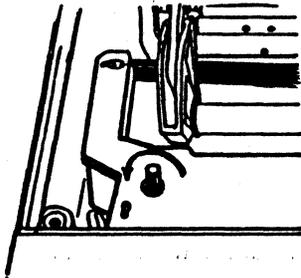
Inserting and Removing the Ribbon Cartridge

Inserting the Cartridge

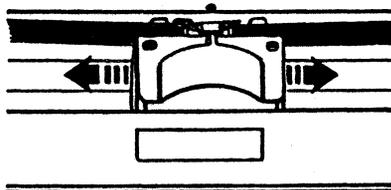
1. Push the cartridge gently down until it clips into place.



2. Turn the tension knob in the direction shown by the arrow on the ribbon cartridge, to tighten the ribbon.

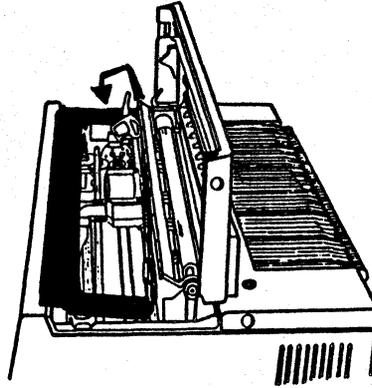


3. Slide the print head on the carriage to check that the mask runs freely along the ribbon.

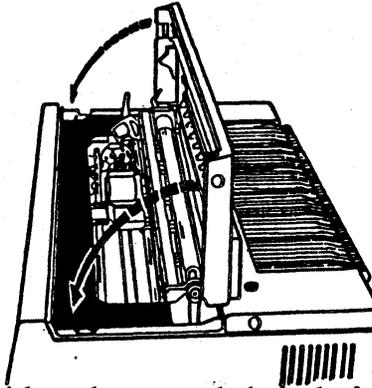


Inserting and Removing the Ribbon Cartridge

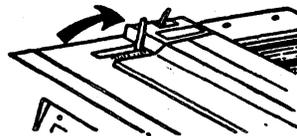
4. Reposition the paper bail by lifting and pulling it towards the front of the printer, then releasing it gently. Before closing the front cover make sure the paper bail is correctly positioned, or it could damage the front cover.



5. Close the front cover.



6. Move the paper thickness lever towards the back of the printer and align it with the last mark on the cover.

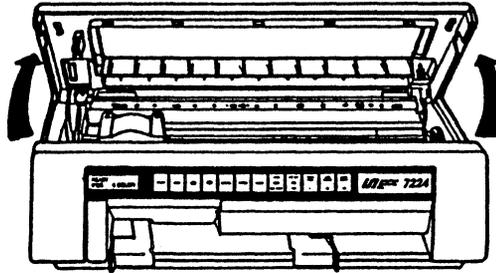


Inserting and Removing the Ribbon Cartridge

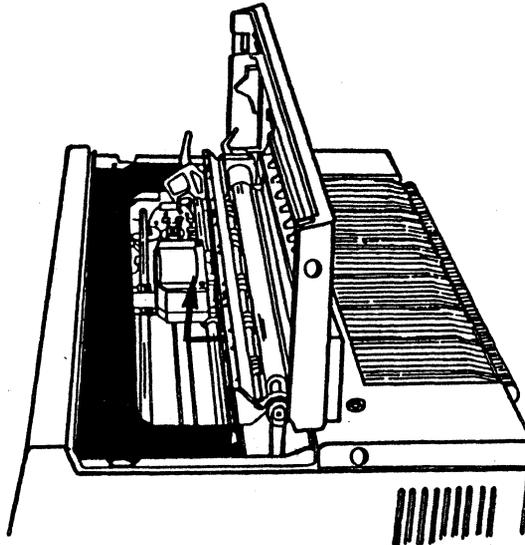
Removing

When changing or replacing a ribbon cartridge you will need to remove the existing cartridge. The ribbon should be replaced when the print gets too light, or when the ribbon begins to tear or shred. To remove a ribbon cartridge stand facing the front of the printer and do the following.

1. Raise the front cover.

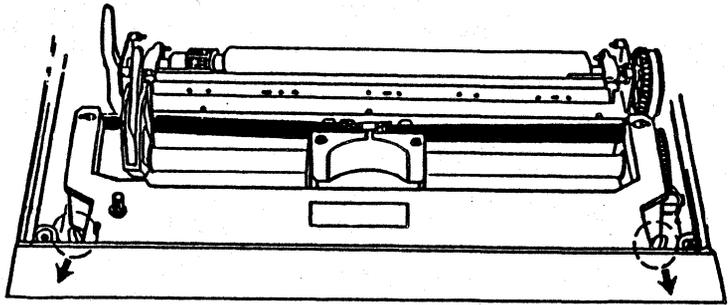


2. Pull the paper bail towards the front of the printer and lift it.

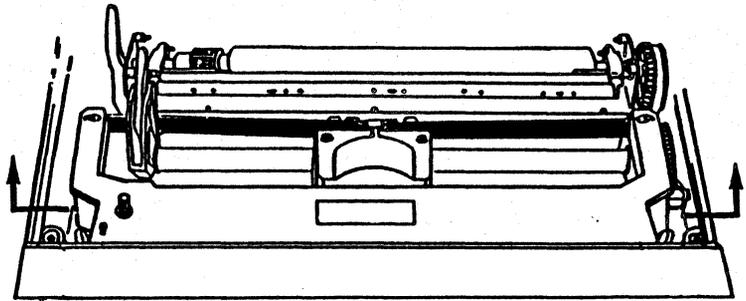


Inserting and Removing the Ribbon Cartridge

3. Push the left retaining clip towards the front of the printer.



4. Hold the used ribbon cartridge at the rear and lift first the left, then the right side of the cartridge up and off the printer.



Now you are ready to insert a new ribbon cartridge. Follow from step 3 of "Inserting - Preparing the Printer" on page 6.

◆NOTE

The ribbon cartridge can be removed when the printer is powered off or the display shows **01 Paper Empty** or **Stopped**.

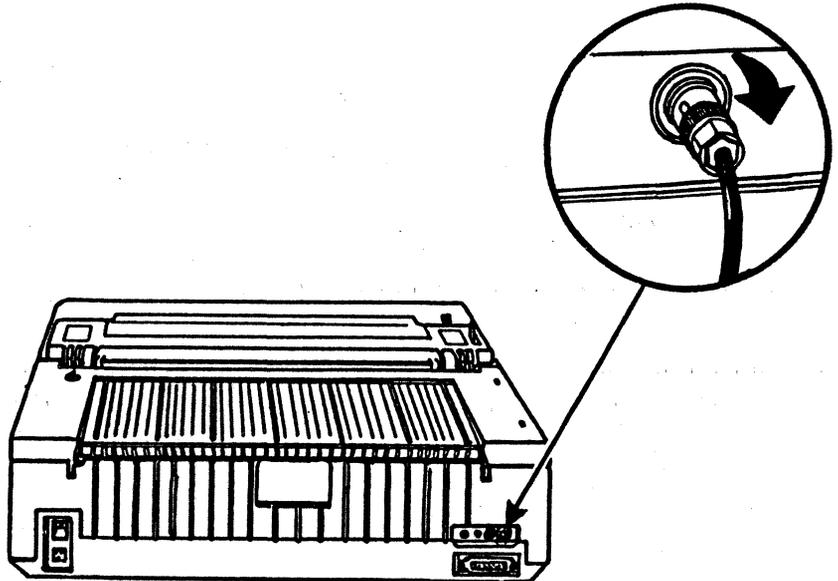
Changing the Ribbon Type

If you have changed ribbon types, you will need to change the ribbon type option setting on the Mechanism Menu before beginning operation. See pages 76-77 for details.

In order for your printer to receive data to print in coaxial host operation, it must be connected to a host computer through a coaxial cable. You must purchase this cable separately. To get the right cable, refer to the operator's guide that came with your computer. A separate cable must be connected for Serial operation as described on the following page.

To connect the coaxial cable:

1. Make sure the 7224's power is off.
2. Bring the coaxial cable to the correct port on the rear of the printer as shown below.
3. Push and lock (twisting clockwise) the cable connector into the printer.
4. Connect the other end of the cable to the interface port on the host computer.

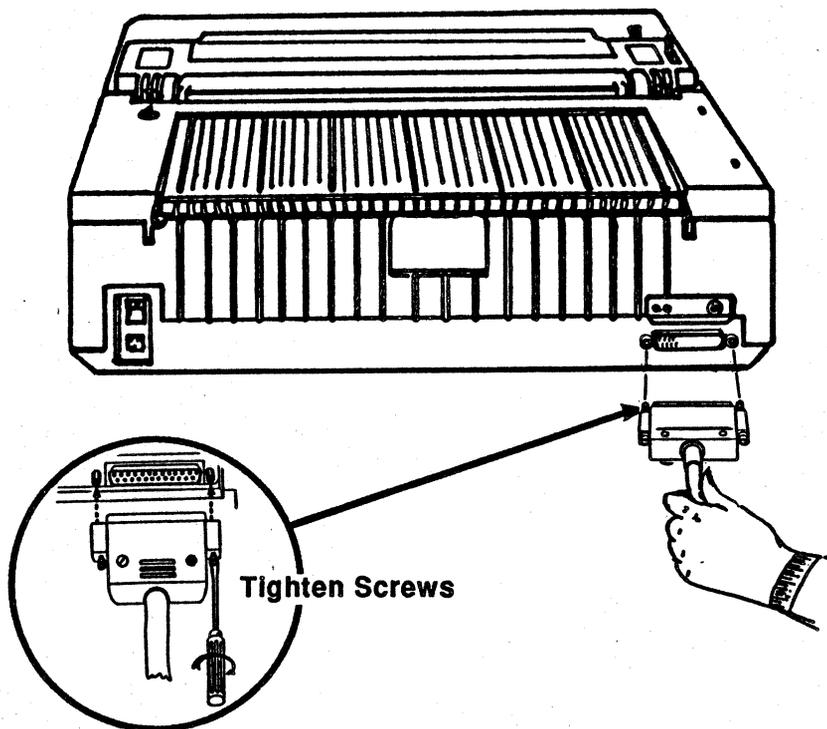


Connecting to the Serial Port

The 7224 can also be connected for serial operation through the serial cable. This connection is made by attaching a serial connector from the PC to the printer and using the ALT. HOST key as described. (Serial cable must be purchased separately.) See *Chapter 6* on page 93 for instructions on serial operation.

Connecting the Serial Cable

1. Locate the serial cable jack on the back of the printer as shown.
2. Select the connector on the end of the cable that matches the jack on the printer.
3. Carefully push the cable connector into the jack until it is firmly seated.
4. Fasten the cable connector to the jack by tightening the screws.
5. Connect the other end of the cable to your computer .



6. Once the printer is connected, you must perform the change host procedure through the ALT. HOST key on the control panel. See page 95 for instructions.

For a listing of the serial menu and details on serial operation, see *Chapter 6* on page 93.

Connecting to Power

Use the power cord you received in the shipping container to attach your printer to a well grounded AC outlet. Check that the main voltage power supply is the same as the voltage requirement displayed on the back of the printer. If the main voltage does not match the printer's voltage do not use the printer. Instead, call your sales representative for assistance.

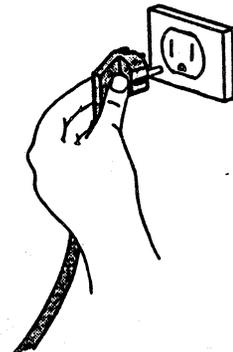
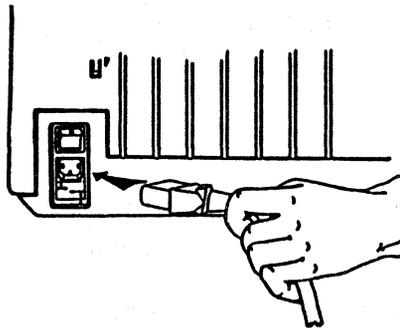
Selecting an Outlet

Keep the following points in mind when selecting a power outlet.

- Avoid using electrical outlets controlled by wall switches. If you accidentally turn off a switch, you could wipe out the information sent to the printer and stop your printing.
- Avoid using an outlet on the same circuit breaker as other large electrical machines which might disrupt the supply of power to your printer.
- Avoid using an outlet which would require an adapter plug.

Attaching the Power Cord

1. Plug the power cord into the socket on the back of the printer.
2. Plug the other end of the power cable into a convenient outlet.



Once the power cord is attached to the proper outlet, the printer is ready to be powered on. This section describes the power on procedure. Refer to pages 61-62 if you would like a list of power on factory defaults.

To power the printer on:

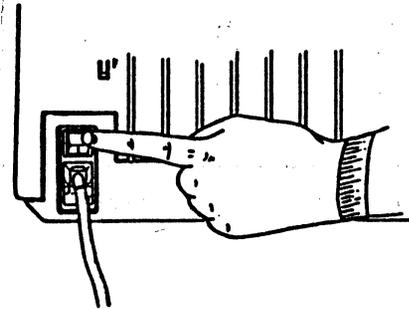
1. Press the upper part of the power switch (1) on the back of the printer. The printer performs a self-test of its basic functions. During this test:

- **** ISI 7224 **** will display momentarily on the LCD.
<Power on Tests>
- The print head moves to the right and back, and stops at the left side of the printer.
- **Check 01 Paper empty** will display if paper is not loaded. Press STOP to silence the alarm, then load paper.

When the test is complete:

- **Ready** will display on the LCD.

If no power goes on at all, check the power outlet you are using. If the outlet is working, refer to page 85 "Solving Printer Problems".



Chapter 2

Loading Paper

Your 7224 can handle both single and fanfold forms up to six parts. Single forms can be loaded with or without completely removing fanfold forms from the printer. The printer can also handle stiff forms such as continuous form card stock when using the bottom feed function. This chapter will tell you how to set the feed type and load the forms in these different ways.

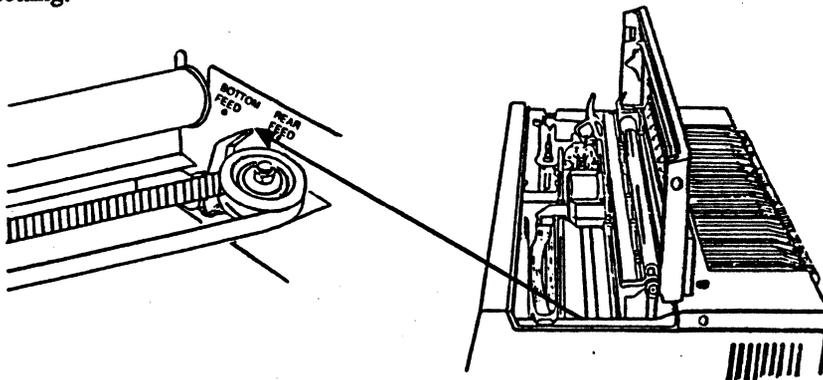
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Each paper loading method requires selection through one or all of the following: the feed lever, the drive selection switch, and the pull tractor menu option. Specific settings are covered in the individual paper loading instructions. The rear paper loading method is the default. The instructions below give a general description of the selection procedure.

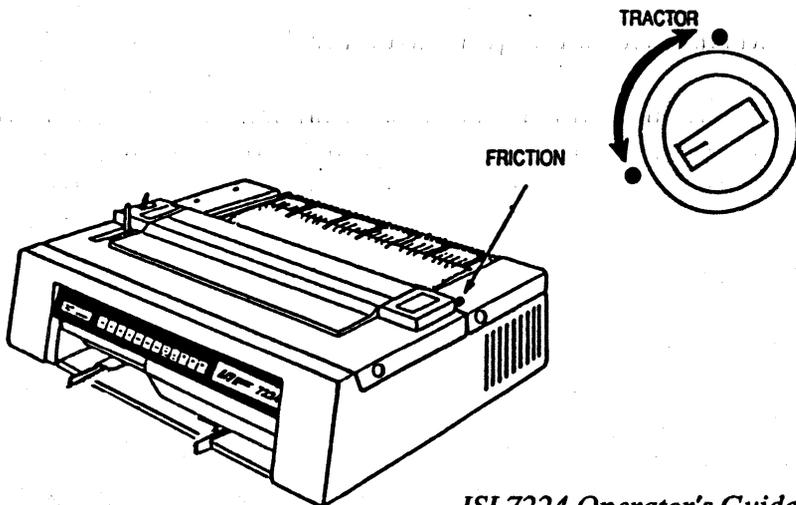
Feed Lever

The feed lever is located inside the top cover as shown in the illustration below. The available settings for the feed lever are Rear Feed and Bottom Feed. To select a new setting push (push hard) the feed lever to the desired setting. Refer to the specific paper loading instructions for the appropriate setting.



Drive Selection Switch

The drive selection switch is located at the right rear corner as shown in the following illustration. The available settings for the drive selection switch are Friction and Tractor. To select a new setting, turn the drive selection switch to the desired position. Refer to the specific paper loading instructions for the appropriate setting.



Selecting Paper Loading Method

Pull Tractor Menu Option

The Pull Tractor menu option is dependent upon whether the optional pull tractors are attached or not. If they are attached, a "Yes" value must be selected. If they are not attached, a "No" value must be selected. Pull Tractor "No" is the default. To check or change the Pull Tractor setting, do the following.

1. Press STOP

■ Stopped
CU will display

2. Press MENU to enter menu mode, and continue pressing until

Mech. Menu is displayed.

3. Now, press NEXT OPTN or PREV. OPTN until Pull Tractors = XX is displayed.

4. If the Pull Tractor option is set as desired, return to Stopped condition without changing the setting by pressing STOP. If the Pull Tractor setting needs to be changed, press the UP or DOWN ARROW key to advance or reverse to the desired option value.

■ The current option value will display. This value is effective immediately upon leaving the menu. You can check your selection by viewing the new setting on the LCD.

5. To exit the option menus press STOP.

■ Stopped will display.

The value you just set is temporary and will not remain once the printer has been powered off. To set this value permanently see "Saving Individual Settings Permanently" on page 65. You may also press CANCEL to exit without altering the current setting.

The Pull Tractor settings that correspond with the available paper loading methods are covered in the specific paper loading instructions.

◆NOTE

If the hoppers are attached, the Pull Tractor menu item is not displayed.

The following instructions tell how to select and load fanfold forms from the rear entry slot. Rear paper loading is the default.

Selecting Rear Loading

To select the rear paper loading method be sure the following items are set correctly.

1. Turn the drive selection switch to Tractor.
2. Push the feed lever to Rear Feed.

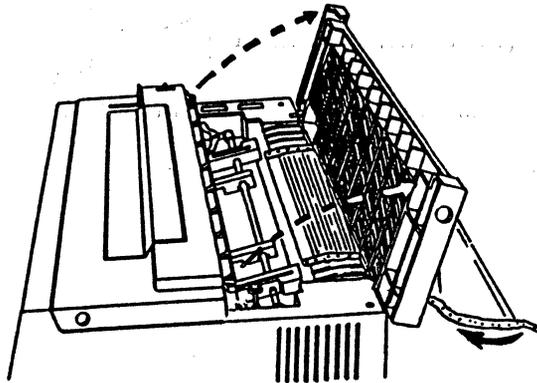
The setting of the pull tractor menu option is not applicable for this paper loading method.

Summary of Rear Paper Loading Selection

Drive Selection Switch	Feed Lever	Pull Tractor Option
Tractor	Rear Feed	N/A

Preparing the Printer

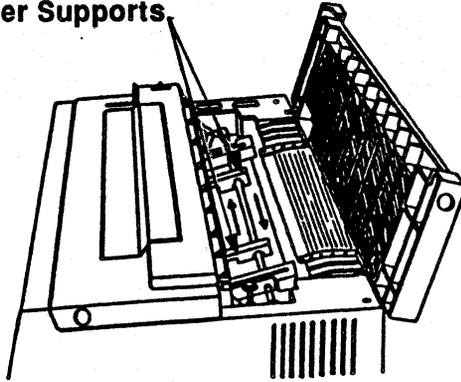
1. Feed the paper into the rear paper entry slot.
2. While still holding onto the paper, open the rear cover part way and pull the paper through.



