Documax

A6300 Series

User's Manual

Part No. 107052

Rev. B

Datasouth Computer Corporation

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This binder contains the User's Manual. If you would like to order related publications, fill in the appropriate information below and fax or call the Service/Parts number listed above:

[ ]Programmer's Manual (Part No. 104629).....$45.00

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Please fill in the blanks below so that we may provide you with the correct information:

Name _____

Company Name _____

Business Address _____

City _____State _____Zip_____

Business Phone _____Fax No. _____

***Important Information**

***Printer Serial No. _____Date of Purchase _____**

***Firmware Option (Run a "Print Profile") _____**

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Chapter 1:.....Installation and Start Up

1.1 Introduction

This dot matrix impact printer provides high-speed performance, plus a rugged, round-the-clock duty cycle, and flexibility to handle a number of printing applications.

Feature Highlights:

- Straight through paper path for optimum forms handling.
- Eighteen wire ballistic printhead and flat metal print platen to assure legibility on every copy.
- Demand document printing.
- Automatic Form Thickness adjustment.
- Forms parking and reloading at the touch of a key.
- Ten user-defined profiles for quick forms set up.
- Paper path selection by profile selection, downline command or active interface.
- Emulations: Epson FX, DEC LA 120, IBM Graphics, IBM Proprinter XL, DS-180.
- Automatic voltage select power supply.
- Ribbon Life Monitor feature that tracks ribbon usage.
- Options:
    a. Second pin feed paper path
    b. Cut sheet paper path
    c. IBM Coax, IBM Twinax interfaces, Ethernet, Token Ring
    d. Quiet cover set
    e. Barcodes

1.2 Quick Start Up Procedure

The following is an abbreviated installation and start up procedure provided for users who are already familiar with printer products. If you are not experienced with printers, follow all of the instructions in Chapter 1 for setting up printer.

1. Place the printer on a suitable stand or countertop.

CAUTION

ENSURE THAT FRONT RUBBER FEET ARE AT LEAST ONE INCH FROM THE EDGE OF THE TABLE.

2. Install ribbon cartridge following the instructions on the box.
3. Attach the power cord.
4. Turn printer on.
5. Position left tractor with Alignment mark on printer. Position front paper guides and rear paper supports equally across the width of the form. Load 8.5" paper in tractors.
6. Press the Load key (or insert a cut sheet).
7. Open the Keypad Door to enter Setup Mode.
8. Use the Quick Access key, the Value ▲▼ keys, and the Enter key to set margins.
9. Close the Keypad Door.
10. Press the Profile key to save settings.

CAUTION

IMPROPER MARGIN SETTINGS CAN LEAD TO PRINTHEAD DAMAGE! DO NOT PRINT OFF THE EDGE OF THE FORM.

11. Press the Feature ▲ key to display "Self Test".
12. Press the Enter key.

Press the Enter key to start the self-test. Press the Enter key or close the Setup Door to stop the self-test.

1.3 Unpack The Printer

Remove the following from the shipping carton:

- Dot Matrix Printer

- Ribbon Cartridge
- Power Cord
- Accessory Kit
  - User's Manual
  - Three-Ring Binder
  - Warranty card

If any items are missing, please contact your distributor. Save the shipping carton and all packing materials. These items will be needed in the event the printer must be shipped.

CAUTION

SHIPPING THE PRINTER IN ANY CONTAINER OTHER THAN ITS ORIGINAL PACKAGING MAY RESULT IN SHIPPING DAMAGE AND MAY VOID THE PRINTER WARRANTY.

1.4 Choosing A Place For The Printer

The printer weighs approximately 45 pounds. Its dimensions are:

- 17.0 inches (431 mm) wide x 15.7 inches (398 mm) deep x 12.3 (312 mm) inches high (Dual tractor, top roller versions).

- 17.0 inches (431 mm)wide x 15.7 inches (398 mm) deep x 11.3 inches (287 mm) high (Standard model).
- 17.0 inches (431 mm) wide x 16.7 inches (424 mm) deep x 12.3 inches (312 mm) high (Cut Sheet model).