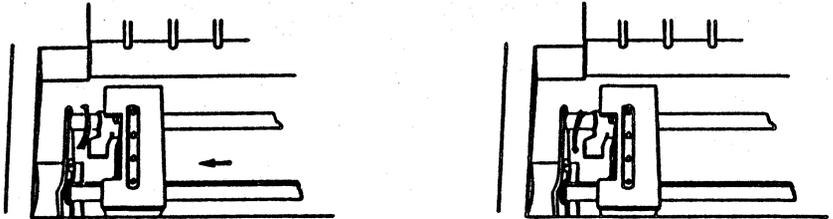
Rear Loading Fanfold Paper

3. Let the rear cover open all the way.
4. Space the paper supports evenly along the tractor bar.

Paper Supports

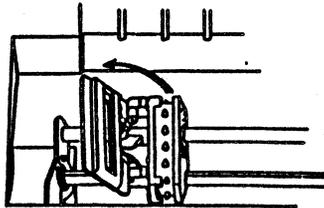


5. Unlock the left tractor and slide it to the left, lock it in place.



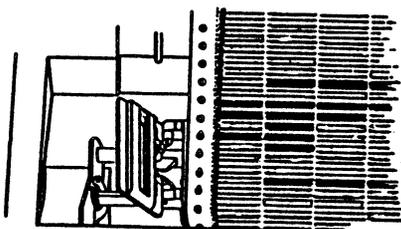
Positioning Paper on the Feed Pins

1. Open the tractor flap.

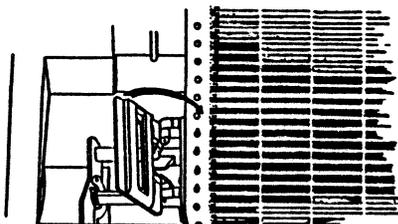


Rear Loading Fanfold Paper

2. Position the paper feed holes over the pins on the left tractor.



3. Close the tractor flap. Perform the same operation on the right tractor, adjusting the tractor to the paper width.



Adjusting the Left Margin

There are three sets of 4 notches on the left rear of your printer under the rear cover. These notches may be used to align your left margin. The different settings are shown in the chart below.

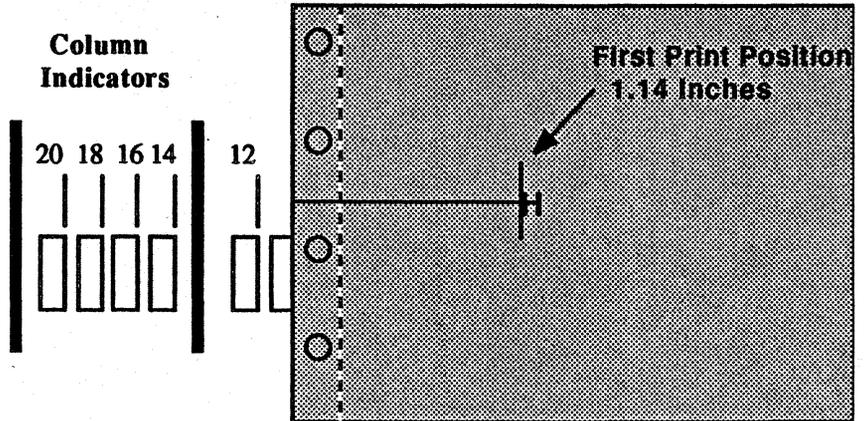
If the left edge of your paper is aligned with the inside of the notch, the first print position will begin at the following distances. Align the left edge of your paper accordingly. (See the illustration on the following page.)

Distance in Columns	Distance in Inches	Distance in Columns	Distance in Inches
20 columns	1.891	12 columns	1.14
18 columns	1.72	10 columns	.93
16 columns	1.5	8 columns	.75
14 columns	1.3	6 columns	.56

Rear Loading Fanfold Paper

⚠Warning

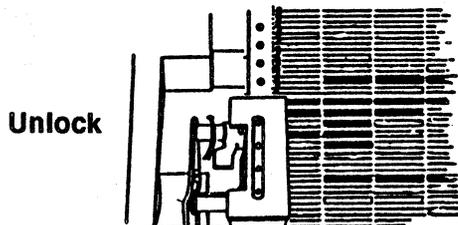
Do not align paper past the notch at column 8 or the print head will be damaged. Damaging the print head in this manner can void your warranty.



To align the left edge of the paper do the following.

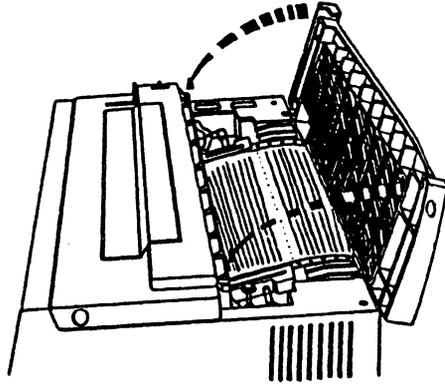
1. Unlock the left and right tractors.
2. Slide the left tractor, the paper, and the right tractor until the left edge of the paper is aligned accordingly. See illustration above.

← Slide to Align →



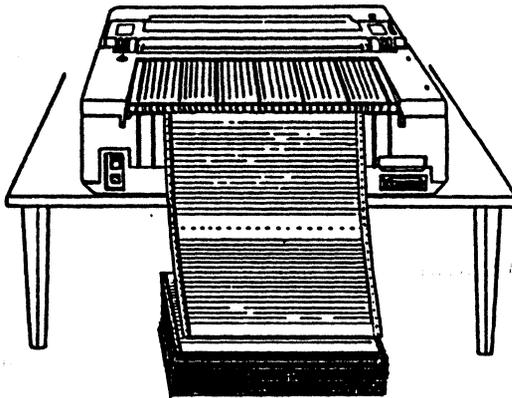
Rear Loading Fanfold Paper

3. Close the rear cover.



Feeding Forms Into the Printer

1. Position the stack of blank paper so that it feeds freely into the printer.

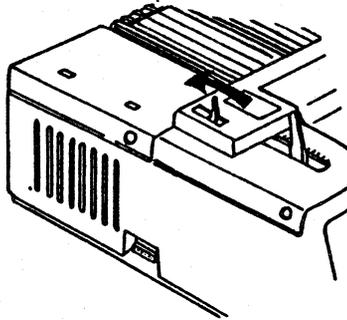


2. Your printer should already be powered on at this point. Check to be sure the printer is in Stopped condition by pressing STOP.

■ The display shows **Stopped**.

Rear Loading Fanfold Paper

3. Push the paper load lever toward the back of the printer and release. The paper will move to the tear bar, then reverse back to be positioned in front of the print head at the top of form. TOF is the first printable line of the first form. If you prefer a different setting, see page 29 for details.



4. Press **START** on the control panel. The printer will be ready to print.

■ **Ready** will display.

If you want to check your forms alignment, you may press **STOP**, then **SETUP** to print a line of "H's". If additional forms adjustment is necessary, see "*Adjusting Top of Form for Rear Loading*" on page 29 for details on setting TOF.

Reloading

To reload fanfold forms, repeat the loading procedure. Your form will be positioned at the current TOF.

During rear paper loading, Top of Form (TOF) is set automatically. This TOF setting is determined by the power on status of the printer, and when the paper was loaded. Top of form can also be re-aligned if you prefer a different top of form setting. This section describes the automatic selection of TOF, the re-alignment of TOF, and how to save TOF.

Automatic Selection of TOF

Power- On with No Paper Present.

If paper was not present when the printer was powered on, TOF will be automatically set to the first printable line when the paper is loaded. If you would prefer a different position for TOF, please refer to "Re-alignment of TOF".

Power-On with Paper Present

If paper was present when the power was turned on, the TOF will be set automatically to the position of the paper currently loaded. If you would prefer a different position for TOF, please refer to "Re-alignment of TOF".

Re-alignment of TOF

To change the current TOF position, make sure that Stopped is displayed, then use one of the following methods.

1. Press LOAD/EJECT to advance paper to the top of the tear bar.
2. Press the UP ARROW to move the paper forward and the DOWN ARROW to move the paper backwards in the printer until the paper is positioned as desired. TOF will be set at the position you select.
3. Press the SET TOF key to set the TOF alignment you just selected.
■ **Top of Form Set** will display momentarily, then return to Stopped.
4. Finally, press LOAD/EJECT to reverse feed the paper into the printer and position it at the top of form. To save the new TOF for power on see below.

Saving Rear TOF

To save the TOF setting for use at power on do the following

1. Perform steps 1-3 above.
2. Press MENU until ****Mech. Menu**** is displayed.

Adjusting Top of Form for Rear Loading

3. Now, press NXT OPTN or PREV. OPTN to advance or reverse in the menu until **Save Rear TOF?** is displayed.
4. Press the UP ARROW to activate the function.
■ **Saved for POR** will display momentarily.
5. Press STOP to return to stopped condition.
6. Push LOAD/EJECT and the paper is reverse fed into the printer at the new TOF.

Correcting Problems with TOF or LOAD/ EJECT

If your top of form or Load/Eject is not working as expected, you may do the following to try and correct the situation.

1. Tear your forms along the last perforation.
2. Press STOP.
3. Make sure the drive selection switch is turned to Tractor.
4. Press PARK.
5. Push the paper load lever toward the back of the printer and release. Paper will be positioned in front of the print head at the first printable line of the form.
6. If you would like a different TOF, refer to "Re-alignment of TOF" on page 29.

When you have completed this section, you may set your load eject distance. Your TOF or load eject distance should now work as expected.

To tear demand document forms at the perforation, you will need to advance the paper to the tear bar. This section describes the two methods of demand document forms removal.

Using the Load Eject Function

To advance forms for removal, load, align, and print forms as instructed previously, then do the following.

1. When the form is done printing, press LOAD/EJECT.
 - **03 Forms Ejected** will display.
 - The form will advance to the tear bar.
2. Tear form at perforation.
3. Press LOAD/EJECT.
 - The form will be reverse fed into the printer and aligned at TOF.
 - **Stopped**
CU will display.

Adjusting Load Eject Distance

If you are wasting forms by performing the above procedure, you may want to adjust the Load Eject (L/E) distance. This forms saving feature allows you to tear forms at the perforation *without* wasting a form. To adjust, follow the directions below.

◆NOTE

This procedure should only be used with preprinted forms when the print job does not bring you to the next top of form.

1. Make sure TOF has been set.
2. Run your print job to the end of the page, or press the LINE FEED key to where the end of the page would be.
3. Press STOP.
 - **Stopped** will display.
4. Press MENU until you reach the Mechanism Menu.
 - ****Mech. Menu**** will display on line one.
5. Now, press NEXT OPTN to locate the L/E distance option.
 - ****Mech.Menu****
Set L/E Distance? will be displayed.

Removing Demand Document Forms

6. Press the UP ARROW once to initiate the L/E distance option.

■ **** Mech. Menu ****
L/E to Activate will display.

7. Press the UP ARROW again to advance the perforation to the tear bar.

■ **Use Up/Down Keys**
L/E to Activate will display.

◆NOTE

The distance will be aborted if keys other than the UP ARROW, DOWN ARROW, or LOAD/EJECT are used. (Load/Eject will activate the newly selected load eject distance.) **Distance aborted** will be displayed and your paper will be returned to its original position. The maximum distance paper can travel is 3.8 inches; therefore, the last line must be closer than 1.5 inches from the bottom perforation.

8. Press the LOAD/EJECT key when the perforation is at the tear bar. This activates the selected load eject distance. Paper will be reverse fed into the printer. When the next print job is received, the paper will be positioned at the previously set TOF.

■ **L/E Distance Set** will display momentarily.

Using Load Eject Distance

After you have set the load eject distance as described, it is very easy to use. Follow the instructions below to continue to tear forms at the perforation.

1. Make sure L/E distance has been selected and activated.

2. Press STOP.

■ **Stopped** will display.

3. Press LOAD/EJECT to eject the form to the perforation.

4. Tear off form.

5. Press LOAD/EJECT or START to reverse feed the paper into the printer. The paper will be positioned so that printing will begin at the previously set TOF when the next job is received.

Front and Bottom Loading of Fanfold Paper

To load fanfold forms from the front or bottom of the printer make sure the optional pull tractors are attached. Do the following to select the paper loading method, attach the tractors, and load paper.

The front and bottom paper loading procedures are very similar. The only difference is the initial insertion of paper as described on the following pages. Refer to the appropriate form feeding instructions for details on initial insertion.

Selecting Front or Bottom Paper Loading

To select the front or bottom paper loading method do the following:

1. If paper is in the rear, park the forms as described on page 44, then turn the drive selection switch to Friction. If the paper is not loaded in the rear, this switch is not applicable.
2. Push the feed lever to Bottom Feed.
3. Select the **Pull Tractor = Yes** setting. Please note that the optional pull tractors *must* be installed for these two paper loading methods.

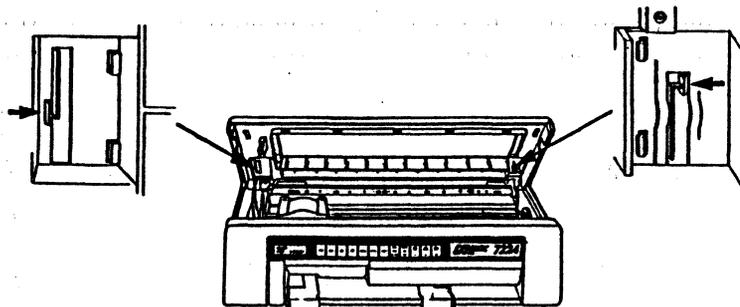
Summary of Front/Bottom Paper Loading Selection

Drive Selection Switch	Feed Lever	Pull Tractor Option
Friction *	Bottom Feed	Yes

Attaching the Tractors

To insert the tractors do the following.

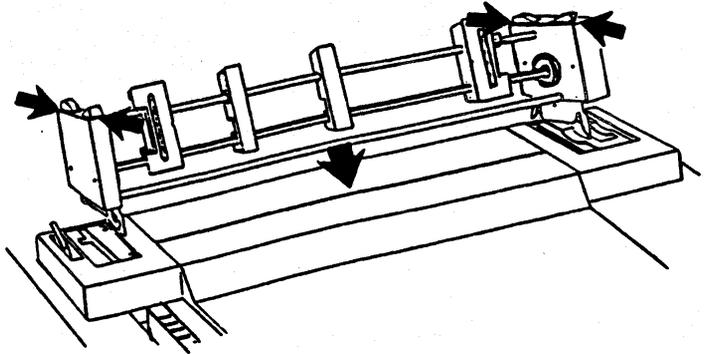
1. Press in on the plastic tabs shown below to remove the two plastic covers. Close the top cover.



*This switch setting is applicable only if paper is loaded in the rear.

Front and Bottom Loading of Fanfold Paper

2. Be sure your paper is in front of the tractors, then gently set the tractor clips into the slots on the top of the printer cover. (See illustration below.)
3. Squeeze together the two sprung levers on the top of the left and right ends of the tractor until they won't go any further.



4. While still squeezing, tilt the tractors slightly forward until you hear a click.
5. Then, rock the tractors back until you hear another click. Release the sprung levers.

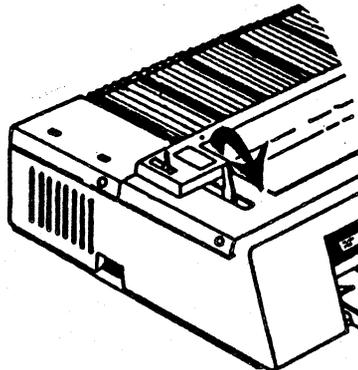
If the tractors are seated correctly, the black part of the tractors should be almost flush with the top cover.

Feeding Forms Into the Printer

The paper insertion procedure is different for front and bottom loading of forms. Refer to the appropriate section for instructions.

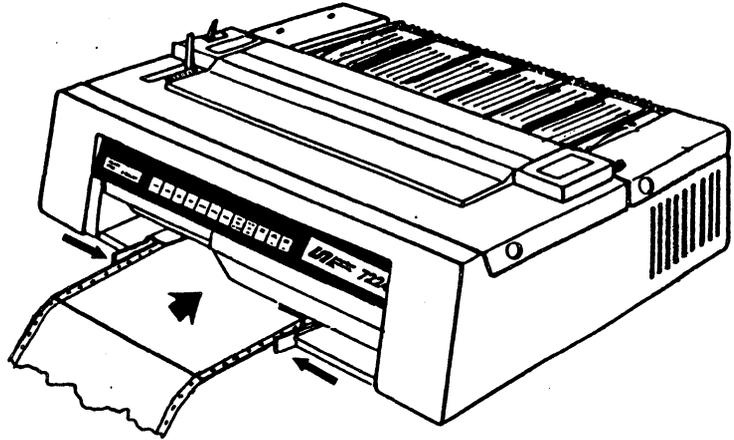
Front Loading

1. Move the forms lever to the front as far as it will go without forcing it.

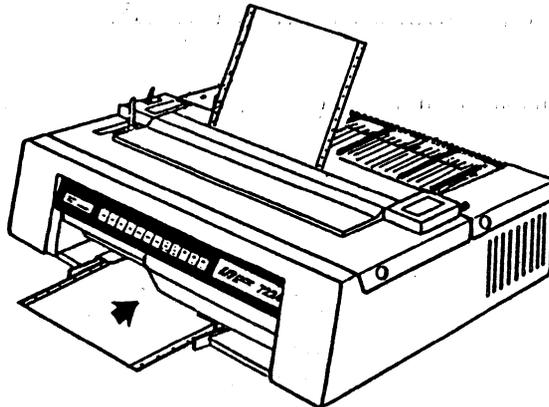


Front and Bottom Loading of Fanfold Paper

2. Position the stack of blank paper so it feeds freely into the printer.
3. Slide the left paper guide to the right as far as it will go.



4. Insert the paper part way into the front slot, then adjust the right paper guide according to the paper width.
5. Manually feed the paper into the printer and out the top cover. Make sure at least one sheet is out the top cover.



Front and Bottom Loading of Fanfold Paper

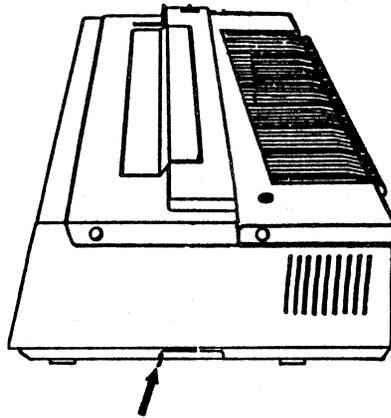
Bottom Loading

The bottom feed capability allows you to load thicker, stiffer continuous forms because of the relatively straight paper path.

❖NOTE

A printer table with a slot for bottom feeding is necessary for this paper loading method.

1. Move the forms lever to the front as far as it will go without forcing it.
2. Position the stack of blank paper so it feeds freely into the printer.
3. Insert the paper into the *front* of the bottom feed slot, feeding it through the printer and out the top cover.



❖NOTE

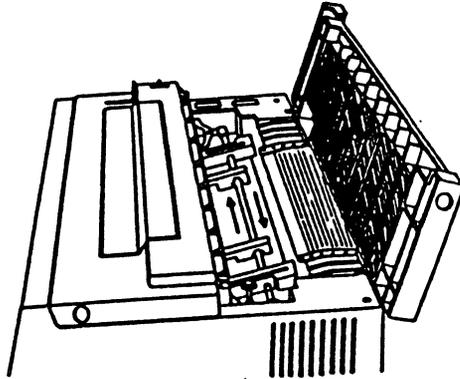
The bottom feed slot is the silver metal slot which protrudes only slightly from the bottom of the printer. If you are having trouble getting the paper in, you may be trying to load the paper behind the slot instead of into it. If this happens, move the paper to the correct slot and try again.

Front and Bottom Loading of Fanfold Paper

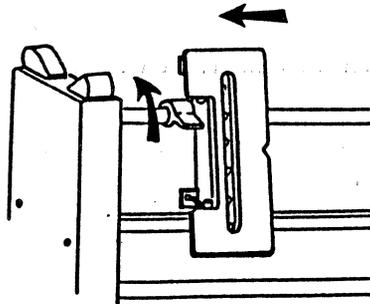
Positioning the Paper on the Tractors

After the tractors are attached you may place the paper on the pin feed tractors. Make sure the tractors are adjusted to the size of your forms. To adjust:

1. Space the paper supports evenly along the tractor bar.

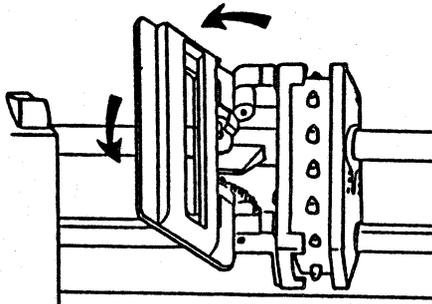


2. Lift the left tractor locking lever to loosen, and slide the pin feed tractor to the left adjusting the tractor to the paper width.

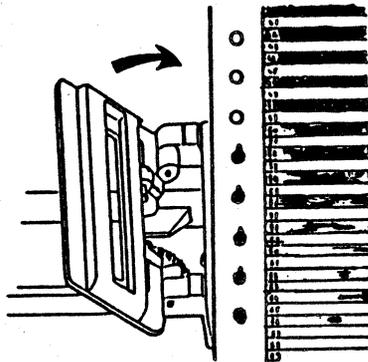


Front and Bottom Loading of Fanfold Paper

3. Push down on the tractor locking lever to lock the pin feed tractor in place, then open the tractor flap.



4. Place your forms on the pin feed tractor. Make sure the paper is taut and the holes are centered on the pins or your paper may jam. Close the flap.



5. Repeat steps 2 through 4 with the right pin feed tractor , adjusting the tractor to paper width.
6. Move the forms thickness lever back to the center.

Front and Bottom Loading of Fanfold Paper

Setting Top of Form

See page 40, "Adjusting TOF for Front and Bottom Loading", for instructions on how to set, re-align, and save the top of form setting for the bottom and front paper loading methods.

Reloading

To reload forms, feed the new forms into the printer and out the top cover, then place the paper on the pins and set TOF as described.

Adjusting TOF for Front and Bottom Loading

TOF is set the same way for both front and bottom paper loading as described in the individual sections. This section explains how to set, re-align, and save TOF.

Setting TOF

After you have performed the paper loading procedure as described on pages 31-39, do the following:

1. Make sure your first form is above the tear bar with the paper positioned on the feed pins.
2. Next, press LOAD/EJECT.
 - The paper will advance a short distance.
 - **03 Forms Ejected** will be displayed.

◆NOTE

If you are getting extra form feeds when using the LOAD/EJECT key, make sure the bottom or front paper loading method is selected correctly as described on page 33.

3. Use the UP and DOWN ARROWS or the LINE FEED key to align the perforation with the tear bar.
4. Press SET TOF to set the TOF position you just selected.
 - **Top of Form Set** will display momentarily.
5. Now, press LOAD/EJECT.
 - The form is reverse fed into the printer and positioned at TOF ready for printing.
 - **Stopped** will be displayed.

◆NOTE

The LOAD/EJECT key should only be used for setting TOF in bottom and front loading of fanfold forms. You may not set the LOAD/EJECT distance when using the bottom or front paper loading methods.

If you want to check your forms alignment, you may press STOP, then SETUP to print a line of "H's". If additional forms adjustment is necessary, see the following, "Re-alignment of TOF" for instructions.

Adjusting TOF for Front and Bottom Loading

Re-Alignment of TOF

To change the selected TOF position, make sure that **Stopped** is displayed on the LCD, then do the following:

Press the UP ARROW to move the paper forward and the DOWN ARROW to move the paper backward in small increments, or use the LINE FEED key to advance the paper by lines. Next, press SET TOF to set the TOF alignment you just selected.

■ **Top of Form Set** will display momentarily.

◆NOTE

When using the DOWN ARROW, or LOAD/EJECT key be sure to keep your paper taut, or your forms may jam.

You may want to press SETUP (which prints a line of "H's") to check your alignment.

Saving TOF

The setting you have just selected is only temporary. To save the setting for use at power on, use the SAVE key as described on page 65.

◆NOTE

If you will be saving more than one TOF setting for use at power on, use the Save Setup option for saving multiple settings.

Loading Cut Sheets

Cut sheets can be loaded with or without completely removing fanfold forms. If you wish to use cut sheets without removing the fanfold paper, be sure to park the paper first. The pull tractors must *not* be installed when loading cut sheets. Please note, the best mechanical operation occurs when Line Width is set to cut sheet paper size for 10 CPI prints. Do the following to select the paper loading method and to load cut sheets.

Parking Fanfold Forms

If you are loading cut sheets without removing the fanfold forms, you must first "Park" the forms as described below. If fanfold forms are removed, skip to "Selecting Cut Sheet Paper Loading" on the following page.

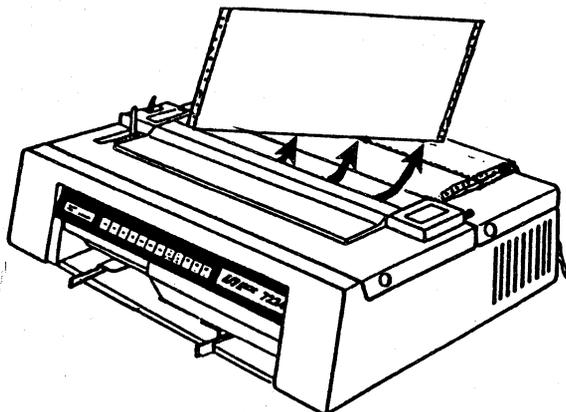
1. First, be sure your printer is in Stopped condition.

■ Stopped
CU is displayed.

2. Tear any loaded continuous fanfold paper along the last perforation.

◆NOTE

Be sure the print job on the fanfold form is finished or at a convenient stopping point, before tearing the fanfold paper.



3. Press the PARK key.

■ Fanfold paper moves backwards.

■ Disengage Tractor/Insert Cut Sheet will display and the printer is in manual sheet feed mode.

◆NOTE

Fanfold paper moves backwards a maximum of 17 inches. If the fanfold inserted is longer than 17 inches, the display shows: Remove Print Job Before Parking. Press the DOWN ARROW to move the remaining paper backwards until 01 Paper Empty appears.

Selecting Cut Sheet Paper Loading

After the forms are parked, select the cut sheet paper loading method as described below.

1. Turn the drive selection switch to Friction.
2. Push the feed lever to Rear Feed.

The Pull Tractor menu option is not applicable for this paper loading method.

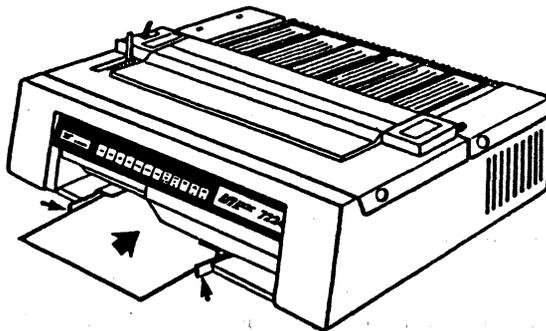
Summary of Cut Sheet Paper Loading Selection

Drive Selection Switch	Feed Lever	Pull Tractor Option
Friction	Rear Feed	N/A*

*If pull tractors are attached cut sheet paper loading will malfunction.

Inserting Cut Sheets

1. Slide the left paper guide to the right as far as it will go, then insert a sheet of paper only part way into the front slot.
2. Next, adjust the right paper guide according to the paper width and insert the sheet of paper until it stops.



3. Press LOAD/EJECT.
 - The cut sheet will be fed in automatically and positioned at the first printable line.

◆NOTE

If the tractors were not disabled when LOAD/EJECT was pressed, the alarm will sound and you will get a **02 Paper Jam**

Loading Cut Sheets

message. To clear the jam:

1. Press STOP to silence the alarm.
2. Manually remove the paper from the front slot. (You may have to pull hard.)
3. Turn the drive selection switch to Friction.
4. Remove then reload the fanfold forms by following the instructions in "Rear and Bottom Loading of Fanfold Forms".

Reloading Cut Sheets

After one sheet is printed and ejected you may reload the printer by repeating the cut sheet insertion procedure and pressing LOAD/EJECT until you have completed your job.

If the Page Was Not Printed to the Bottom

If the page did not print to the bottom, press LOAD/EJECT to remove the form. Using any other method of forms removal, such as physically removing the paper or using the ARROW keys, LINE FEED, or FORM FEED keys, may alter your TOF setting for the next cut sheet loaded.

Resuming Use of Continuous Fanfold Forms

To resume printing with continuous fanfold forms after you have been using cut sheets do the following.

1. Move the drive selection switch back to Tractor.
2. Push the paper load lever toward the back of the printer and release. The paper will be positioned in front of the print head at the previously set TOF.

❖NOTE

Load Forms and Engage Tractors will display if the drive selection switch is not in Tractor. Move the switch to Tractor and try pushing the load lever again as described above.

Loading the Automatic Sheet Feeder

The automatic sheet feeder (ASF) is an optional paper loading device which increases the paper handling capabilities of the 7224. This device may be purchased separately. Up to two individual hoppers may be attached to the 7224. Each hopper holds 130 sheets. For details on attaching and operating the optional ASF, refer to *Appendix B The Automatic Sheet Feeder* on page 127.

During cut sheet paper loading, Top of Form is set automatically to the first printable line. Top of form can also be re-aligned if you prefer a different top of form setting. This section describes the re-alignment of TOF.

Realigning TOF

To change the current TOF setting be sure the paper has been loaded to the current top of form, then do the following.

1. Press STOP.
2. Press the MENU key until ****Mech. Menu* *** is displayed.
3. Now press NEXT OPTN until **Cut Sheet TOF?** is displayed.
4. Use the UP ARROW key to bring paper to the tear bar.
 - **UP Key to Set TOF to Activate** is displayed.
5. Press the UP ARROW to set the new TOF.
6. Press SET TOF to activate the new setting, and eject a page.
 - **Top of Form Set** will be displayed temporarily.
 - **Cut Sheet TOF?** will be displayed when the function is completed.
7. Press STOP to exit menu mode.

Saving TOF

This setting is temporary and will be lost at power on unless you save it with the SAVE key as instructed on page 65. If you are saving more than one TOF setting, it is advisable to use the Save Setup menu option. To verify your TOF, you may press the LOAD/EJECT key to load a cut sheet to the new TOF, then press SETUP to print a line of H's.

◆NOTE

If you will be saving more than one TOF setting, use the Save Setup option on page 65 for saving multiple settings.

Quick Reference Paper Loading Chart

Once you have learned the paper loading procedures you may refer to the quick reference chart below to quickly check your work.

Please refer to the previous pages if details on loading paper are needed.

	Drive Selection Switch	Feed Lever	Menu Pull Tractor Option	Notes
Fanfold				
Rear Load	Tractor	Rear	N/A	<ul style="list-style-type: none"> ■ Keeps front slot available for front load cut sheet. ■ Setting TOF is easiest with this fanfold paper loading method. ■ Pull tractor not needed
Front Load	Friction**	Bottom	Yes	<ul style="list-style-type: none"> ■ Optional pull tractors <i>must</i> be installed. ■ Demand Document is not available when tractors are attached. ■ If parking fanfold forms, park forms <i>first</i>, then turn the switch to Friction.
Bottom Load	Friction**	Bottom	Yes	<ul style="list-style-type: none"> ■ Optional pull tractors <i>must</i> be installed. ■ Demand Document is not available when tractors are attached. ■ If parking fanfold forms, park forms <i>first</i>, then turn the switch to Friction.
Cut Sheet				
Front Load (Fanfold Loaded)	Park Fan-fold forms <i>first</i> , then turn switch to Friction.	Rear	No	<ul style="list-style-type: none"> ■ Fanfold forms must be parked <i>before</i> loading cut sheets, or a temporary message will display.
Front Load (Without Fanfold)	N/A	Rear	No	
Auto Sheet Feeder (ASF) (optional)	Friction	Rear	N/A	<ul style="list-style-type: none"> ■ Use menu to select Hopper 1 or 2, and hopper MPL. ■ Available options include an output stacker and up to two hoppers.

*N/A = Not applicable

Chapter 3

Using the Control Panel

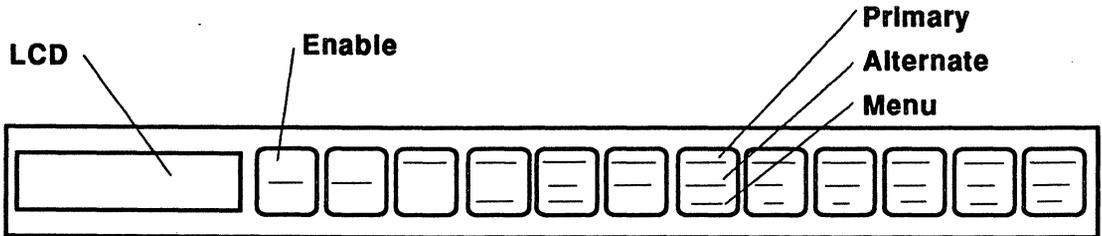
The control panel consists of a 32-Character Liquid Crystal Display (LCD) and twelve pressure sensitive keys which allow you to control and monitor the operation of your printer. This chapter describes the LCD and the control panel key functions.

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The Control Panel consists of one Liquid Crystal Display (LCD) and twelve multifunction keys which allow the user to control and monitor printer operation. This section gives a general description of the LCD and the keys.

The LCD

The two-line, 32-character LCD displays messages to the operator in a variety of ways depending on the current mode of operation. See page 50-52 for details on these messages.



The Keys (Modes of Operation)

The keys are used to enable four selection and operation modes. These modes, Enable, Primary, Menu, and Alternate, allow the user to print, select parameters, move paper, test the printer, and customize mechanical operations to meet individual paper and form needs. A description of these modes follows.

Enable Mode

The first mode, Enable, allows the printer to receive and print information from the Host. The Enable mode is entered upon power up and when the user presses START from any of the other three modes. While in this mode, all but two of the keys are disabled, and Ready is displayed. To exit this mode, press STOP.

Primary Mode

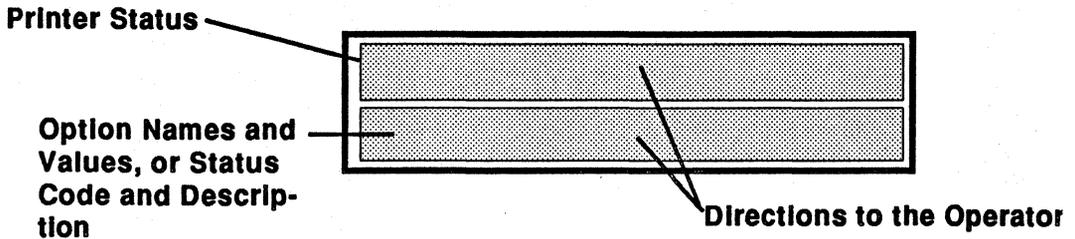
The second mode, Primary, is entered by pressing the STOP key. Primary mode disables the printer, enables its own distinct features, and allows the user to enter the other two modes by pressing one of two keys. Primary mode enables the MENU key, the ALTERNATE key, all of the functions written in black on the remaining keys, and displays Stopped.

Menu and Alternate Modes

The third and fourth modes, Menu and Alternate, are entered from the Primary mode by pressing either the MENU or the ALTERNATE keys. The orange MENU key allows the user to perform the functions that are printed in orange. The green ALTERNATE key allows the user to perform the functions that are printed in green.

Reading the LCD

You can monitor the operation of your printer by reading the various codes and messages displayed on the LCD. It shows printer status, options and their values, and directions to the operator. The different messages and their meanings are explained below.



First Line

For 3270 coaxial operation, the top line indicates the printer status. Possible first line messages and their meanings are listed below.

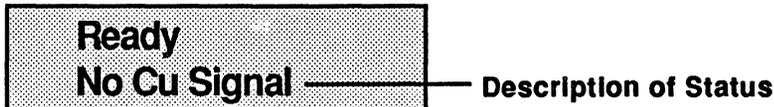
Display	Meaning
Ready	Printer is ready to accept and print data from the host.
Check	Printer is unable to print, but has not been stopped. (See second line status for explanation or action.) Most keys are inactive.
Fault	A hardware failure has occurred making the printer inoperable. The keys are inactive and the printer will require service from qualified service personnel. This message is sometimes accompanied by a second line status message.
Stopped	Printer will not print data sent to it. The primary function assigned to the keys is active.
Alternate	Printer is stopped and the alternate function of certain keys is active. Pressing another key will terminate the Alternate Key mode.
...Menu	The first word is the name of the currently selected option menu.

Second Line

The second line messages will appear in different ways depending on which mode the printer is in.

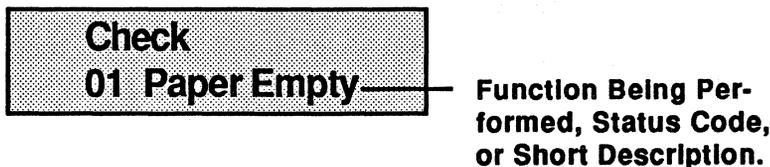
Display for Enable Mode

In enable mode, the first line of the display will read **Ready**. The second line will be blank, or display a short description of the status. Messages that may display are **28 No Cu Signal**, **CU**, **Comm. Timeout**, and **SCS Mode**.



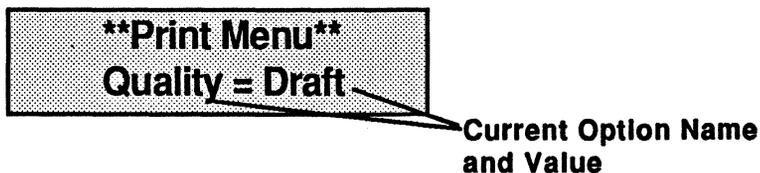
Display for Primary Mode

In primary mode, the first line of the display will read **Check**, or **Stopped**. The second line may be blank, explain a function being performed, or give a status code and a short description of the status. Some common second line messages include **Paper Empty**, **Paper Jam**, **Remove Form**, and **Testing**. See page 81 for a complete list of messages and their meanings.



Display for Menu Mode

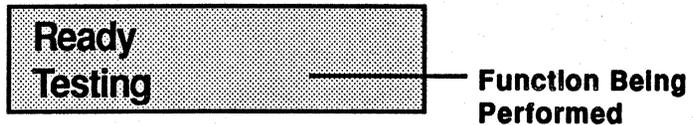
In menu mode, the top line shows the name of the current option menu. The current option and its value are displayed on the second line.



Reading the LCD

Display for Alternate Mode

In alternate mode, the top line displays **Ready** or **Stopped** and the second line displays the function being performed. Messages that may display are **59 Cancel**, **60 Buffer Print** or **PA1/PA2 Pending**. Once the function is performed, the LCD returns to **Stopped**.



Temporary Messages

Some operator errors display a message for a short time to guide the operator in correct usage of the printer. These messages:

Some operator errors display a message for a short time to guide the operator in correct usage of the printer. These messages:

- use both lines of the display.
- are accompanied by a “beep” from the alarm.
- are removed after 3 seconds.

Possible temporary messages and their meanings are listed on page 88.

Serial Operation

The messages displayed on the LCD when you are using the serial operation mode are very similar to those used in coaxial host mode. See Chapter 6 on page 93 for details.

The twelve multifunction keys on the 7224 are used to enable four separate selection and operation modes, and perform various functions while in these modes. This section gives a brief description of how each key functions in the different operating modes.

Entering Enable Mode

The first mode, Enable, allows the printer to receive and print information from the Host. The Enable mode is entered upon power up and when the user presses START from any of the other three modes. While in this mode, all but two of the keys are disabled and the message **Ready** is displayed. To exit this mode press STOP.

Enable Key Description



Returns printer to normal (online) operation unless an error is present. All errors must be cleared before this key can function. See pages 87 - 90 to correct the error. If START is pressed before a fault is corrected, the alarm will sound and the fault message will continue to be displayed.

Entering Primary Mode

This second group consists of the primary functions which are printed on the top row of the keypad. The primary or main function of each key is the function you will use the most in everyday operations. To enter primary function mode press STOP. If errors are present, refer to pages 87 - 90 for assistance.

Primary Key Descriptions



Places the printer in the Stopped condition which interrupts printing and activates the MENU key, the ALTERNATE key, all of the functions written in black on the remaining keys, and displays the message **Stopped**. STOP and LOAD/EJECT are the only keys that are active when you are not in the Stopped condition.



Places the printer in menu mode, thus activating all functions printed in orange and allowing access to the five option menus. Pressing MENU will advance you to the next available option menu. When you reach the last menu, pressing MENU again will return you to the top of the menu list. See page 56 for a list of the available option menus. For details on accessing and changing the various option values see page 63.

Using the Control Panel Keys



Places the printer in ALTERNATE mode activating all functions printed in green. Alternate will display on the LCD. See "Alternate Function Descriptions" on page 55 for details.



This is the only key other than START which is active when the printer is in Ready condition. The operation of this key depends on the state of the front panel, the state of the paper empty sensor, and the paper feed type being used. See paper loading instructions for specific operations of this key.



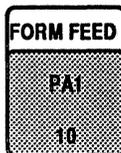
Disengages the demand document forms to allow manual or automatic feeding of forms. This key is ignored if the bottom feed option is selected. See the paper loading instructions for specific operation of this key.



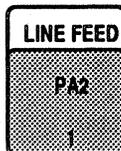
Causes "H's" to print. If the user holds the key down, a line of "H's" will be printed until the key is released, or 80 columns have been printed. This key can be used to check top of form alignment.



Sets all line counters within the printer to line one which is the top of form (TOF). The current line thus becomes the first line of the form.