Location

1. To permit air flow and proper cooling, do not place anything closer than 2 inches (50mm) to the printer.
2. Allow 6 inches to the right of the printer for access to the Form Thickness Adjustment knob.
3. For continuous printing and accumulation of forms, allow sufficient room behind the printer for cables and stacking forms.
4. Place the printer on a sturdy level surface and align lower front edge of printer with table edge. The feet should be at least one inch from the edge of the table.
5. Locate the printer near a grounded power receptacle and use the power cord provided. Do not use an extension cord to connect the printer.
6. Avoid the following:
   - Direct sunlight or excessively illuminated areas
   - Direct placement in front of air conditioning or heating vents
   - Extreme high or low temperatures
   - Exposure to excessive dirt or dust
   - Exposure to vibration or mechanical shock
   - Excessive humidity or condensation

1.5 Printer Parts

Four basic models of the printer are available.

- Standard straight tractor paper path with standard access cover.
- Straight tractor paper path with top roller set and sound reduction access cover.

- Dual tractor path (straight and 45º alternate path) with top roller set and sound reduction access cover.
- Straight tractor path and cut sheet (Friction Feed) path with top roller set and sound reduction access cover.

Use the following illustrations to locate the major printer parts for each model. The standard model is used to illustrate most of the procedures in this manual.

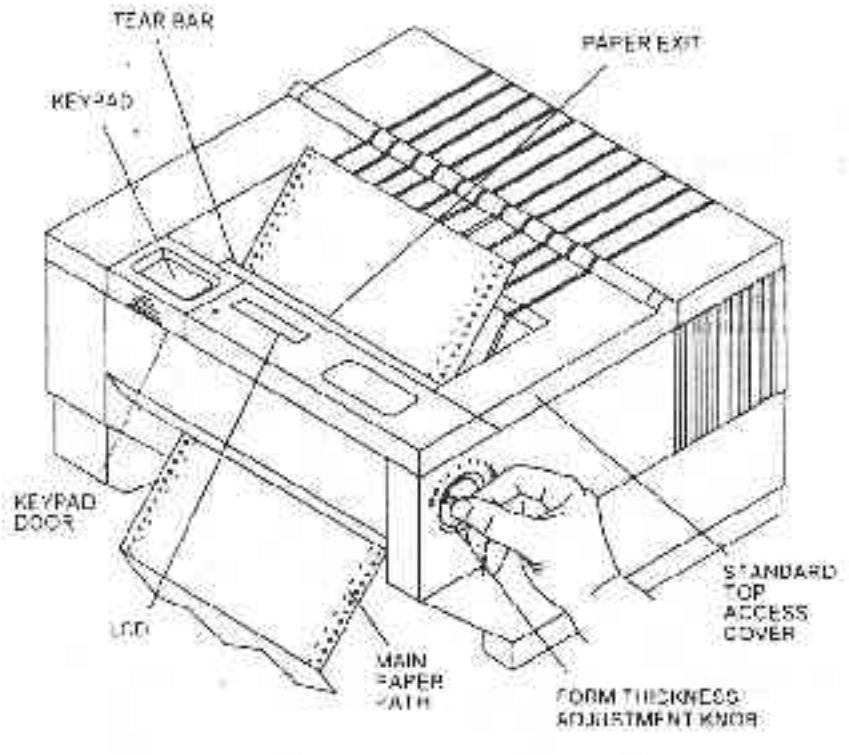


Figure 1-1. External Printer Parts (Standard Model)