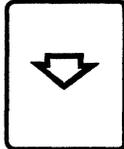
Advances the paper to the top of the next page as defined by the forms length option. Also ejects a sheet if cut sheets are inserted.



Each time the LINE FEED key is pressed, the paper is advanced one line (at 1/6" LPI). This can be used as a fast method of advancing forms if it is held down.



Moves the paper up by small increments. If this key is held down, it will move the paper slowly upward. This will affect the TOF setting. The arrow key is also used in menu mode to scroll through the individual option values.



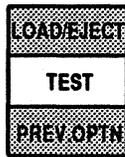
Moves the paper backwards in small increments. Holding this key down will move the paper slowly backwards. This will affect the TOF setting. The arrow key is also used in the menu mode to scroll backwards through the individual option values.

Entering Alternate Mode

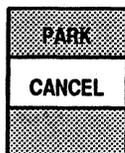
This third group consists of the alternate functions which are printed in green. When an alternate key is pressed, the function will be performed and the printer will return to Stopped condition. The functions that may be selected while in alternate function mode are: TEST, CANCEL, ALT. HOST, REPRINT, PA1 and PA2. To exit alternate mode, press STOP or START. STOP will enter primary mode. START will enter enable mode. Do the following to enter alternate function mode.

1. Press STOP.
 - **Stopped** will display.
2. Press ALTERNATE.
 - **Alternate** will display.
3. Press any of the keys printed in green on the control panel.
 - The function will be performed and the printer will return to Stopped condition.

Alternate Key Descriptions



Causes the printer to run the current test as set by the Test option in the Diagnostics Menu. There are ten available tests. See page 90 for details. The printer will return to the Stopped condition immediately following the test.



Pressing CANCEL will cancel a print operation. This key is active only in Stopped condition, and only during an SCS operation. This key also functions in menu mode. See page 57 for the menu function of the CANCEL key.

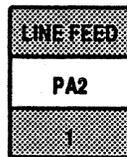
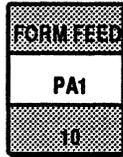
Using the Control Panel Keys



The alternate host key switches the active mode of the printer between 3270 coaxial operation and serial operation and goes into Enable mode. When switching from coaxial to serial, the coaxial printer appears to power off to the host. When switching from serial to coaxial the printer appears to power up to the host. See page 95 for instructions on changing hosts.



Causes the printer to reprint the contents of the print buffer.



Sends a Program Attention 1 or 2 code (as defined by IBM) to the host and returns the printer to Stopped condition.

Entering Menu Mode

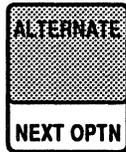
This fourth group consists of the menu functions which are printed in orange. In menu mode you have access to five option menus and their various options and values. You will use some menus more than others. Some menus you may not use at all. To move between menus, do the following:

1. Press STOP, then MENU.
 - The name of the current menu will display.
2. Press MENU again to advance to the next menu. The menus are displayed in the order shown below.

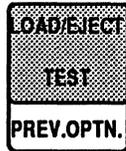
Display	Meaning
Print Menu	Print Menu
Mech.Menu	Mechanism Menu
System Menu	System Menu
LU3 Menu	LU3 Menu
Diags Menu	Diagnostic Menu

3. Once you are in menu mode you may use any of the following keys: NEXT OPTN, PREV. OPTN, SAVE, UP ARROW, DOWN ARROW, and 100, 10, 1. These keys will help you view, modify, and save the option values as described in "Accessing the Option Values" on page 63.

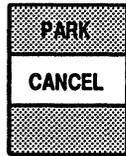
Menu Key Descriptions



If you are in menu mode, pressing NEXT OPTN (option) will advance you through the selected menu to display the next available option.



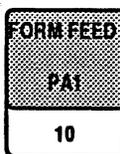
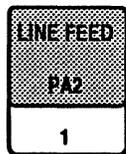
If you are in menu mode, pressing PREV. OPTN (previous option) will back you up in the selected menu to display the previous option.



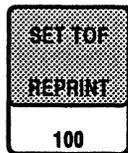
While in the menu mode, pressing CANCEL will recall the previous default setting. CANCEL can also be used in Alternate mode. See page 55 for a description.



Allows you to change factory set defaults. Pressing this key permanently saves the currently selected option value as the new default. This new setting, called a user default, will be used at the next power on. The printer will perform a power on reset following a SAVE. See page 65 for details.

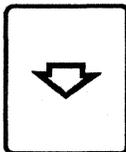


Allow you to increment the 1, 10, and 100's digits of the Page Length and Line Width option values. A new value will be displayed each time the key is pressed. As soon as you select a new value it goes into effect immediately upon exiting the menu. The value will not, however, be saved for power on. To save a setting permanently you must use the SAVE key.



In menu mode the UP ARROW is used to scroll forward through the individual option values. See page 55 for the Primary mode function of this key.

Using the Control Panel Keys



While in menu mode, the DOWN ARROW key is used to scroll backwards through the individual option values. See page 55 for details on the Primary mode function of this key.

Chapter 4

Using the Option Menus

There are a number of options which can be accessed by placing the printer in the menu mode. This chapter lists the factory default option settings, and lists and describes the various option values. Checking, changing, and saving the option values is also covered.

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Summary of Option Values and Defaults

This section contains a list of all the option menus, the specific options, their available value choices, and their default values. Defaults are values set when your printer leaves the factory. These set values are selected automatically at each power up unless they have been changed as described on page 65. These are also the values you get when using the "Factory Default" option on the Diagnostic Menu.

The options and their defaults are listed in the order they are displayed on the LCD. Refer to the following pages for additional settings and instructions on how to check or change any of the settings listed below.

◆NOTE

When the Auto Sheet Feeder (ASF) is attached, various menu items which apply only to the use of the ASF will appear. Those items which no longer apply will disappear.

Option Name	Selections	Default
Print Menu		
Quality	Draft, DP-Txt, NLQ	Draft
Char/Inch	10, 12, 15, 16.5	10
Line Width(MPP)	1 - 132 at 10 CPI 1 - 158 at 12 CPI 1 - 198 at 15 CPI 1 - 218 at 16.5 CPI	132
Lines/Inch	6, 8	6
Spacing	Single, Double	Single
Page Length (MPL)	1 - 255	66
MPL Hopper 1*	1 - 255	66
MPL Hopper 2*	1 - 255	66
Mechanism Menu		
Hopper *	Top (1), Bottom (2)	Top (1)
Ribbon	Process, Black, Primary	Process
Alarm	Low, High, Off	Low
Pull Tractor	No, Yes	No
Bidirection	On, Off	On
Save Rear TOF?	**	
Cut Sheet TOF?	***	
Hopper 1 TOF?*	***	
Hopper 2 TOF?*	***	
Set L/E Dist.?	User selectable	

*(Appears only when ASF is attached.)

(Continued)

** Function is activated immediately upon pressing UP ARROW.

***Function is activated immediately upon press SET TOF.

Factory Default Settings

(Continued)

Option Name	Selections	Default
System Menu		
Model	4 - 3440 5 - 3564 1 - 960 2 - 1920 3 - 2560	4 - 3440
Lang	29 languages available, see page 79 for listing	English U.S.
Printer ID	4224 3287	4224
LU3 Menu		
Color	Enabled, Disabled	Enabled
Base Col	Black, Green	Black
Case	Dual, Mono	Dual
CR at MPP	Next Line, Same Line	Next Line
NL at MPP	Two Lines, Next Line	Two Lines
FF+Data	Column 2, Column 1,	Column 2
FF at EOJ to	Line 1, Line 2	Line 1
Null Lns	Ignored, Printed	Ignored
FF Valid	Col 1, Any Col, Never	Column 1
FF at EOJ	None, Local, Host, All	None
Diagnostic Menu		
Test	11 tests available, see page 90 for listing	Vers/Status
Auto Dump On*	No, Yes	No
Reset?	**	
Save Setup?	**	
Factory Dflts?	**	

* Auto Dump can not be saved permanently.

**Function is activated immediately upon pressing UP ARROW.

Changing Default Values

In most cases you will want to use the factory default values for your everyday printing jobs. Some jobs, however, will require that you change one or more of the defaults. You may change these values temporarily or permanently. To change a value temporarily, see "Changing Option Values Temporarily" on pages 63, 64. To change a value permanently see page 65.

The options are accessed by placing the printer in the menu mode. While in the menu mode you may use any of the keys printed in orange. This section tells how to access and check the current option values. It also gives instructions on how to change them temporarily or permanently.

Checking the Option Values

Each menu has a number of options to choose from. To scroll through the list of options to check an option value do the following.

1. Press STOP.
 - **Stopped** will display.
2. Press MENU to enter menu mode and select the desired option menu.
 - The selected menu will display.
3. Now press NEXT OPTN or PREV. OPTN to advance and reverse in the menu until the desired option is displayed.
 - The current menu and the selected option and its current value will display .
4. If the desired value is selected, you may:
 - press START to return to Ready without altering the current setting, or
 - press STOP to return to Stopped without altering the current setting.

Changing Option Values Temporarily

To change an option temporarily, perform the instructions listed below. Please remember that temporary option changes *are not* saved when the printer is powered off.

1. Perform steps 1 through 3 above.
2. When you have located the option you would like to change press:
 - the UP ARROW key to advance to the next value.
 - the DOWN ARROW key to back up to the previous value.
 - the 1's, 10's , and 100's digits keys to select a specific numeric value for the Page Length and Line Width options. Only valid numerical values are displayed.

Accessing the Option Values

3. When you have selected the desired option value, you may press:

- STOP to return to Stopped condition,
- START to return to Ready condition, or
- CANCEL to cancel the selection and return to the previous default value.

The new value goes into effect when you exit or advance to the next option or menu.

●Example

To change the alarm volume from low to off, you would:

1. Press STOP.

- **Stopped** will display.

2. Press MENU until you reach the Mechanism Menu.

- ****Mech. Menu****
xxxx = xxxx will display.

3. Press NEXT OPTN or PREV. OPTN to locate the Alarm option.

- ****Mech. Menu****
Alarm = Low will display.

4. Next, press the UP or DOWN ARROW until **Alarm = Off** is displayed.

5. Finally, press START to return to Ready. The new value will be in effect.

If after you pressed START, you realize you didn't want to change the alarm setting after all, you would do the following to change back to the previous setting.

1. Perform steps 1 through 4 above.

2. Then press the CANCEL key. The newly selected value will be deleted and the previous default value will be recalled and operational.

Saving Individual Settings Permanently

If you use a specific setting other than a factory default quite frequently, you may want to change the setting permanently by using the SAVE key. This user default will be the new power on default value until it is changed back by using the SAVE key or the Factory Default option.

To set a value permanently do the following:

1. Select the desired option value.
2. Then, press SAVE. The value you have just selected is now the new user default.

■

Saved for POR

 will display momentarily.

3. Press START to return to Ready condition.

Saving Multiple Settings Permanently

If you want to permanently save *all* the settings you have changed during a particular session, you may use the Save Setup option from the Diagnostics Menu.

To set all the values permanently, follow the procedure below.

1. Once all the desired changes have been made, press the MENU key until you reach the Diagnostic Menu.

■

Diags Menu
Test = xxxx

 will display.

3. Press the OPTION key to advance to the Save Setup option.

■

Diags Menu
Save Setup?

 will display.

4. Press the UP or DOWN ARROW to activate the function.

■

Saved for POR

 will display momentarily. Then,

■

Diags Menu
Save Setup?

 will display again.

5. Press START to return to Ready condition, or STOP to return to Stopped condition. The settings you have just saved are now in effect and will be used at the next power on.

Accessing the Option Menus

Restoring Factory Defaults

If you would like to return *all* option values to their original factory defaults but can't remember which values you have changed, you may use the Factory Defaults option from the Diagnostics Menu.

Perform the following steps to restore all option values to their factory defaults.

1. Press STOP.

■

Stopped

 will display.

2. Press the MENU key until you reach the Diagnostics Menu.

■

Diags Menu Test = xxxx

 will display.

3. Press the OPTION key to advance to the Factory Default option setting.

■

Diags Menu Factory Dflts?

 will display.

4. Press the UP or DOWN ARROW key to activate the function.

■

Defaults Set

 is displayed momentarily.

■

Diags Menu Factory Dflts?

 will display again when the reset is complete.

5. Press START to return to Ready condition, or STOP to return to Stopped condition.

◆NOTE

This reset is only temporary. You must use the Save Setup option in the Diagnostics Menu to save the settings for use at the next power on.

The paragraphs below are brief descriptions of the available options. Additional descriptions and instructions can be found in the following pages or throughout the manual where necessary.

Print Menu**◆NOTE**

Values displayed represent the factory default value.

Quality = Draft

Sets the Print Quality. The available settings are draft, DP- text, and Near Letter Quality (NLQ). Draft is the lowest quality, DP- text is medium quality, and NLQ is the highest quality. The lower the quality print, the higher the print speed. See page 72 for details.

Char/Inch = 10

The Characters Per Inch (CPI) setting allows the operator to display and modify the print density. The available settings are: 10, 12, 15, and 16.5 CPI.

Line Width= 132

The maximum Line Width, sometimes called the Maximum Presentation Position (MPP), displays and allows the operator to select the maximum line width setting in the range of 1- 218. Valid values are: 1-132 at 10 CPI, 1-158 at 12 CPI, 1-198 at 15 CPI, and 1-218 at 16.5 CPI. See page 73 for details.

Lines/Inch = 6

The Lines Per Inch (LPI) setting displays and allows the operator to select the number of lines to print per inch, 6 or 8 (3 or 4 respectively when using double spacing). See page 75 for details.

Spacing = Single

Displays and allows the operator to modify the line spacing. The available settings are single or double. The double setting inserts a blank line between two lines of text.

Page Length = 66

Sets the Maximum Page Length (MPL) and displays and controls the distance a form feed advances paper. The available Page Length settings are in the range of 1-255. See page 74 for details.

Option Descriptions

MPL Hopper 1=66

Sets the Maximum Page Length (MPL) for hopper 1 (top) and displays and controls the distance a form feed advances paper. The available MPL settings are in the range of 1-255. See page 75 for details. (Displays only when ASF is attached.)

MPL Hopper 2=66

Sets the Maximum Page Length (MPL) for Hopper 2 (bottom) and displays and controls the distance a form feed advances paper. The available MPL settings are in the range of 1-255. See page 75 for details. (Displays only when ASF is attached.)

Mechanism Menu

Hopper = Top (1)

Cut sheets will be fed from the top (front) hopper of the optional automatic sheet feeder. Available settings are the top or front hopper, and the bottom or rear hopper. See page 100 for details. Hopper is displayed only if the auto sheet feeder is attached.

Ribbon = Process

Tells the printer the type of ribbon installed. The available selections are Black, Process, and Primary. This setting is overridden if there is a black ribbon installed. The black ribbon is solid black, the process ribbon is yellow, cyan (turquoise), magenta (pink), and black, and the primary ribbon is red, yellow, blue, and green. See page 76 for details.

Alarm = Low

Allows the operator to display and set the volume of the alarm. Available settings are Low, High, and Off.

Pull Tractor = No

Tells the printer whether the optional pull tractors are installed or not. Available settings are No and Yes. See page 21 for details on selecting the Pull Tractor option.

Bidirection = On

The 7224 prints in both directions (left-to-right, and right-to-left). When Off is selected, the printer will print from left-to-right only. The Off setting is used when precise registration is required.

Save Rear TOF?

Allows the operator to permanently save the rear TOF setting. This allows the operator to resume printing at the set TOF after doing a park function. This function is activated immediately upon pressing the UP ARROW key. See page 29 for details.

Cut Sheet TOF?

Allows the operator to set the top of form for cut sheets. Use the UP ARROW key to set the new TOF, and use the SET TOF key to activate the new setting. Refer to page 45 for details

Hopper 1 TOF?

Allows the operator to set the TOF for hopper 1. To save this setting, you must use the SAVE key. See page 65 for details.

Hopper 2 TOF?

Allows the operator to set the TOF for hopper 2. To save this setting, you must use the SAVE key. See page 65 for details.

Set L/E Distance?

Allows the operator to alter the load eject distance so no forms are wasted when tearing individual forms at the perforation. See page 31 for details on using this forms saving function.

System Menu

Model = 4-3440

Displays and allows the operator to modify the coaxial printer model number. The number represents the character buffer, or screen size, of the terminal being used. These sizes correspond to those used for IBM 3287 Models. The single digit number corresponds to the IBM 3287 Model number. The available settings are: 4 - 3440, 5 - 3564, 1 - 960, 2 - 1920, 3 - 2560. See page 78 for details.

Lang = English US

Sets the language set to the selected country/language. There are 29 language settings available. See page 79 for a detailed listing. Your system and keyboard must support any language you select.

Printer ID= 4224

Identifies which IBM printer you want emulated. The available settings are IBM 3287 and IBM 4224.

LU3 Menu

Color = Enabled

Enables or disables base color printing. Available settings are Enabled and Disabled. See page 81 for details.

Base Col = Black

Sets the printer's base (text) color to black or green. Green is sometimes used since many terminals display text as green. See page 82 for details.

Option Descriptions

Case = Dual

Displays and allows the operator to modify the setting of the Dual/Mono Case parameter. Dual case is both upper and lower case printing. Mono case is all upper case printing.

CR@MPP=NextLine

A CR (carriage return) will be performed at one position past the maximum presentation position (MPP+1). The alternate setting suppresses the automatic New Line (NL) at MPP+1 and stays on the current line. The available settings are Next Line and Same Line. (9501 same as Routine 311 on the 4224)

NL@MPP=TwoLines

New Line (NL) at MPP+1 advances two lines. The next line setting suppresses Auto NL at MPP+1 and only advances 1 line. The available settings are Two Lines and Next Line. (9502 same as routine 312 on the 4224.)

FF+Data=Column 1

Form feed (FF) advances to the second column of the next page. The alternate setting advances to the first column of the next page. Available settings are Column 2 and Column 1. (9503 same as routine 313 on 4224)

FF@EOJ to =Line1

The default setting, Line 1, advances to the first line of the next page at the end of a print job. The Line 2 setting advances to the second line of the next page. (9504 Same as routine 314 on the 4224)

Null Lns = Ignored

Null lines of fixed format (screen copy) prints are suppressed. The alternate setting, Printed, includes them in the print. (9505 same as routine 315 on the 4224)

FF Valid = Col 1

Form feed (FF) is at the print position of a line to be recognized. The alternate setting, Any Col, honors the FF in any position in the line. (9506 same as routine 314 on the 4224)

FF@EOJ = None

An automatic form feed (FF) is not executed at the end of a print. The available settings are: None, Local, Host, and All. The Local setting will perform a FF after local (screen) copy prints. The Host setting will perform a form feed after all prints except local copy. The All setting, will perform a FF after any print. (9507, 9508 same as routine 317 and 314)

Diagnostic Menu

Test = Vers/Status

Selects the test (or print sample) to be run when the TEST key is pressed. There are 11 tests available; 5 printer tests, 6 IPDS tests. See page 90 for a listing of tests.

Auto Dump On=No

Activates a print dump to the printer. This dump generates diagnostic information along with a print which is used to report and diagnose errors. Users are often requested to send a dump to service personnel for error diagnosis. The available settings are Yes, and No.

Reset ?

Resets check conditions, sends a power on reset message to the control unit, and indexes one line. This function is activated immediately upon pressing the UP or DOWN ARROW key. While the reset is being performed, **Resetting** is displayed in the LCD. Once the reset is complete the printer automatically returns to the "Reset?" setting.

Save Setup ?

Saves all selected option settings as user defaults. This function is activated immediately upon pressing the UP or DOWN ARROW key. When the save is being performed **Saved for POR** is displayed. When the function is complete, the setting returns to "Save Setup?". See page 65 for details. Use this option when saving more than one TOF setting.

Factory Dflts?

Resets all options to their factory defaults. This function is activated immediately upon pressing the UP or DOWN ARROW key. While the reset is being performed, **Defaults Set** is displayed. When the reset is complete the setting returns to "Factory Dflts?". This setting is only temporary. This option is like all other options, thus the SAVE key must be used to save the factory defaults as the new power on defaults. See page 66 for details.

The previous section gave brief descriptions of all the options. In some cases additional explanations are necessary and are covered throughout the manual for specific applications, others are self explanatory. The following paragraphs include additional instructions on various options that are not covered in other sections.

◆NOTE

All values set in the following examples are temporary and will not remain once the printer has been powered off. To set these values permanently see page 65.

Selecting Print Quality

The Quality option allows you to select Draft, DP-text, or Near Letter Quality printing for your various printing applications. The lower the quality print, the higher the print speed. For example, draft is often used for printing quick drafts for internal use, DP-text is used for things such as internal correspondence and reports, and near letter quality is used for proposals, external reports and correspondence, or any time you want to make the best impression possible. NLQ and DP-text are recommended for jobs where a higher registration is required. See the chart below for comparisons of print speeds.

Char/Inch Setting	Print Speed (in cps)		
	Draft	DP-Text	NLQ
10	400	200	100

Checking/Changing the Current Setting

To view the current Print Quality setting:

1. Press STOP then MENU.

■ ****Print Menu ****
Quality = xxx x will display.

2. If you are satisfied with the current setting, you may exit menu mode without altering the setting by pressing:

- STOP to return to Stopped condition.
- START to return to Ready condition.

To select a new Quality, press:

- the UP or DOWN ARROW key until the desired value is displayed. (Pressing CANCEL at this point will return the setting to its previous default value.)

3. Press START to resume printing. The new setting will be in effect immediately upon exiting the menu.

Selecting Line Width

Line Width, sometimes called the MPP or maximum presentation position, sets the point at which the printer will "break" a very long line and continue it on the next line. This setting is variable and should be changed to correspond with the current Char/Inch setting. The factory default setting is 132 character positions (including spaces) for 10 characters per inch.

Checking/Changing the Current Setting

To view or change the current Line Width setting:

1. Press STOP then MENU.

- ****Print Menu **** will display.
Quality = xxxx

2. Press NEXT OPTN or PREV. OPTN until **Line Width = xxxx** is displayed.

3. If you are satisfied with the current setting, you may exit menu mode without altering the setting by pressing:

- STOP to return to Stopped condition.
- START to return to Ready condition.

To select a new Line Width press:

- the digit keys until the desired value is displayed. If you pass the maximum line width for a selected CPI, the display will "wrap" to "1". Pressing the down arrow will return you to the maximum line width. The various line widths which correspond with the available CPI settings are listed below:

Line Width	CPI
1 - 132	10
1 - 158	12
1 - 198	15
1 - 218	16.5

Format Setting Descriptions

(Pressing CANCEL at this point will recall the previous default setting.)

4. Press START to resume printing. The new setting will be in effect immediately upon exiting the menu.

Selecting Lines/Inch

The Lines/Inch option determines the number of lines per inch to print 6 or 8. When Lines/Inch is changed, the page length may also be changed to correspond with the new line spacing.

❖NOTE

When changing Lines/Inch, it is assumed that you are at top of form. If you specify double spacing along with a setting of 6 LPI, you will actually get 3 Lines/Inch.

Checking/Changing the Current Setting

To view the current Lines/Inch setting you would:

1. Press STOP then MENU.

■ ****Print Menu **** will display.

Quality = xxxx

2. Press NEXT OPTN or PREV. OPTN until **Lines/Inch = xxxx** is displayed.

3. If you are satisfied with the current setting, you may exit menu mode without altering the setting by pressing:

■ STOP to return to Stopped condition.

■ START to return to Ready condition.

To select a new Lines/Inch setting press:

■ the UP or DOWN ARROW key until the desired value is displayed. (Pressing CANCEL at this point will return the setting to its previous default value.)

4. Press START to resume printing. The new setting will be in effect immediately upon exiting the menu.

Selecting Page Length or Hopper MPL

You can select a three digit page length or Hopper MPL (maximum page length) of 1 to 225. The factory default setting is 66. The page length setting is variable and should be changed to correspond with the current line spacing.

Determining Line Count for New Page Length or MPL

To determine the number of lines to select for your new page length or MPL, you must consider three things:

- the length of the form in inches
- the number of lines you want printed per inch (6 or 8 — 3 or 4 respectively, for double spacing)
- the line spacing you want (single or double)

Once you determine these values, multiply the forms length by the desired Lines/Inch setting.

●EXAMPLE

In this example the forms length is 11 inches (279.4 mm), the Lines/Inch setting is 6, and the spacing is single. Multiply the forms length by the Lines/Inch to get the new page length value of 66 (i.e. $11 \times 6 = 66$). For double spacing, multiply the page length by 3 (i.e. $11 \times 3 = 33$).

Checking/Changing the Current Setting

To view or change the current Page Length or MPL Hopper setting:

1. Press STOP then MENU.

■ ****Print Menu **** will display.

Quality = xxxx

2. Press NEXT OPTN or PREV. OPTN until the appropriate menu item is displayed **Page Length = xxxx**, or **MPL Hopper x = xxxx**.

3. If you are satisfied with the current setting, you may exit menu mode without altering the setting by pressing:

- STOP to return to Stopped condition.
- START to return to Ready condition.

To select a new Page Length or MPL press:

- the digit keys until the desired value is displayed. (Pressing CANCEL at this point will return the setting to its previous value.)

4. Press START to resume printing. The new setting will be in effect immediately upon exiting the menu.

●EXAMPLE

To select a new page length setting of 088, we will assume that the physical form length is 11 inches (279.4 mm), and that 8 Lines/Inch and single spacing is already set. To select this setting:

1. First press STOP and MENU.
2. Press NEXT OPTN or PREV. OPTN until **Page Length** displays in the LCD.
3. Enter the page length value as a three digit number by using the appropriate digit keys. Your entry (88) will be displayed in the LCD.
4. Press START to resume printing at the new setting.

The printer is back in primary function mode and will select the value you have just set. This value is temporary and will not remain once the printer has been powered off.

Selecting Ribbon Type

The model 7224 uses three different ribbons: solid black, primary, and process. Ribbon type selection is necessary when changing between ribbons. Listed below are a few facts to consider when using the different ribbons.

- **Solid Black Ribbon** - When a black ribbon is installed only black will print. Using an all black ribbon is the fastest method of printing for the 7224.
- **Primary Ribbon** - With a primary ribbon installed, the printer acts like a four color printer and may print in red, blue, green, and black. Each color requires one pass of the print head, thus a single line could require up to four passes. For this reason, color printing is slower than solid black printing. For example, a line with four colors requires four passes of the print head to complete.

Format Setting Descriptions

- **Process Ribbon** - The process ribbon is cyan, magenta, yellow, and black. With this ribbon installed, the printer can print in eight colors if directed to do so. Four of the eight colors are produced by printing one color over another (overprinting). These colors require two passes of the print head to complete. The maximum amount of passes for any one line is four. Lines requiring all four passes become more frequent when using eight colors, thus it is considered the slower of the two ribbons to use. As a general rule, the more colors you use, the longer it will take to complete a job. One pass colors are: turquoise, pink, yellow, and black. Two pass colors are: red, blue, green, and brown.

◆NOTE

Multicolored Ribbon life is determined by the most used color. These ribbons will last longer if they are not used for black and white jobs, thus, it is advisable to use an all black ribbon for non-color jobs.

To select the ribbon type do the following:

1. Press STOP then MENU until the Mechanism Menu is selected.

■ ****Mech. Menu****
Ribbon = xxxx will be displayed.*

2. If you are satisfied with the current setting, you may exit menu mode without altering the setting by pressing:

- STOP to return to Stopped condition.
- START to return to Ready condition.

To select a new Ribbon type press:

- the UP or DOWN ARROW until the desired value is displayed. (Pressing CANCEL at this point will return the setting to its previous default value.)

3. Press START to resume printing. The new setting will be in effect immediately upon exiting the menu.

* ****Mech.Menu****
Hopper = xxxx will be displayed if the hopper is attached. You must press NEXT OPTN or PREV. OPTN to locate the Ribbon option.

Format Setting Descriptions

Selecting Model Number

It is important that the printer be configured to match the controller. To determine the appropriate buffer size follow the instructions below. The buffer size selections correspond to the IBM 3287 buffer sizes and model numbers.

Determining Buffer Size

To determine the appropriate buffer size, look at your display screen and count the number of characters per line and the number of lines per screen. For example, if your screen has 24 lines per screen and 80 characters per line, you would use the 1920 character screen size ($24 \times 80 = 1920$).

Checking/Changing the Current Setting

To view or change the current Model Number:

1. Press STOP then MENU until the System Menu is selected.
2. Press NEXT OPTN or PREV. OPTN until **Model = x-xxx** is displayed.
3. If you are satisfied with the current setting, you may exit menu mode without altering the setting by pressing:
 - STOP to return to Stopped condition.
 - START to return to Ready condition.

To select a new Model Number press:

- the UP or DOWN ARROW until the desired value is displayed. The available settings are listed below.

Summary of Model Numbers

Model #	Buffer Size
4	3440
5	3564
1	960
2	1920
3	2560

(Pressing CANCEL at this point will recall the previous default value.)

4. Press START to resume printing. The new setting will be in effect immediately upon exiting the menu.

Selecting a Language

The 7224 has the capability of printing up to 29 different languages. Your system and keyboard must support any language you select. This section gives a detailed list of the available language settings and how to select them.

Display	Meaning
English US	_____
English US1	_____
Austr/Germn	Austrian/German
A/Germn-Alt	Austrian/German Alternate
Danish/Norw	Danish/Norwegian
Dan/Nor-Alt	Danish/Norwegian Alternate
Fin/Swedish	Finnish/Swedish
Fin/Swd-Alt	Finnish/Swedish Alternate
French	_____
Italian	_____
Portuge-Alt	Portuguese Alternate
Spanish	_____
Spanish-Alt	Spanish Alternate
English UK	_____
Belgian	_____
Brazilian	_____
Japan Engl	Japanese English
Spanish Spk	Spanish Speaking
Internatl 5	International 5
Can Bi-Ling	Canadian Bilingual
Katakana	_____
Portuguese	_____
Swiss Bilng	Swiss Bilingual
French Azrt	French Azerty
Can French	Canadian French
Hebrew Engl	English
Hebrew-A	_____
Hebrew-B	_____
Hebrew Btin	Hebrew Bulletin

Checking/Changing the Current Setting

To view or change the current language setting:

1. Press STOP then MENU until you reach the System Menu.
2. Press NEXT OPTN or PREV. OPTN until Lang = xxxx is displayed.

Format Setting Descriptions

3. If you are satisfied with the current setting, you may exit menu mode without altering the setting by pressing:

- STOP to return to Stopped condition.
- START to return to Ready condition.

To select a new Language press:

- the UP or DOWN ARROW until the desired value is displayed.
(Pressing CANCEL at this point will return the setting to its previous default value.)

4. Press START to resume printing. The new setting will be in effect immediately upon exiting the menu.

Your 7224 can perform a number of basic printing functions in addition to printing in up to eight colors. Your printer can print with color without IBM color software. Just follow the directions below to use these functions. If you are using a system with IBM's Intelligent Printer Data Stream (IPDS) refer to the IBM "4224 Printer Product and Programming Description".

✦NOTE

A screen copy from a seven color display to the 7224 printer *usually* prints in those seven colors, but this is not guaranteed. The correct color selects must be present in your system to print seven colors. To determine if your system will support seven color printing, try a sample print before you begin a job.

How to Use color

To use color you must install the appropriate ribbon as described on pages 6-12 and follow the instructions in the specific local operating procedures written for your system. These operating procedures are different for each system.

The instructions given in the following paragraphs are for basic functions that you will perform by using the operator control panel on the 7224. If your instructions tell you to enable or disable color, follow the procedure listed below.

Enabling Color Printing

In the steps below it is assumed that the current setting is Disabled. To enable color printing:

1. Press STOP then MENU until you reach the LU3 menu.

■

LU3 Menu
Color = Disabled

 will display.

2. Press the UP or DOWN ARROW key until:

■

LU3 Menu
Color = Enabled

 will display.

(Pressing CANCEL at this point will recall the previous default value.)

3. Press START to resume printing. The new setting will be in effect immediately upon exiting the menu.

Printing With Color

Selecting Base Color When using the base color option, you have the choice of base color black, or base color green. This is controlled by the Base Color option in the LU3 Menu. If you want most of your text which is displayed in green on your screen to print in black, use base color black. This maintains ribbon life and allows you to use green, red, and blue with the rest of your program. If you want your text to be printed exactly like it appears on your display screen, use base color green. See the chart below for color displayed - vs - color printed.

Color Displayed	Color Printed	
	Base Color Black	Base Color Green
Green	Black	Green
Red	Red	Red
Blue	Blue	Blue
White	Green	Black
Turquoise	Turquoise**	Turquoise**
Pink	Pink**	Pink**
Yellow	Yellow**	Yellow**

*The correct ribbon must be installed to print the colors listed.

**These colors are only available when using a process ribbon and extended color.

To select a base color follow the steps below. It is assumed that the current setting is Black. To change the setting to Green, do the following.

1. Press STOP then MENU until you reach the LU3 Menu.
2. Press NEXT OPTN or PREV. OPTN until **Base Color = xxx x** is displayed.
3. Then, press the UP or DOWN ARROW until **Color = Enabled** is displayed. (Pressing CANCEL at this point will recall the previous default value.)
4. Press START to return to Ready. The newly selected value goes into effect as soon as you exit the menu.

**Color Printing
Checklist**

Check these things before you start printing with color.

1. Is a color ribbon installed? (NOTE: When an all black ribbon is installed, the color control codes are ignored, and everything is printed in black.)
2. Can your program control the selection of color on the ribbon?
3. Does your program instruct you to enable or disable base color? If it does, have you done so?
4. Are the color and base color option values correct for the desired base color?
5. Is the correct ribbon installed for the desired colors? (For example, eight colors can only be printed when the process ribbon is installed.)

Using Bar Code, Large Character Printing, and Graphics

The ISI 7224 has bar code, large character, and graphics printing capabilities using IBM IPDS (Intelligent Printer Data Stream), and APF (Advanced Print Function). If you are using a system with IPDS, refer to the IBM "4224 Printer Product and Programming Description". Supported bar codes and their corresponding print densities are listed below.

Variable Length Codes

There are a number of bar codes which can be printed in two or more print densities. These codes are printed at variable lengths. The codes and the CPI settings that they support are listed below.

Supported Bar Codes	
Code	Supported CPI Settings
3 of 9	3.0, 4.97, 6.1
MSI	6.0, 4.0
2 of 5 Industrial	5.54, 3.43
2 of 5 Matrix	8.0, 4.8
2 of 5 Interleaved	9.0, 5.33

Constant Length Codes

The remaining codes are all printed at 10.3 CPI. Each of these codes have a constant length. The codes and corresponding lengths are listed below.

Supported Bar Codes	
Code	Constant Length (in inches)
UPC-Version A	1.31
UPC - Version E	.70
EAN - 13	1.31
EAN - 8	.92
EAN Two Digit Add-On	.27
EAN Five Digit Add-On	.65
UPC-Magazine and Paperback, 2 Digit	.27
UPC- Magazine and Paperback, 5 Digit	.65

Chapter 5

Solving Printer Problems

Most of the problems you encounter during normal operation are called operational problems which you can fix quite easily. This section lists possible status messages and gives corrective actions. It also includes instructions on how to run printer diagnostics and how to place a service call.

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When a problem occurs, look at the status indicator to see if a message is displayed. Most messages include a number code which corresponds with IBM error messages. If a message is displayed, locate it in the left column, then, refer to the corresponding problem description and corrective action. If the problem can't be corrected by the suggested procedure, contact your service representative as described on page 94.

Status Messages

Message	Problem Description	Corrective Action
01 Paper Empty	The printer is out of paper.	Reload paper.
02 Paper Jam	Paper has jammed or misfed.	Clear jam and reload paper.
03 Remove Form	The LOAD/EJECT key has advanced a demand document form to the tear bar.	Press LOAD/EJECT. Paper will backfeed to print head.
06 Attention	The host has turned on the printer's alarm via SCS bell code or POLL-ALARM command.	Press STOP.
07 Order Reject	Invalid command received from host.	Send legal order.
08 Int Required/Stp	Intervention Required was returned to the host because the printer was Stopped for more than ten minutes.	Return printer to Ready.
27 No CU Signal	Communication to host has been interrupted.	Check coax cable connection.
28 Comm. Timeout	Control Unit has not enabled the printer.	Re-enable printer.
29 Link Not Established	No or bad serial cable, or serious serial problems.	<ul style="list-style-type: none"> ■ Connect and/or check serial cable connection. ■ Try to send a print. If message does not clear, call for service.
31 Int Required/PE	Intervention required was returned to the host because the paper out condition exceeded one minute.	Reload paper.
32 Int Required/PJ	Intervention required was returned to the host because the paper jam condition exceeded one minute.	Clear jam and reload paper.
59 Job Canceled	Print job was canceled by CANCEL key.	Next print with FSFIC (First Segment First in Chain) will clear the message and print.
60 Buffer Reprint	Buffer is being reprinted.	No action required. Cleared when reprint is complete.

(Continued)

Status Messages

(Continued)

Message	Problem Description	Corrective Action
61 PA1 Sent	PA1 is being presented to the controller.	No action required. Cleared when CU accepts PA1.
62 PA2 Sent	PA2 is being presented to the controller.	No action required. Cleared when CU accepts PA2.
63 Press PAX Key	Printer has been placed in SLU sendstate by an SSA command (alarm will sound).	Select and press a PA key. Message will be removed when a send state timeout occurs, or will be replaced when PA key is pressed.
Sys_err 100		Call your service representative.
Sys_err 101		Call your service representative.
Sys_err 102		Call your service representative.
Sys_err 103		Call your service representative.
Sys_err 104		Call your service representative.
Equip. Check	Equipment Check was returned to the host.	Power printer off for 5 seconds, then back on. If message does not clear, call your service representative
Testing	Printer is running a diagnostic test. Also displays momentarily when printer is powered on.	No action required. Message is cleared when test is complete.
Test xxx Failed	Diagnostic test failed. First line will read "Check".	Call your service representative.
Insert Cut Sheet	Printer is in manual cut sheet mode, but no cut sheet has been loaded.	Insert cut sheet.
Cover Open	Cover is open, and printing slows.	Close printer cover.
Head Jam	Head jam has occurred.	<ul style="list-style-type: none"> ■ Remove paper or any object jamming the print head. ■ Be sure shipping restraints have been removed.
Fault	A hardware failure has occurred; printer is inoperable.	Call your service representative.
	The display does not come on. There are a variety of causes for this problem. (i.e. blown fuse)	<ul style="list-style-type: none"> ■ Check the outlet you are using. ■ Check the power cord connection. ■ Call your service representative

Temporary Messages For some operating conditions a temporary error message is displayed for a short time to explain the error and guide the operator in correct usage of the printer. These messages use both lines of the display and are accompanied by the alarm sounding.

Temporary Messages

Message	Problem Description	Corrective Action
Remove Print Job Before Parking	A continuous forms "Park" was attempted before a completed print job was removed.	Remove the job, then park the forms.
Load Forms and Engage Tractors	A continuous forms "Unpark" was unsuccessfully attempted. Either tractors are still disengaged for cut sheets, or no continuous forms are loaded.	Reload continuous forms, and/or engage the tractors, then unpark the forms.
Disable Tractors Insert Cut Sheet	Displayed after paper is parked to remind the operator to switch to friction feed before inserting a cut sheet.	Disable tractors, then insert cut sheet.
09 Key Ignored	Invalid key actuation.	Cancelled when valid actuation is sent.
Park Cont Forms	Displayed if paper is detected in both paper paths when the LOAD/EJECT key is pressed.	Park continuous forms.

Selecting Diagnostics

In the event of a printer error, the following procedure should be followed to perform a printer diagnostic. These diagnostics may not mean much to you, but will be helpful when talking with service personnel. Eleven diagnostics are available. Six of these diagnostics are for testing IPDS. This section describes how to run a printer diagnostic and an IPDS diagnostic.

Printer Diagnostics

1. Press STOP then MENU until you reach the diagnostics menu.

■ ****Diags Menu****
Test: xxxx will display.

2. If you are satisfied with the current test setting, you may exit the menu mode without altering the current setting by pressing:

- STOP to return to Stopped condition.
- START to return to Ready condition.

To select a new test press the UP or DOWN ARROW until the desired setting is displayed. The available tests are listed below.

Summary of Tests	
Printer Tests	IPDS Tests
Vers/Status(default)	SAMPLE 7224
Print Setup	ISI KNUZE
Buffer Dump	PAT COLOR
Ribbn Align	BC ADDON
Horiz Align	COLOR
	PRINTER

(Pressing CANCEL at this point will recall the previous value.)

3. Press STOP to exit the menu and return to Stopped.

4. Next, press ALTERNATE to enter alternate mode.

■ **Alternate** will display.

5. Finally, press TEST and the printer will run the selected test and return to Stopped condition.

Re-Running a Test

To re-run the same test, press ALTERNATE, then TEST .

Aborting a Printer Test

If you wish to abort a lengthy, or continuous printer test *before* it is completed, simply press STOP. The test will be stopped and the printer will return to Stopped condition.

❖NOTE

Printer tests cannot be interrupted then continued. Once STOP is pressed the test is aborted immediately.

Interrupting an IPDS Test.