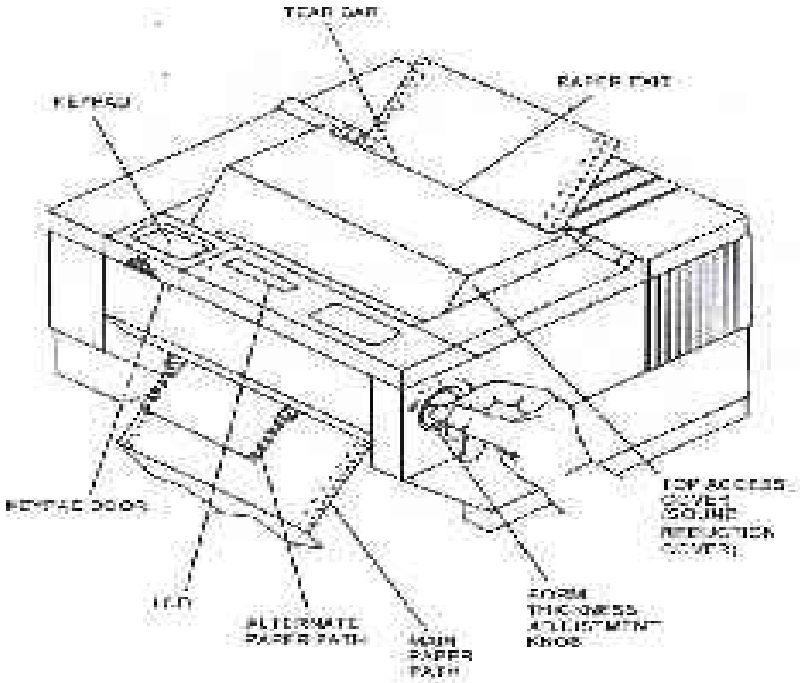


Figure 1-1. External Printer Parts (Dual Path And Sound Reduction Access Cover)

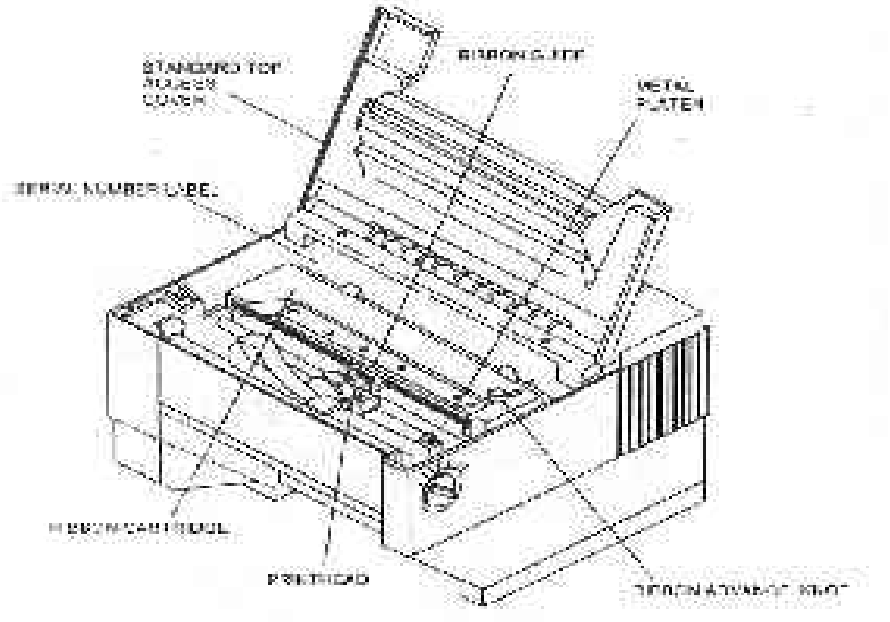
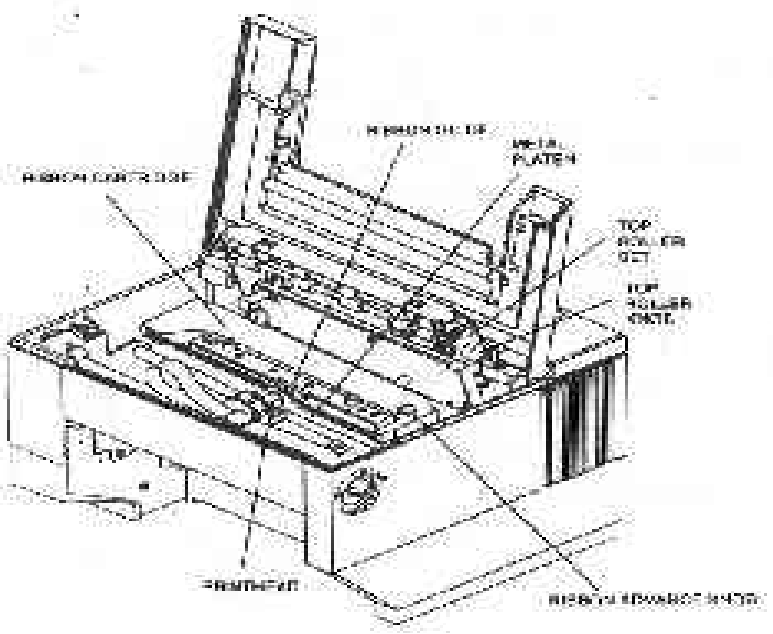


Figure 1-2. Internal Printer Parts (Standard Model)



Note: Keypad assembly is not shown in order to identify printhead.