If you wish to stop a lengthy IPDS test *before* it is completed, press STOP.

■

Stopped Testing

 will display.

To resume the test, press START. When the test is completed, the printer will return to the Stopped condition.

Aborting an IPDS Test

If you wish to abort an IPDS test *before* it is completed, do the following:

1. Press STOP to interrupt the test.

■

Stopped Testing

 will display.

2. Press ALTERNATE to enter Alternate mode.

■

Alternate Testing

 will display.

3. Finally, press CANCEL to stop the test and return to Stopped condition.

Placing a Service Call

In the event of a printer error that cannot be solved by consulting the status message chart, you will need to place a service call. This section tells you who to call and what to tell them.

Who to Call

If your printer *is* under a service contract, call 1-800-331-0102 for prompt service. If you can not reach this toll free number, please call the backup number 215-296-2900. If your printer *is not* under a service contract, you must call Interface Systems, Inc. for service.

What to Tell Them

When placing a service call you should know the following items.

- the site ID number
- the printer's model number
- the contact person for the department and their phone number
- a description of the problem

It is also helpful if you have print samples which show the problem. To generate some print samples you may use the diagnostics. These tests may not mean much to you, but will be helpful when talking with service personnel.

Chapter 6

Serial Operation

Before you begin using the instructions in this section, your printer should be completely installed as described in Chapter 1. This section describes how to select serial operation. It also explains the differences between coaxial and serial operation, or refers you to the appropriate coaxial instructions.

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In addition to connecting the serial cable as described on page 14, you must also change hosts through the ALT. HOST key on the control panel. This section gives instructions on the change host procedure.

To change from coaxial operation to serial operation, do the following.

1. Press STOP.

■ **Stopped** will display.

2. Press ALTERNATE.

■ **Alternate** will display.

3. Then press ALT. HOST.

■ Printer does a power on reset.

■ ****ISI 7224****
<Power On Tests> will display momentarily

■ The print head moves to the right and back, and stops at the left side of the printer.

■ **Check**
01 Paper Empty will display if paper is not loaded. Press STOP to silence the alarm, then load paper.

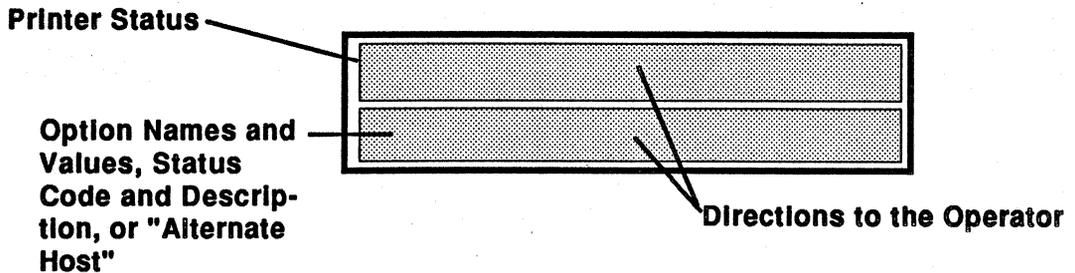
■ Once paper is loaded, press START

Ready
Alternate Host will display, and you are ready to print.

The 7224 is now in serial host mode. Perform the same procedure to return to 3270 coaxial mode.

Using the Serial LCD (Liquid Crystal Display)

You can monitor the operation of your printer by reading the various codes and messages displayed on the LCD. The LCD is located on the left end of the control panel. It shows printer status, options and their values, and directions to the operator. The different messages and their meanings are explained below.



First Line

The first line messages in serial operation indicate the printer status. Possible first line messages and their meanings are listed below.

Display	Meaning
Ready	Printer is ready to accept and print data from the host.
Check	Printer is unable to print, but has not been stopped. (See second line status for explanation or action.) Most keys are inactive.
Fault	A hardware failure has occurred making the printer inoperable. The keys are inactive and the printer will require service from qualified service personnel. This message is sometimes accompanied by a second line status message.
Stopped	Printer will not print data sent to it. The primary function assigned to the keys is active.
Alternate	Printer is stopped and the alternate function of certain keys is active. Pressing another key will terminate the alternate key mode.
...Menu	The first word is the name of the currently selected option menu.

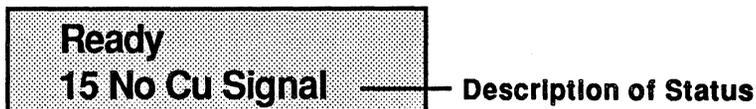
Using the Serial LCD (Liquid Crystal Display)

Second Line

The second line message will be **Alternate Host**, or will appear in different ways depending on which mode or operating condition the printer is in.

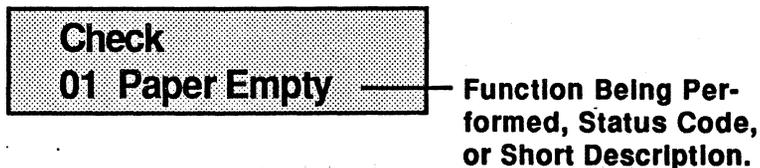
Display for Enable Mode

In enable mode, the first line of the display will read **Ready**. The second line will be blank, or display a short description of the status. Messages that may display are **15 No Cu Signal**, or **22 Not Selected**.



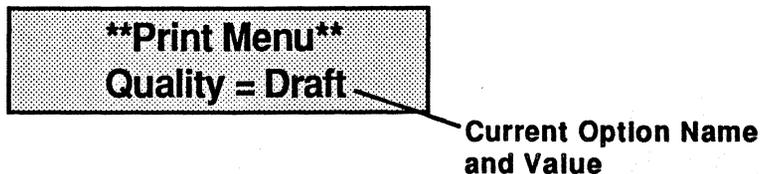
Display for Primary Mode

In primary mode, the first line of the display will read **Ready**, **Check**, or **Stopped**. The second line may read **Alternate Host**, explain a function being performed, or give a status code and a short description of the status. Some common second line messages include **Paper Empty**, **Paper Jam**, **Remove Form**, and **Testing**. You may also get a two line message which notifies you of an IPDS error. See page 79 for a complete list of messages.



Display for Menu Mode

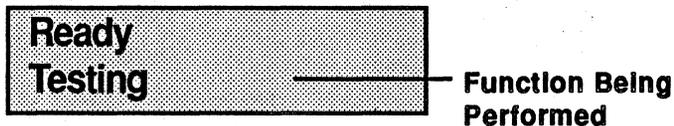
In menu mode, the top line shows the name of the current option menu. The current option and its value are displayed on the second line.



Using the Serial LCD (Liquid Crystal Display)

Display for Alternate Mode

In alternate mode, the top line displays **Ready** or **Stopped** and the second line displays the function being performed. Messages that may appear are **59 Cancel**, **Testing**, or **60 Buffer Print**. Once the function is performed the LCD returns to **Stopped**.



Temporary Messages

Some operator errors display a message for a short time to guide the operator in correct usage of the printer. These messages:

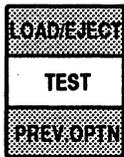
- use both lines of the display.
- are accompanied by a "beep" from the alarm.
- are removed after 3 seconds.

Possible temporary messages and their meanings are listed on page 90.

The control panel keys for serial operation are the same as for coaxial operation with the exception of the green alternate function keys. Refer to the information below for descriptions on the alternate function keys. Refer to pages 53 through 57 for all other key descriptions.

In serial alternate function mode you may use only the TEST, CANCEL, and ALT. HOST keys. The REPRINT, PA1, and PA2 keys are not active. You may use the STOP key to exit alternate function mode without performing the function.

Alternate Function Mode Descriptions



Causes the printer to run the Version/Status test. The printer will return to the Stopped condition immediately following the test. More tests may be added at a later date.



The cancel key has two functions. It can be used while in alternate mode, and while in the menu mode. In the alternate mode, pressing CANCEL will cause the printer to perform a partial POR reset which will clear any information in the data buffer, and reset all menu items to their factory defaults. While in the menu mode, pressing CANCEL will recall the previous default setting.



The alternate host key switches the active mode of the printer between 3270 coaxial operation and ASCII serial operation. The printer will appear to power off to the deactivated host and power on reset to the activated host.

Using the Serial Option Menus

The major difference between the serial and coaxial modes of operation is the menu. For all procedures involving the serial menu, refer to the information on the following pages. The serial menu is shown below.

Summary of the Serial Option Values

This section contains a list of all the option menus, the specific options, their available value choices, and the default values in the order they will appear on the LCD. The default values which determine how your documents will be formatted have been set at the factory. These set values will be selected automatically at each power up unless they have been changed as described on pages 103, 104. These are also the values you get when using the Factory Default option on the Diagnostic Menu.

The options and their defaults are listed in the order they are displayed on the LCD. Refer to the following pages for additional settings and instructions on how to check or change any of the settings listed below.

Summary of Option Values

Option Name	Selections	Default
Print Menu		
Quality	Draft, DP-Text, NLQ	Draft
Char/Inch	10, 12, 15, 16.5	10
Condensed	15, 16.5	15
Line Width	1-132 at 10 CPI 1-158 at 12 CPI 1-198 at 15 CPI 1-218 at 16.5 CPI	132
Lines/Inch	6, 8	6
Page Length	1-225	66
MPL Hopper 1*	1-225	66
MPL Hopper 2*	1-225	66
Mechanism Menu		
Hopper*	Top(1), Bottom(2)	Top (1)
Ribbon	Process, Black, Primary	Process
Alarm	Low, High, Off	Low
Pull Tractor**	No, Yes	No

(Continued)

*Appears only when ASF is attached.

** Does not appear when ASF is attached.

(continued)

Option Name	Selections	Default
Bidirection	On, Off	On
Save Rear TOF?	*	
Cut Sheet TOF?	**	
Hopper 1 TOF?	**	
Hopper 2 TOF?	**	
Set L/E Dist?	User Selectable	
System Menu		
Auto LF	On, Off	Off
Auto CR	On, Off	Off
Slashed Zero	No, Yes	No
FF Suppress	Off, On	Off
Lang	29 languages available, see page 79 for listing	PC Chr Set 1
ID	4224 ASCII, Proprinter	4224 ASCII
Port Menu		
Port	RS232-C, RS422-A	RS232-C
Baud Rate	300 600 1200 2400 4800 9600 19200	9600
Parity	None, Off, Even, Ignore	None
Pacing	XON/XOFF***, DTR Not Used	XON/XOFF
Report Stat	No, Yes	No
Link Recov	Stop, Host	Stop
Diagnostics Menu		
Test	Vers/Stat, Print Setup	Vers/Stat
Auto Dump On	No, Yes	No
Save Setup?*		
Factory Dlfts?*		

- * These options are activated immediately upon pressing the UP ARROW.
- **These options are activated immediately upon pressing the SET TOF key.
- *** When using RS422 port, the only available parity setting is XON/XOFF.

Changing Serial Default Values

In most cases you will want to use the factory default values. You may, however, change these values temporarily or permanently. To change a value temporarily, see "Changing Option Values Temporarily" on page 102.

Accessing the Serial Option Values

The options are accessed by placing the printer in the menu mode. While in the menu mode, you may use any of the keys printed in orange. This section tells how to access and check the current option values. It also gives instructions on how to change them temporarily or permanently.

Checking the Option Values

Each menu has a number of options to choose from. To scroll through the list of options to check an option value, do the following.

1. Press STOP.

■ Stopped
Alternate Host will display.

2. Press MENU to enter menu mode and select the desired option menu.

■ The selected menu will display.

3. Now press NEXT OPTN or PREV. OPTN to advance and reverse in the menu until the desired option is displayed.

■ The current menu, and the selected option and its current value will display .

4. If the desired value is selected, you may:

■ press START to return to Ready without altering the current setting, or

■ press STOP to return to Stopped condition without altering the current setting.

Changing Option Values Temporarily

To change an option temporarily, perform the instructions listed below. Please remember that temporary option changes *are not* saved when the printer is powered off.

1. Perform steps 1 through 3 above.

2. When you have located the option you would like to change press:

■ the UP ARROW key to advance to the next value.

■ the DOWN ARROW key to back up to the previous value.

■ the 1's, 10's , and 100's digits keys to select a specific numeric value for the Page Length and Line Length options. Only valid numerical values are displayed.

Accessing the Serial Option Values

3. When you have selected the desired option value you may press:
 - STOP to return to Stopped condition,
 - START to return to Ready condition, or
 - CANCEL to cancel the selection.

The new value goes into effect when you exit the menu.

●Example

To change the alarm volume from low to off, you would:

1. Press STOP.

■

Stopped Alternate Menu

 will display

2. Press MENU until you reach the Dual Host Menu.

■

Dual Host Menu

 will display.

3. Press NEXT OPTN. or PREV. OPTN. to locate the Alarm option.

■

Dual Host Menu Alarm: Low

 will display.

5. Next, press the UP ARROW or DOWN ARROW until "Off" is displayed.

6. Finally, press START to return to Ready. The new value will be in effect.

If after you pressed START, you realized you didn't want to change the alarm setting after all, you could do the following to change back to the previous setting.

1. Perform steps 1 through 4.
2. Then press the CANCEL key. The newly selected values will be lost and the previous default value will be in effect.
3. If you only want to change this one setting, access the desired option, change it back, then exit the menu.

Saving Individual Settings Permanently

If you use a specific setting other than a factory set default quite frequently, you may want to save the setting permanently by using the SAVE key. This user default will be the new power on default value until it is changed back to the original factory defaults by using the SAVE key or the Factory Default option.

Accessing the Serial Option Values

To set a value permanently do the following:

1. Select the desired option value.
2. Then, press SAVE. The value you have just selected is now the new default.
■ **Saved for POR** will display momentarily.
3. Press START to return to Ready condition.

Saving Multiple Settings Permanently

If you want to permanently save *all* the settings you have changed during a particular session, you may use the Save Setup option from the Diagnostics Menu.

To set all the values permanently follow the procedure below.

1. Make the desired changes in the option values.
2. Press the MENU key until you reach the Diagnostic Menu.
■ ****Diags Menu****
Test = xxxx will display.
3. Press the OPTION key to advance to the Save Setup option.
■ ****Diags Menu****
Save Setup ? will display.
4. Press the UP ARROW to immediately activate the Save Setup function
■ **Saved For POR** will display momentarily
■ **Save Setup?** returns when the save is complete.
5. Press START to return to Ready, or STOP to return to Stopped condition.

The settings you have just saved are now in effect and will be used at the next power on.

Restoring Factory Defaults

If you would like to return *all* option values to their original factory defaults but can't remember which values you have changed, you may use the Factory Defaults option from the Diagnostics Menu.

Perform the following steps to restore all option values to their factory defaults.

1. Press STOP.

■

Stopped Alternate Host

 will display.

2. Press the MENU key until you reach the Diagnostic Menu.

■

Diags Menu Test = xxxx

 will display.

3. Press the OPTION key to advance to the Factory Default option setting.

■

Diags Menu Factory Dflts ?

 will display.

4. Press the UP ARROW to immediately activate the Factory Default option setting.

■

Defaults Set

 will display momentarily.
■

Factory Dflts?

 will display when the save is complete.

5. Press START to return to Ready, or STOP to return to Stopped.

◆NOTE

This reset is only temporary. You must use the Save Setup option in the Diagnostics Menu to save the default settings for use at the next power on.

Serial Option Descriptions

The paragraphs below are brief descriptions of the available options. Additional descriptions and instructions can be found in the following pages or throughout the manual where necessary.

Print Menu

Quality= Draft

Sets the Print Quality. The available settings are draft, DP-text and Near Letter quality, DP-text is medium quality, and NLQ is the highest quality. The lower the quality print, the higher the print speed. See page 62 for details.

Char/Inch= 10

The Characters Per Inch (CPI) setting allows the operator to display and modify the print density. The available settings are: 10, 12, 15, and 16.5 CPI.

Condensed=15

The compressed setting allows the operator to select 15. or 16.5 CPI when compressed print has been selected in the data stream.

Line Width = 132

The Maximum Presentation Position (MPP) displays and allows the operator to select the maximum line width setting in the range of 1 to 225. Valid values are: 1-132 at 10 CPI, 1-158 at 12 CPI, 1-198 at 15 CPI, and 1-218 at 16.5 CPI.

Lines/Inch= 6

The Lines Per Inch (LPI) setting displays and allows the operator to select the number of lines to print per inch, 6 or 8 (3 or 4 respectively when using double spacing).

Page Length= 66

Sets the Maximum Page Length (MPL) and displays and controls the distance a form feed advances paper. The available MPL settings are in the range of 1-255.

MPL Hopper 1= 66

Sets the Maximum Page length (MPL) for hopper 1 (top) and displays and controls the distance a form feed advances paper. The available MPL settings are in the range of 1-255. See page 75 for details. This function displays only when the ASF is attached.

MPL Hopper 2= 66

Sets the Maximum Page length (MPL) for hopper 2 (bottom) and displays and controls the distance a form feed advances paper. The available MPL settings are in the range of 1-255. See page 75 for details. This function displays only when the ASF is attached.

(Values displayed represent the factory default value.)

Mechanism Menu

- Hopper = Top (1)** Cut sheets will be fed from the top (front) hopper of the optional automatic sheet feeder. Available settings are the top or front hopper, and the bottom or rear hopper. See page 130 for details. Hopper is displayed only if the auto sheet feeder is attached.
- Ribbon = Process** Tells the printer the type of ribbon installed. The available selections are Black, Process, and Primary. This setting is overridden if there is a black ribbon installed. The black ribbon is solid black, the process ribbon is yellow, cyan (turquoise), magenta (pink), and black, and the primary ribbon is red, yellow, blue, and green. See page 76 for details.
- Alarm = Low** Allows the operator to display and set the volume of the alarm. Settings are Low, High, and Off.
- Bldirection = On** The 7224 prints in both directions (left-to-right, and right-to-left). When Off is selected, the printer will print from left-to-right only. The Off setting is used when precise registration is required.
- Save Rear TOF?** Allows the operator to permanently save the rear TOF setting. This allows the operator to resume printing at the set TOF after doing a park function. This function is activated immediately upon pressing the UP ARROW key. See page 29 for details.
- Pull Tractor = No** Tells the printer whether the optional pull tractors are installed or not. Available settings are No and Yes. See page 22 for details on selecting the Pull Tractor option.
- Cut Sheet TOF?** Allows the operator to set the top of form for cut sheets. Refer to page 45 for details.
- Hopper 1 TOF?** Allows the operator to set the TOF for hopper 1. To save this setting, you must use the SAVE key. See page 65 for details.
- Hopper 2 TOF?** Allows the operator to set the TOF for hopper 2. To save this setting, you must use the SAVE key. See page 65 for details.
- Set L/E Distance?** Allows the operator to alter the load eject distance so no forms are wasted when tearing individual forms at the perforation. See page 31 for details on this forms saving function.

Serial Option Descriptions

System Menu

Auto LF = Off

An Auto Line Feed is performed each time a carriage return is detected in the data stream when the setting is On. The available settings are On, and Off.

Auto CR = Off

A Carriage Return is performed any time a line feed is detected in the data stream when the setting is On. The available settings are On, and Off.

Slashed Zero = No

The zero will be printed with a slash if the setting is on. The available settings are On, and Off.

FF Suppress = No

If your paper is at TOF and no data is in the buffer to print, the printer ignores form feeds. The printer honors all form feeds when On is selected. The available settings are On, and Off.

Lang = PCChrSet 1

Sets the language set to the selected country/language. There are 19 language settings available. See page 116 for a detailed listing. Your system and keyboard must support any language you select.

ID = 4224 ASCII

Identifies which IBM printer you want emulated. The available settings are 4224 ASCII (default) and Proprinter.

Port Menu

❖NOTE

Before changing settings in the Port Menu consult your Systems Manager about what settings are compatible with your operating system.

Port = RS232-C

Tells what type of serial port you are connecting to. The available settings are RS232-C and RS422-A.

Baud Rate = 9600

The baud rate is dependent on cable lengths, and the speed of the systems. The baud rate determines how fast the data can move between the printer and the host. The available settings are 300, 600, 1200, 2400, 4800, 9600, 19200.

Parity = Even

Is a communication protocol which determines whether the checksum is odd or even. The available settings are None, Odd, Even, and Ignore.

PacIng=XON/XOFF

Sometimes called "handshaking", tells the printer when it can receive data when the printer buffer is almost full. The available settings are, XON, XOFF (Only setting available for use with the RS422-A, DTR (Data Transmission Ready), and Not Used.

Report Stat = No

Report Status tells the computer what is wrong with the printer if errors are present. The available settings are No and Yes.

Link Recov = Stop

Link Recovery allows you to clear a link error in two different ways. The available settings are Stop which allows you to clear the error through the front panel, and Host • which enables a break sequence which allows you to clear an error.