Figure 1-2. Internal Printer Parts (w/ Top Roller Option)

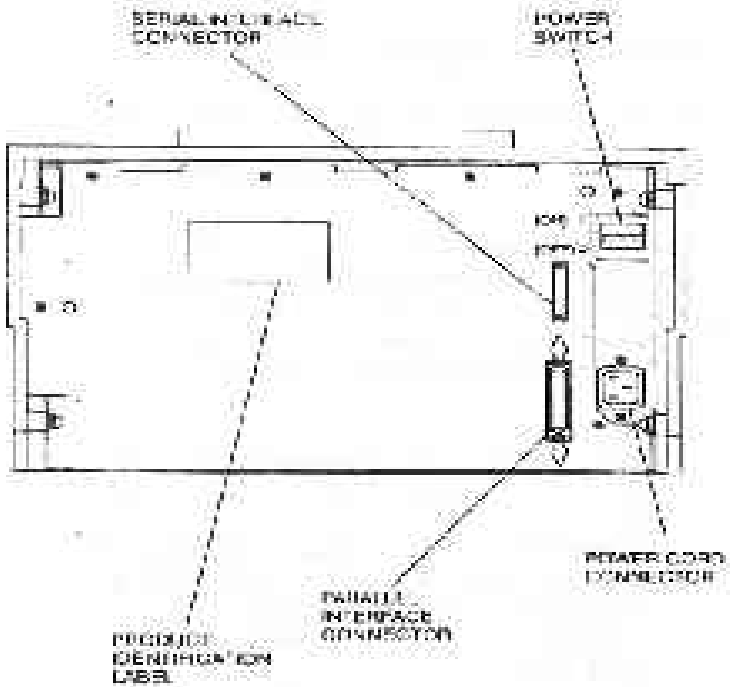


Figure 1-3. Back Printer Parts (All Options)

1.6 **Install The Power Cord**

1. Set the power switch to Off. (See Figure 1-4).

2. Install the power cord into the printer as shown in Figure 1-4.

3. Install the plug end of the power cord into a grounded AC outlet. A grounded outlet **must** be used. Plugging the printer into an ungrounded outlet may result in increased radio frequency noise generation, erratic printer operation, or electrical shock.

CAUTION

CONNECTING THIS EQUIPMENT TO AN UNGROUNDED POWER RECEPTACLE CAN RESULT IN ELECTRICAL SHOCK.

4. Set the power switch to ON. The alarm will sound 3 short tones and the printer will display:

Paper Out: Main

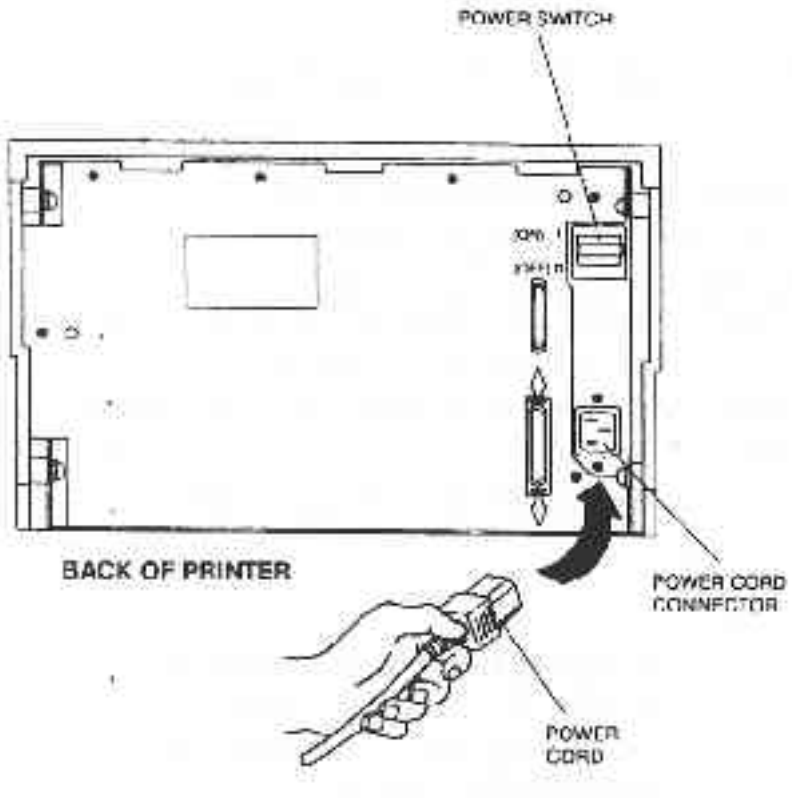


Figure 1-4. Install Power Cord

1.7 **Install The Ribbon Cartridge**

To prolong ribbon life, the printer is shipped without the cartridge installed. The following procedure is written for both initial installation and ribbon replacement.

This printer is equipped with a Ribbon Life Monitor Feature that tracks ribbon usage. When the ribbon life reaches its set limit, the LCD will indicate a “Check Ribbon” or “Replace Ribbon” status. For detailed information on this feature refer to Appendix E.

1. Press the On/Off Line key to display "off line" status.

Note

If paper is loaded, press PARK key to park the form in the tractors. The ribbon cartridge cannot be installed if paper is loaded.

2. Open top access cover and lift roller assembly on models so equipped as shown in Figure 1-5.

   The display will indicate:

< Cover Open >

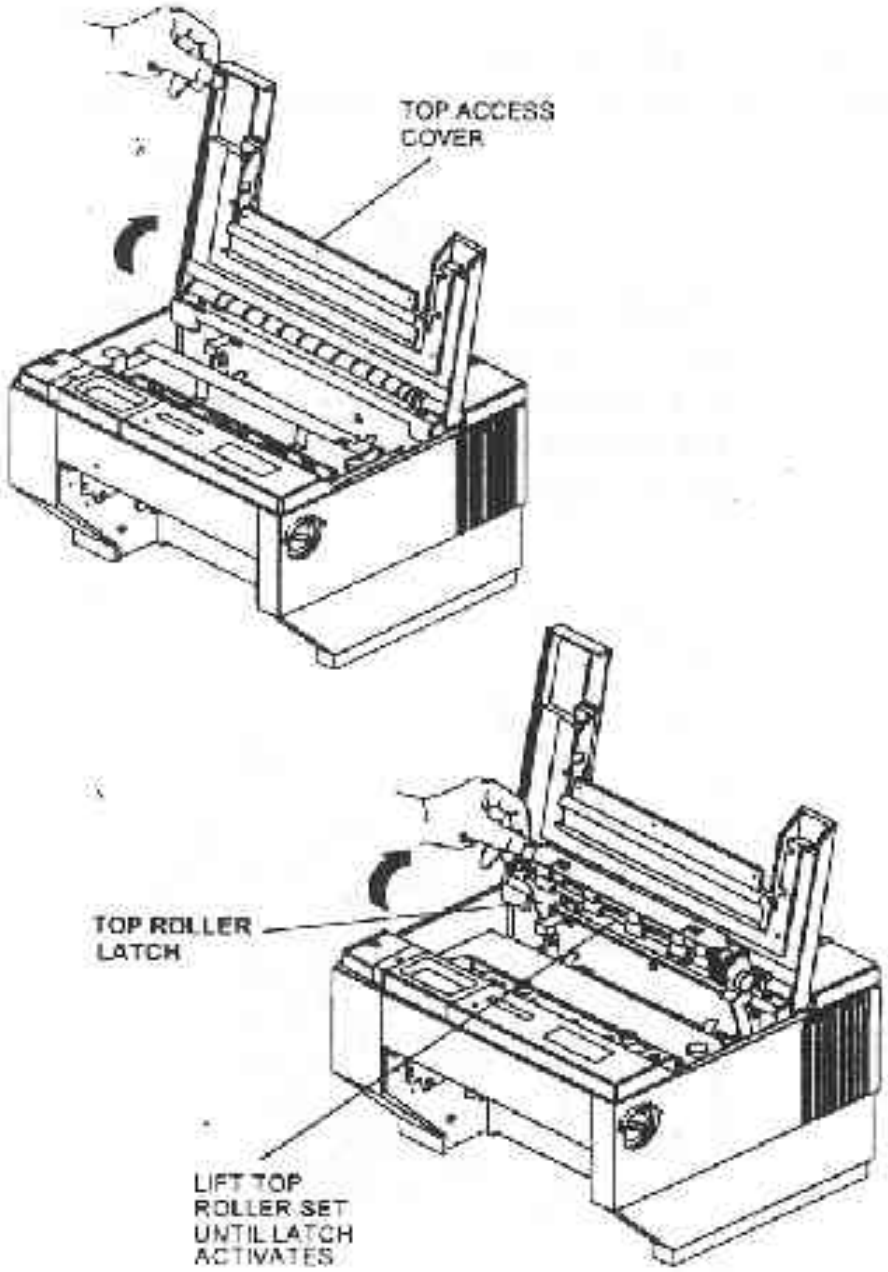


Figure 1-5. Open Access Cover (Both Options)