Diagnostic Menu

Test = Ver/Status

Selects the test to be run when the TEST key is pressed. More tests may be added at a later date.

Auto Dump On=No

Activates a print dump to the printer. This dump generates diagnostic information along with a print which is used to report and diagnose errors. Users are often requested to send a dump to service personnel for error diagnosis. The available settings are Yes and No.

Save Setup?

Saves user selected option settings as defaults. This setting is activated immediately upon pressing the UP or DOWN ARROW key. When the function is complete, the setting returns to "?".

Factory Dflts?

Resets all options to their factory defaults. This setting is activated immediately upon pressing the UP or DOWN ARROW key. When the reset is complete, the value returns to "?". This setting is only temporary. You must use the SAVE key to save the factory defaults as the new power on defaults.

Serial Format Setting Descriptions

The previous section gave brief descriptions of all the option selections. In some cases additional explanations are necessary and are covered throughout the manual for specific applications such as saving individual and multiple option settings permanently, others are self explanatory. The following paragraphs include additional instructions on various options that are not covered in other sections.

◆NOTE

All values set in the following examples are temporary and will not remain once the printer has been powered off. To set these values permanently see pages 103,104.

Selecting Print Quality

The Print Quality option allows you to select draft, DP-text, or near letter quality printing for your various printing applications. The lower the quality print, the higher the print speed. For example, draft is often used for printing quick drafts for internal use, DP-text is used for things such as internal correspondence and reports, and near letter quality is used for proposals, external reports and correspondence, or any time you want to make the best impression possible. NLQ and DP-text are also recommended for jobs where a higher registration is required. See the chart below for recommended print speeds.

Char/Inch Setting	Print Speed (in cps)		
	Draft	DP-Text	NLQ
10	400	200	100

Checking/Changing the Current Setting

To view the current Print Quality setting:

1. Press STOP then MENU.

■ ****Print Menu ****
Quality = xxx x will display.

2. If you are satisfied with the current setting, you may exit menu mode without altering the setting by pressing:

- STOP to return to Stopped condition.
- START to return to Ready condition.

To select a new Print Quality press:

- the UP or DOWN ARROW key until the desired value is displayed. (Pressing CANCEL at this point will recall the previous default values.)

3. Press START to resume printing. The new setting will be in effect immediately upon exiting the menu.

Selecting Line Width

Line Width, sometimes called the MPP or maximum presentation position, sets the point at which the printer will “break” a very long line and continue it on the next line. This setting is variable and should be changed to correspond with the current Char/Inch setting. The factory default setting is 132 character positions (including spaces) for 10 characters per inch.

Checking/Changing the Current Setting

To view or change the current Line Width setting:

1. Press STOP then MENU.

■ ****Print Menu **** will display.
Quality = xxx

2. Press NEXT OPTN or PREV. OPTN until **Line Width = xxx** is displayed.

3. If you are satisfied with the current setting, you may exit menu mode without altering the setting.

- STOP to return to Stopped condition.
- START to return to Ready condition.

To select a new Line Width press:

■ the digit keys until the desired value is displayed. The various line widths which correspond with the available CPI settings are listed below:

- 1 to 132 at 10 CPI
- 1 to 158 at 12 CPI
- 1 to 198 at 15 CPI
- 1 to 218 at 16.5 CPI

(Pressing CANCEL will recall the previous default value.)

4. Press START to resume printing. The new setting will be in effect immediately upon exiting the menu.

Serial Format Setting Descriptions

Selecting Lines/Inch The Lines/Inch option determines the number of lines per inch to print, 6 or 8. When Lines/Inch is changed, the page length may also be changed to correspond with the new line spacing.

❖NOTE

When changing Lines/Inch, it is assumed that you are at top of form. If you specify double spacing along with a setting of 6 LPI, you will actually get 3 Lines/Inch.

Checking/Changing the Current Setting

To view the current Lines/Inch setting you would:

1. Press STOP then MENU.

■ ****Print Menu **** will display.
Quality = xxx

2. Press NEXT OPTN or PREV. OPTN until **Lines/Inch = x** is displayed.

3. If you are satisfied with the current setting, you may exit menu mode without altering the setting by pressing:

- STOP to return to Stopped condition.
- START to return to Ready condition.

To select a new Lines/Inch setting press:

- the UP or DOWN ARROW key until the desired value is displayed. (Pressing CANCEL at this point will recall the previous default value.)

4. Press START to resume printing. The new setting will be in effect immediately upon exiting the menu.

Selecting Page Length and Hopper MPL

You can select a three digit page length, sometimes called MPL or maximum page length, of 1 to 112 for regular printing or printing with the optional sheet feeder. The factory default setting is 66. The page length setting is variable and should be changed to correspond with the current line spacing.

Determining Line Count for New Page Length

To determine the number of lines to select for your new page length, you must consider three things:

- the length of the form in inches
- the number of lines you want printed per inch (6 or 8 — 3 or 4 respectively, for double spacing)
- the line spacing you want (single or double)

Once you determine these values, multiply the forms length by the desired Lines/Inch setting.

●EXAMPLE

In this example the forms length is 11 inches (279.4 mm), the Lines/Inch setting is 6, and the spacing is single. Multiply the forms length by the Lines/Inch to get the new page length value of 66 (i.e. $11 \times 6 = 66$). For double spacing, multiply the page length by 3 (i.e. $11 \times 3 = 33$).

Checking/Changing the Current Setting

To view or change the current Page Length setting:

1. Press STOP then MENU.

■ ****Print Menu **** will display.
Quality = xxxx

2. Press NEXT OPTN or PREV. OPTN until **Page Length = xxxx** is displayed.

3. If you are satisfied with the current setting, you may exit menu mode without altering the setting by pressing.

- STOP to return to Stopped condition.
- START to return to Ready condition.

Serial Format Setting Descriptions

To select a new Page Length press:

- the digit keys until the desired value is displayed. (Pressing CANCEL at this point will recall the previous default value.)

4. Press START to resume printing. The new setting will be in effect immediately upon exiting the menu.

●EXAMPLE

To select a new page length setting of 088, we will assume that the physical form length is 11 inches (279.4 mm), and that 8 Lines/Inch and single spacing is already set. To select this setting:

1. First press STOP and MENU.
2. Press NEXT OPTN or PREV. OPTN until **Page Length** displays in the LCD.
3. Enter the page length value as a three digit number by using the appropriate digit keys. Your entry (88) will be displayed in the LCD.
4. Press START to resume printing at the new setting.

The printer is back in primary function mode and will select the value you have just set. This value is temporary and will not remain once the printer has been powered off.

Selecting Ribbon Type

◆NOTE

Color printing in serial operation is not available at this time.

The model 7224 uses three different ribbons: solid black, primary, and process. Ribbon type selection is necessary when changing between ribbons. Listed below are a few general facts to consider when using the different ribbons.

- **Solid Black Ribbon** - When a black ribbon is installed, only black will print. Using an all black ribbon is the fastest method of printing for the 7224.
- **Primary Ribbon** - With a primary ribbon installed, the printer acts like a four color printer and may print in red, blue, green, and black. Each color requires one pass of the print head, thus a single line could require up to four passes. For this reason, color printing is slower than solid black printing. For example, a line with four colors requires four passes of the print head to complete.

■ **Process Ribbon** - The process ribbon is cyan, magenta, yellow, and black. With this ribbon installed, the printer can print in eight colors if directed to do so. Four of the eight colors are produced by printing one color over another (overprinting). These colors require two passes of the print head to complete. The maximum amount of passes for any one line is four. Lines requiring all four passes become more frequent when using eight colors, thus it is considered the slowest of the three ribbons to use. As a general rule, the more colors you use, the longer it will take to complete a job. One pass colors are: turquoise, pink, yellow, and black. Two pass colors are: red, blue, green, and brown.

◆NOTE

Multicolored ribbons will last longer if they are not used for non-color jobs. It is advisable to use a solid black ribbon for these jobs.

To select the ribbon type do the following:

1. Press STOP then MENU until the Mechanism Menu is selected.
2. Press NEXT OPTN or PREV. OPTN until **Ribbon = xxxx** is displayed.
3. If you are satisfied with the current setting, you may exit menu mode without altering the setting by pressing:
 - STOP to return to STOPPED condition.
 - START to return to READY condition.

To select a new Ribbon type press:

- the UP or DOWN ARROW until the desired value is displayed. (Pressing CANCEL at this point will recall the previous default value.)
4. Press START to resume printing. The new setting will be in effect immediately upon exiting the menu.

Selecting a Language

The 7224 has the capability of printing up to 19 different languages. Your system and keyboard must support any language you select. This section gives a detailed list of the available language settings and how to select them.

Serial Format Setting Descriptions

Available Language Settings	
Display	Meaning
PC Chr Set 1	Personal Computer Character Set 1
PC ChrSet 2	Personal Computer Character Set
PC Multiling	Personal Computer Multilingual
Multiling	Multilingual
USA/Can	USA/Canadian
Austr/Germn	Austrian/German
Belgian	_____
Brazilian	_____
Can/French	Canadian/French
Danish/Norw	Danish/Norwegian
Fin/Swedish	Finnish/Swedish
French	_____
Italian	_____
Japan/Engl	Japanese English
J.Katakana	Japanese Katakana
Portuguese	Portuguese
Spanish	_____
English UK	_____
Hebrew	_____

Checking/Changing the Current Setting

To view or change the current language setting:

1. Press STOP then MENU until you reach the System Menu.
2. Press NEXT OPTN or PREV. OPTN until **Lang = xxxx** is displayed.
3. If you are satisfied with the current setting, you may exit menu mode without altering the setting by pressing:
 - STOP to return to Stopped condition.
 - START to return to Ready condition.

To select a new Language press:

- the UP or DOWN ARROW until the desired value is displayed.
(Pressing CANCEL at this point will recall the previous default value.)

4. Press START to resume printing. The new setting will be in effect immediately upon exiting the menu.

Printing With Color

Not available at this time.

**Using Bar Code,
Large Character
Printing, and Graphics**

Not available at this time.

Selecting Serial Diagnostics

In the event of a printer error, follow the directions below to perform printer diagnostics. There are two diagnostics available. These are listed below.

Printer Diagnostics

1. Press STOP then MENU until you reach the diagnostics menu.

■ ****Diags Menu****
Test: xxxx will display.

2. If you are satisfied with the current test setting, you may exit the menu mode without altering the current setting by pressing:

- STOP to return to Stopped condition.
- START to return to Ready condition.

To select a new test press the UP or DOWN ARROW until the desired setting is displayed. The available tests are listed below.

Summary of Serial Diagnostics

Vers/Status (default)

Print Setup

(Pressing CANCEL at this point will recall the previous value.)

3. Press STOP to exit the menu and return to Stopped.

4. Next, press ALTERNATE to enter alternate mode.

- Alternate will display.

5. Finally, press TEST and the printer will run the selected test and return to Stopped condition.

Re-Running a Test

To re-run the same test, press ALTERNATE, then TEST.

All the status messages listed on pages 87-89 will appear in serial operation. There are a number of additional status messages that will also appear.

Status Messages		
Message	Problem Description	Corrective Action
24 Parity Mismatch	<ul style="list-style-type: none"> ■ Baud rate of printer and computer do not match. ■ Communications problem possible if rates do match. 	<ul style="list-style-type: none"> ■ Make sure the baud rates match, then end current print job. ■ Call for service.
25 Parity Mismatch	<ul style="list-style-type: none"> ■ Parity of printer and computer do not match. ■ Communications problem possible if parity does match. 	<ul style="list-style-type: none"> ■ Make sure the parity selections match, then send job again. ■ Call for service.
26 Receive Buffer Overrun	<ul style="list-style-type: none"> ■ Computer or application program continued sending data even after the printer buffer became full. 	<ul style="list-style-type: none"> ■ Correct the error in the application then send print job again.

There are also a number of IPDS error messages. These messages can be cleared from the LCD by pressing STOP, then START. You must still remove the error from your application program, or it will show up on the LCD the next time you run that job.

IPDS Error Messages	
Code	Message
A80	OVERLAY CYCLICAL
A84	FONT INCOMPATIBLE
A86	OUT OF STORAGE
A87	CHAR. HEIGHT INCOMPATIBLE
A88	CHAR. WIDTH INCOMPATIBLE
A8C	PAGE LENGTH INVALID
A8E	IMAGE DATA EXCESS
A96	OUTSIDE OF RIGHT MARGIN
A97	BAR CODE INVALID CHAR
A98	OVERSTRIKE LEFT OVRFLW
A99	OVERSTRIKE RIGHT OVRFLW
A9A	DATA LOSS NEW TOF
A9B	OVERLAY INVALID ID
A9C	BAR CODE UPC-E FORMAT

Serial Status Messages

(Continued)

Code	Message	Code	Message
A8F	IMAGE DATA INSUFFICIENT	A9D	BAR CODE MST CHK DIG
A90	INVALID OPERATION	AA0	GRAPHICS COUNT FIELD
A91	BACKWARDS MOVE	AF0	GRAPHICS INVALID MODE
A92	OVERLAY NOT DEFINED	AF2	GRAPHICS IMAGE FORMAT
A93	INVALID ORDER LENGTH	AF5	GRAPHICS MAP REQUEST
A95	OUTSIDE OF LOGICAL PAGE	AF6	GRAPHICS MAP OFFSET

Serial Control Codes and Escape Sequences

The 7224 can be programmed to perform various printing functions by sending escape sequences and control codes through the data stream. The supported codes and sequences are listed on the following pages.

Control Codes

Control Code commands begin with the control command sequence prefix 'X'1B5B', followed by the code and length fields. The control code command prefix enables the printer to accept the data that follows it as an advance printer command. The chart below lists the supported control codes.

Description	Hex Code
Set Presentation Highlights	40
Begin Overstrike	41
Begin Underscore	42
End Overstrike	44
End Underscore	45
Set Single Line Density	4A
Set Initial Conditions	4B
Set Foreground Color	4D
Set Presentation Page Size	50
Set Presentation Position	51
Initialize Local Font	59
Set Local Character Set	5A
Delete Local Font(s)	5B
Set Vertical Units	5C
Graphic Segment List	5F
Bar Code	60
Segment	61
Overlay	62
Graphic Mapping Control	70
Read Printer Status	73

One Byte Control Codes

The chart below lists the supported one byte control codes.

Code	Description
Nul	Null
BS	Backspace
HT	Horizontal Tab
LF	Line Feed
VT	Vertical Tab
FF	Form Feed
CR	Carriage Return

(Continued)

Serial Control Codes and Escape Sequences

(Continued)

Code	Description
SO	Shift Out (Double Width Printing)
SI	Shift In (Condensed Printing)
DC2	Set 10 CPI
DC4	Cancel Enlarge Print Line Mode

Escape Sequences

All escape sequence commands begin with the special hex code 'X'1B'. This code indicates the beginning of an escape sequence, and prepares the printer to accept the data byte(s) that follow as a printer command. The chart below lists and defines the supported escapes.

Code	Description	Code	Description
ESC-	Continuous Underscore	ESC I	Select Print Font
ESC 0	1/8 Inch Line Spacing	ESC J	Relative Vertical Move
ESC 1	7/72 Inch Line Spacing	ESC N	Begin Skip Perforation
ESC 2	Start Text Line Spacing	ESC R	Set All Tabs to Power On Settings
ESC 5	Automatic Line Feed	ESC S	Begin Subscript or Superscript Printing
ESC:	Set 12 CPI	ESC T	End Subscript or Superscript Printing
ESC A	Store Text Line Spacing Printing	ESC W	Continuous Double Width
ESC B	Set Vertical Tabs in Lines	ESC X	Set Horizontal Margins
ESC D	Set Horizontal Tabs	ESC_	Continuous Overscore
ESC E	Start Emphasized Print		
ESC F	End Emphasized Print		
ESC G	Begin Double Strike Print		
ESC H	End Double Strike Print		

Appendix

This section includes miscellaneous information which will not be used very often in the daily operation of your printer. It includes special tips on the care and cleaning of your printer, and instructions for print head removal. It also covers paper specifications, and the installation and forms loading for the automatic sheet feeder option.

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It is easy to keep your printer looking and operating like new if you follow a regular cleaning routine.

Clean the printer as follows being careful not to damage the electronic and mechanical components.:

- Use a neutral detergent or water solution on a soft cloth to clean dirt and grease from the cabinet of your printer.

□WARNING

Do not use an abrasive cloth, alcohol, paint thinner, or other similar agents because they can cause discoloration and scratching.

- Use a soft brush to remove dust and dirt from the internal parts such as the print head and carriage assembly.

You may also perform a brief inspection of the printer by removing the top cover and looking inside for loose wires, connectors, and hardware, chafing of cables, or worn or damaged parts.

Replacing the Print Head

If your printer is missing dots in characters, printing lighter, making a line through characters, or simply stops working, you may need to replace the print head. The instructions below tell how to replace the print head.

Before replacing the print head make sure that:

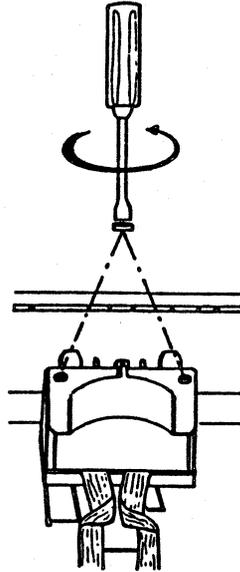
- The printer is powered off.
- The printer has not been printing for at least 15 minutes.

Refer to the illustration on the following page and follow this sequence:

1. Remove the ribbon cartridge see pages 11-12.

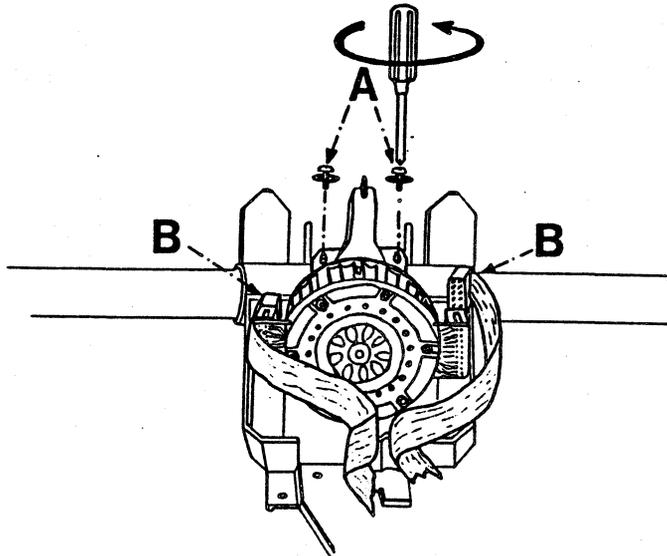
Cleaning and Maintenance

2. Unscrew the two screws on the cover of the print head and lift the cover off.



3. Unscrew the two screws on the print head (a), lift the print head and disconnect the two connectors at either side of the print head (b).

4. Replace the print head by performing the previous actions in reverse order.



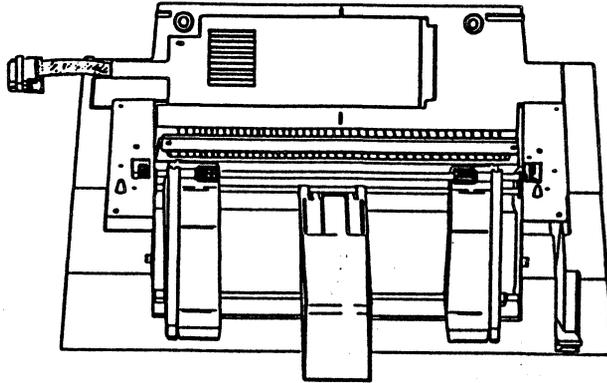
When the hoppers are attached, various menu items which apply only to the use of the sheet feeder will appear. Those items in the menu which do not apply to ASF operation will disappear. The following instructions tell you how to attach the sheet feeder, load paper, and select hoppers. When you are attaching the hoppers, the printer must be powered Off.

Attaching the ASF

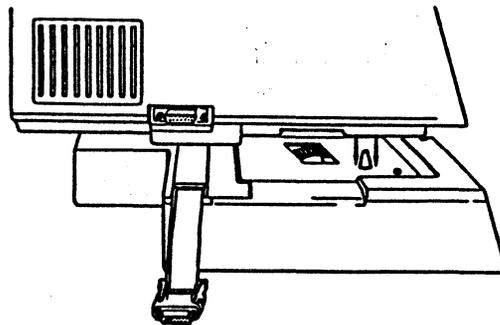
Attaching the optional automatic sheet feeder (ASF) is easier if you have more than one person to lift and center the printer on the pins.