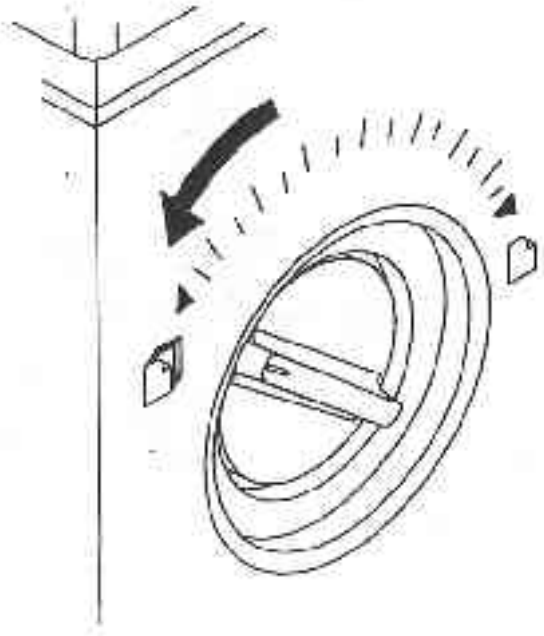
3. Check the Form Thickness Adjustment Knob to be sure that it is in the first

NOTE

When replacing the ribbon, the Form Thickness Adjustment Knob will automatically move away from the form when the paper is parked in the tractors.

position as shown in Figure 1-6.

Figure 1-6. Form Thickness Adjustment Knob



Note

Steps 4 and 5 are not required for initial ribbon installation.

4. Remove the ribbon guide from printhead (lift up and rotate towards front).
5. Remove ribbon cartridge from printer.

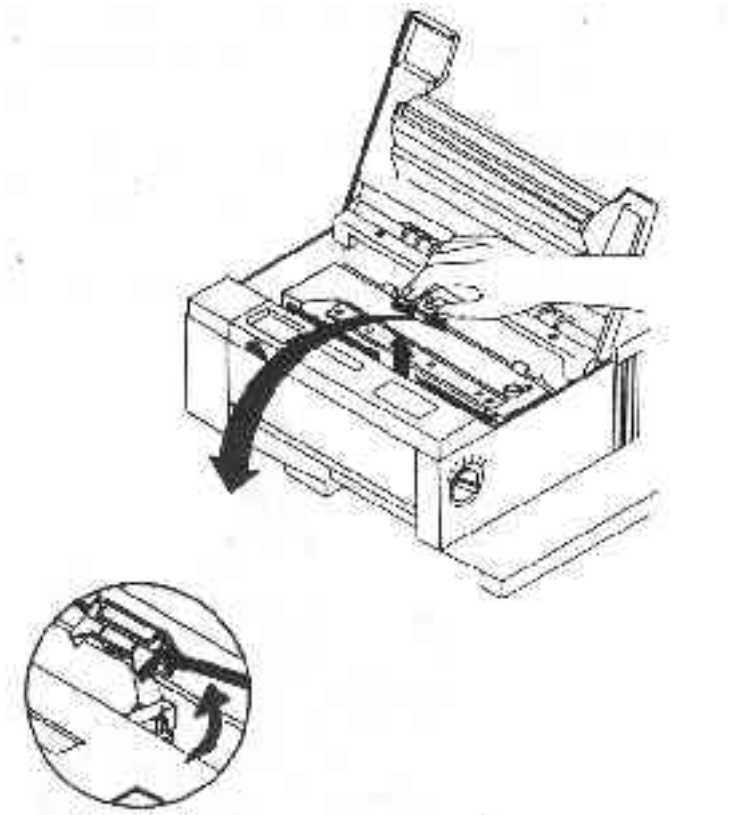


Figure 1-7. Remove Ribbon Guide

WARNING

PRINTHEAD GETS HOT DURING OPERATION. USE CARE WHEN HANDLING THE PRINTHEAD.