Attaching Hopper 1

1. Place the ASF in the position previously chosen for your printer. Make sure that the connection cable, on the left rear side of the ASF is laid outwards.

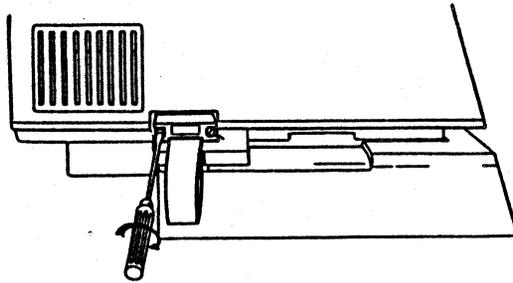


2. Place the printer on top of the ASF with the front of the printer aligned with the front side of the ASF, making sure that the pins on the bottom right and left sides of the ASF are correctly inserted into the printer.



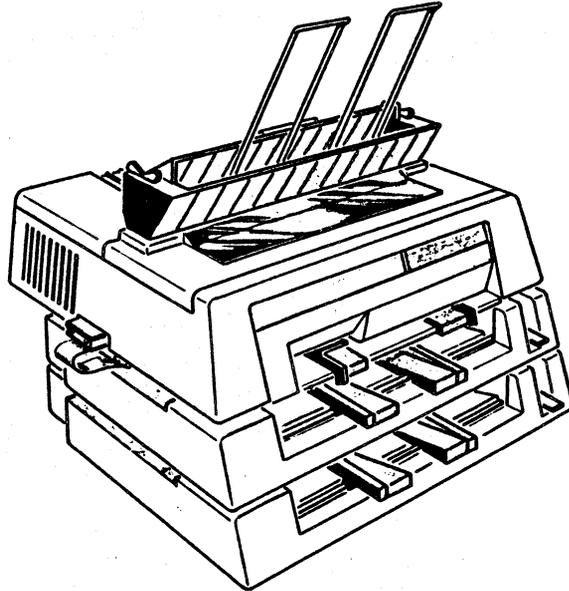
Appendix B The Automatic Sheet Feeder

3. Insert the ASF cable connector into the connector on the printer.



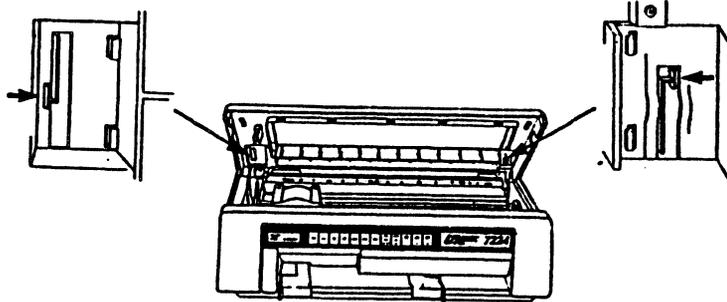
Attaching Hopper 2

To attach hopper 2, repeat steps 1 and 2 on the previous page using the second hopper.

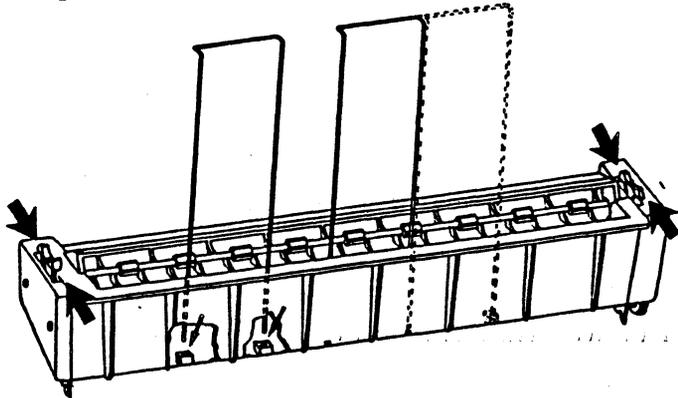


Attaching the Output Stacker

1. Remove the two plastic covers on each side of the front cover.



2. Squeeze together the two sprung levers on the left and right sides of the output stacker.
3. Insert the clips straight down into the long slots on the front cover making sure the input sorter is in the front.
4. Release the levers. When correctly installed, the output stacker is flush with the top cover and immobile.



Inserting the Paper Input Sorters

Insert the two paper sorters in their correct positions: the left paper sorter must be placed in the leftmost position, while the right paper sorter can be adjusted according to the paper width. To insert do the following:

1. Insert the input sorter into the holes on the bottom of the paper output stacker between the left and the right paper guides, to support the paper being inserted. Refer to the illustration on the facing page.
2. Clip the input sorter into position. When inserted correctly, the sorters should be immobile.

Selecting Hoppers

Hopper selection and deselection is controlled through the data stream with ISI's specially designed escape codes, or manually through the control panel. Parameters can be set for each bin through the control panel as well.

Menu Selection

With the optional sheet feeder attached, you may feed paper from two different hoppers. To choose the hopper you want through the front panel follow the directions below.

❖NOTE

Always load paper before selecting the hopper.

To change the current hopper setting from top (1) to bottom (2):

1. Power the printer on. The printer is now ready to feed and print sheets from the default hopper when data is received from the host computer. The factory default hopper is the top (1) hopper. We will assume this is the default hopper for this example.

2. Press STOP then MENU until you reach the Mechanism Menu.

■

Mech. Menu
Hopper = Top (1)

 will display.

3. Press the UP ARROW or DOWN ARROW until

Hopper = Bottom(2)

 is displayed. Pressing CANCEL at this point will recall the previous default value.

4. Press START to return to Ready condition. The newly selected value goes into effect as soon as you exit the menu.

Data Stream Selection

The hoppers may also be selected through the data stream. To select a particular hopper during a print under control of the host program, you may use the sheet feeder header sequence. This header sequence is &%H and must be the first three characters of any sheet feeder line. The automatic sheet feeder hopper selection escape codes are: &%H1 (Hopper 1), &%H2 (Hopper 2).

❖NOTE

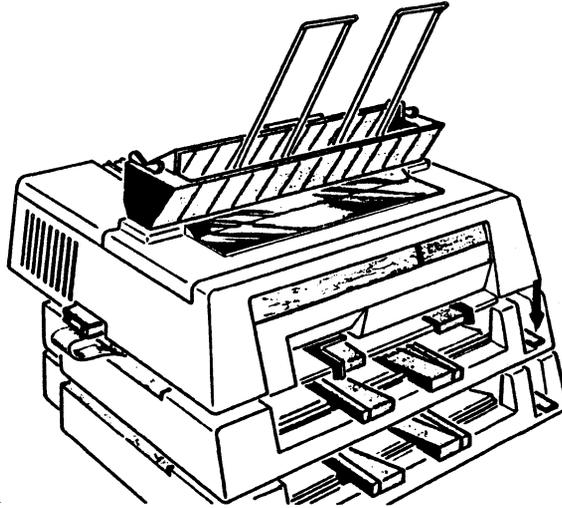
These data stream selects will override the menu selections. If the sheet feeder is not attached, the escape sequences will be accepted, but will not have any affect on printing.

The Automatic Sheet Feeder

Loading the ASF

Make sure the correct hopper MPL has been selected as described on page 78, then do the following. Also, please note that the best mechanical operation occurs when Line Width is set to cut sheet paper size for 10 CPI prints.

1. Make sure that the drive selection switch is positioned to Friction.
2. Raise the lever on the right side of the ASF to facilitate paper insertion.
3. Adjust the right paper guide to the width of the paper.
4. Insert the stack of blank paper between the two paper guides and release the lever by lowering it. The printer is ready to print on cut sheets loaded with the ASF.



5. To load a cut sheet from the selected hopper, press the FORM FEED key once.

◆NOTE

If you try to load paper from the ASF with fanfold inserted, pressing FORM FEED only causes the fanfold paper to advance and jam. It is necessary to insert the cut sheet into the front paper entry slot and press PARK to move fanfold paper backward until it no longer covers the paper empty sensor. Remove the cut sheet. Put drive selection switch in the Friction position. Press FORM FEED to load from ASF. Fanfold paper will not advance and a cut sheet will be loaded from the Automatic Sheet Feeder.

The Automatic Sheet Feeder

Selecting TOF for Hopper 1 and 2

To set the top of form for hopper 1 and hopper 2, make sure the correct hopper is selected, for example, if you are setting Hopper 1 TOF, be sure Hopper 1 is selected on the menu, then do the following.

1. Press STOP
2. Press the MENU key until the Mechanism Menu is displayed.
3. Now press NEXT OPTN until **Hopper x TOF?** is displayed.
4. Press the UP ARROW to automatically load the paper to the tear bar.
 - **UP Key to Set TOF to Activate** will be displayed.
5. Once the paper is at the tear bar, use the arrow keys to set the desired TOF.
6. Next press SET TOF to activate the new TOF
 - **Top of Form Set** will be displayed momentarily.
 - The currently loaded form will be ejected.
7. Press STOP to exit.

To verify the selected TOF press FORM FEED or LOAD/EJECT to load the paper to the newly selected TOF. Then press SETUP to print a line of "H's", and press LOAD/EJECT to eject the page.

This setting is only temporary. To save this setting permanently use the SAVE key as described on page 67. If you will be saving more than one TOF setting, use the Save Setup option in the Diagnostics Menu as described on page 67.

Resuming Use of Cut Sheets

To resume use of cut sheets while the ASF is still attached do the following.

1. If necessary, press LOAD/EJECT to eject the last page loaded by the ASF.
2. Insert the cut sheet into the front slot.
3. Then, press LOAD/EJECT again to load the page.

To change back to using the ASF:

1. If necessary, press LOAD/EJECT to eject the last page printed.
2. Press the START key to return to Ready condition.

The printer will then assume ASF mode and load a sheet from the selected hopper when data is received.

Resuming Use of Fanfold Forms

To resume use of fanfold forms while the ASF is still attached and fanfold forms are in the rear tractors:

1. If necessary, press LOAD/EJECT to eject the last page loaded by the ASF.
2. Turn the drive selection switch to Tractor.
3. Press the paper load lever to load paper into the printer.

To change back to using the ASF:

1. Tear off printed pages.
2. Park the fanfold paper using the PARK key.
3. Turn the drive selection switch to Friction.
4. Press START to return to Ready condition.

The printer will assume ASF mode and load a sheet from the selected hopper when data is received.

The Automatic Sheet Feeder

Sheet Feeder Specifications

Single Bin

Packaging (ASF + Paper Stacker)

Overall dimensions: 33.00 x 24.00 x 1.02 in.
840 x 620 x 280 mm.

Weight: 22.48 lbs
10.2 Kg (gross)

Physical ASF Dimensions

Height: 3.15 in (80 mm)
Depth: 16.16 in (410 mm)
Width: 25.19 in. (640 mm)
Weight: 12.12 lbs (5,500 Kg)

Physical Paper Stacker Dimensions

Height: 3.54 in. (90 mm)
Depth: 3.93 in (100 mm)
Width: 22.00 in (560 mm)
Weight: 2.204 lbs (1 Kg)

Paper Bin Capacity: 130 sheets (80 gr/m²)

Paper Stacker Capacity: 80 sheets recommended (80 gr/m²)

Paper Dimensions:

	A5	A4	A3
Overall	8.26x5.78 in 210x148 mm	8.26x11.69 in 210x297 mm	11.69x16.53 in 297x420 mm
Weight	2.5 ozs/sq ft 70 gr/mq	2.8 ozs/sq ft 80 gr/mq	3.5 ozs/sq ft 100 gr/mq

(Above data is valid for all three formats)

Dual Bin

Packaging (ASF + Paper Stacker)

Overall Dimensions: 33.00 x 24.00 x 22.04 in
840 x 620 x 560 mm

Weight: 43.39 lbs
19.7 Kg (gross)

Physical ASF Dimensions

Height: 3.54 in (90 mm)
Depth: 3.93 in (100 mm)
Width: 22.00 in (560 mm)
Weight: 2.204 lbs (1 Kg)

Paper Dimensions:

(Valid for 1st bin)

	A 5	A 4	A 3
Overall	8.26x5.78 in 210x148 mm	8.26x11.69 in 210x297 mm	11.69x16.53 in 297x420 mm
Weight	2.5 ozs/sq ft 70 gr/mq	2.8 ozs/sq ft 80 gr/mq	3.5 ozs/sq ft 100 gr/mq

(Above data is valid for all three formats)

(Valid for 2nd bin)

Overall	Length:	9.00 in (230 mm) min.
Dimensions	Width:	16.53 in (420 mm) max.
Weight	Same as for 1st bin	

Environmental Conditions:

Operating Temperature: 10 to 40 C
50 to 104 F

Relative Humidity: 40 /80%

**Paper Specification
for Single Sheets,
Multi-Part Forms**

The following specifications should be adhered to in order to assure reliable ASF operation. Paper not conforming to the listed specifications may be used, however, the results cannot be guaranteed. All out-of-specification forms should be tested prior to regular use. Most paper is sensitive to temperature and humidity conditions and the performance of the paper in the ASF and printer may be adversely affected due to extremes in these conditions.

**Paper Type
and Quality**

- Plain bond, typewriter quality paper with a light wood pulp content should be used for optimum performance.
- Papers which should be tested prior to use are:
 - Paper with medium to high wood pulp content
 - Very light or heavy paper
 - Papers with a textured, embossed or glossy surface, or a "hammered" type paper.
- Paper must be well cut and in pristine condition with no creases, surface or edge damage. It has to be flat, not curled or curved. Inspect and "fan" the paper before loading into the feeder.

The Automatic Sheet Feeder

Tolerances: Since variable length paper may be used in the ASF, only width is specified. The paper width tolerance in the same stack is 0.002" (0.5 mm). Paper must be cut orthogonal (90 degrees) and the deviation may not be greater than 3 angular minutes.

**Paper storage recommend-
ation** 64 F - 75 F
18 C - 24 C
40 %- 60 % relative humidity.

❖Note

The paper must stay in this condition at least five hours before using.

Paper weight: Single sheets 15-25 lbs/sq ft \ 70 - 100 gr/mq.

The recommended stationary for use in the ASF is 80 (2lbs/sq ft) (gr/mq), plain bond paper with minimal ground wood content.

Multi-part forms present special consideration because of their complexity. Adherence to tolerances and environmental conditions are more critical than single sheets. The width tolerances and storage conditions specified for single sheets apply also for multi-part forms. There are many different types of multipart forms available. Use only snap-out or top-glued forms. Form sets must be tested prior to regular use.

Snap Out Forms:

(Pressure sensitive paper max 4 copies)

First sheet	17.5 - 20 lbs/sq ft (70 - 80 gr/mq)
Copies	10 - 17 lbs/sq ft (40 - 60 gr/mq)
Last Sheet	17.5 - 20 lbs/sq ft (70 - 80 gr/mq)

(carbon sets max 3 copies)

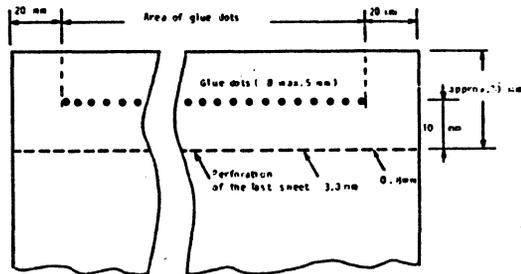
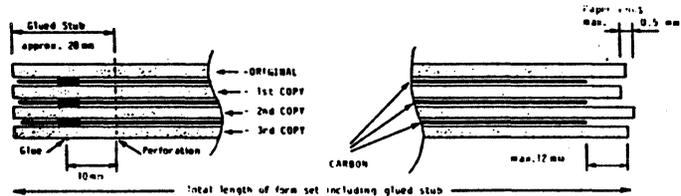
First Sheet	17.5 - 20 lbs/sq ft (70 - 80 gr/mq)
Copies	8.75 - 10 lbs/sq ft (40 - 60 gr/mq)
Last Sheet	17.5 - 20 lbs/sq ft (70 - 80 gr/mq)

The uncoated surface of the carbon paper has to be rough.

Snap-out perforation hole ratio to paper:

First sheet	7: 0.8
Copies	7: 0.8
Last Sheet	3: 0.8

Alternatively, microperforation can be used. (Recommendation 72 dots/inch)



The diagram illustrates the recommended snap-out multi-part form construction.

The under side of the last page in the multi-part form must have a surface within a smoothness range of 18 to 30 Bekk or 140 to 180 Sheffield.

With single sheet paper this tolerance range is from 10 to 60 Bekk or 90 to 250 Sheffield.

Top glued multi-part forms

The top edge must be flat smooth and free of wrinkles and any glue vestiges. Experience has shown that for top glued form sets, last sheet must be cut with the grain (paper fibers orientation); all other sheets must be cut against the grain.

An unglued section: .7" (20 mm) wide, must be left as a margin on each side.

Paper surface smoothness: (Air-leak smoothness methods).

Printing method	Bidirectional with logic seeking.
Print head	18 needles (2 rows of nine needles each).
Print matrix	
Draft	9 x 10
DP-Text	9 x 20
NLQ	18 x 20
Numbers of columns:	132 at 10 cpi 162 at 12 cpi 202 at 15 cpi 225 at 16.5 cpi
Printing speed (at 10 CPI):	
Draft	400 cps
DP-Text	200 cps
NLQ	100 cps
Character spacing:	10, 12, 15, or 17.1 cpi
Line spacing:	3, 4, 6, or 8 lpi
Character set	IBM character sets: US EBCDIC, 20 international, APL, OCRA, OCRB
Quality font	Courier 10
Graphics capabilities:	
Resolution	144 x 144 dpi
	Graphics, bar codes, and large characters via IBM's Intelligent Printer Data Stream

Appendix C Specifications

Page format:

Form length selection	Selectable via software or option menu.
Tabulations	Up to 198 (at 15 CPI) horizontal tab stops may be defined. Up to 127 vertical tab stops can be set for each of the 12 VFU channels available.
Vertical spacing	1/6, 1/8, 7/72, n/72, n/144, n/216 inch 3, 4, 6, 8, 12 lines for 30 mm.

Paper handling:

Paper type	Single sheet and/or fanfold paper.
Single sheet loading	Semi-automatically through the front paper entry slot. Automatically with the Twin-Bin Automatic Sheet Feeder.
Fanfold loading	Semi-automatically with the tractors.

Paper width:

Fanfold paper	3 to 17.5 in. wide (7.6 to 44.4 cm)
Single sheet	4.7 to 117.1 in. wide (11.9 to 43.1 cm) 4 to 17 in. high (10.2 to 43.1 cm)

Paper length:

Fanfold paper	Minimum 8 inches
Single sheet	Minimum 4 inches

Paper tear off distance:

0 inches with load/eject.

Paper out condition: At end of page.

Paper out condition: At end of page.

Number of copies:

Fanfold and single sheets One original plus 5 carbon copies.

Color Printing: Using an appropriate ribbon cartridge (Black, Process, Primary)

Electricity: 120/220 VAC, 50/60 Hz

Maximum AC power consumption: 200 W

Average power dissipation: 125 W printer, 40 W idle

Acoustic Level: 53.7 dBA printing, silent when idle

Environmental Conditions:

Temperature 50 to 104 F (10 to 40 C) operating, -40 to 151 F (-40 to 66 C) storage

Relative humidity 40% to 60% (no condensation) operating, 8% to 80% (no condensation) storage

Physical dimensions:

Height 7.1 in. (180 mm)
Width 24.9 inches (632 mm)
Depth 16.1 inches (410 mm)
Weight 44 lbs. (20 kg)

Revisions

Description	Page	Ver.	Rev.
Preliminary Release			9/25/87
General Revision. Included revision of paper loading section and changing Line Length to Line Width, and 17 CPI to 16.5 CPI. A variety of other small changes were also included.	II,VII,7,13,16,18 19,22,26,27,33, 35-39,49,50,53, 58-65,67-70,84	2/16/88	3/10/88
General Revision. Included revision of paper loading section, addition of Load Eject distance function. Also added some Serial information.		4/30/88	5/18/88
Added the MPL Hopper 1 and 2 option to the menu.	63, 64, 69-72, 77, 78	4/30/88	6/9/88
Added coax menu changes for saving TOF, replaced feed type option with pull tractor menu option also some general revisions.		7/17/88	6/29/88
Added &% escape codes including bar codes and Large Character printing.	145-164	8/5/88	8/88
Removed revisions made on 8/5/88. They will be included on an as needed basis.	145-164	8/29/88	8/88
Made revisions and additions in the serial menu, general revisions of paper loading and ribbon loading, minor additional revisions also made.		9/29/88	9/9/88
General revisions and addition of the Horiz Align test.	IX, X, 5, 50, 61, 62, 71, 73 90, 96, 98, 107, 111, 112	10/19/88	10/7/88