6. Move the printhead to the center of the printer.

7. Remove slack from the ribbon by turning the blue knob on the cartridge in the direction shown by the arrow on the knob.

8. Lower ribbon cartridge towards slots in printer. Ensure that ribbon loop is in front of platen and that ribbon is not twisted.

9. Drop the ribbon cartridge into the ribbon alignment slots.

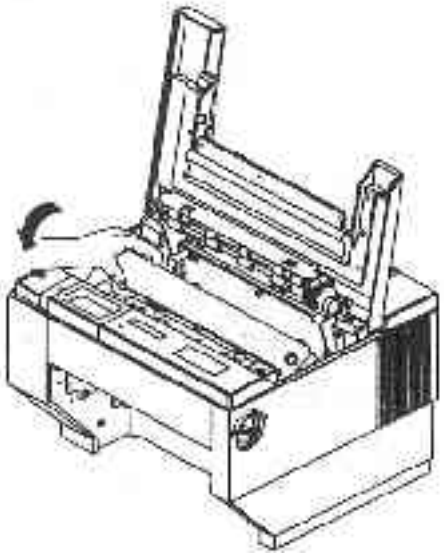


Figure 1-8. Position Ribbon Cartridge In Printer

10. If the ribbon cartridge does not seat squarely on the ribbon drive, rotate the Ribbon Advance Knob in the direction indicated by the arrow on the knob until the cartridge drops into place on the ribbon drive.

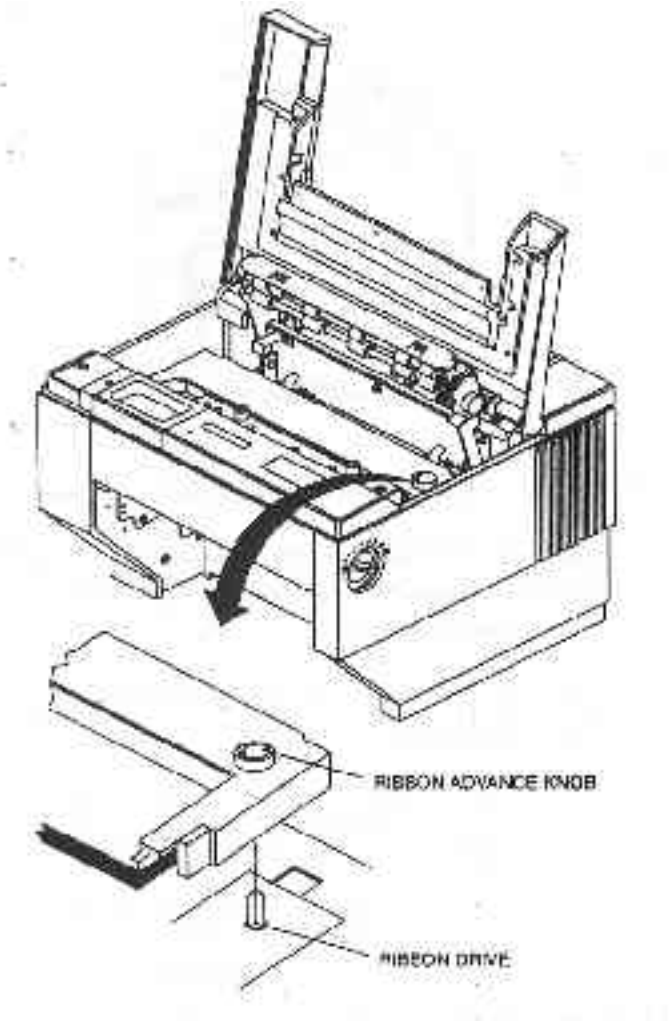


Figure 1-9. Install Ribbon Cartridge

11. With ribbon guide tilted to front of printer, place the guide on printhead nose. Push down on ribbon guide until it snaps into place.

Figure 1-10. Install Ribbon Guide

12. Remove any slack from the ribbon by turning the Ribbon Advance Knob in the direction of the arrow marked on the knob.

13.Close the top access cover. The display alternates the following message:

Ribbon Replaced?

Y=Profile N=Onln

14 Press the Profile key to indicate a new ribbon was installed.

1.8 Printer Self Test

This test is used to verify printer operation. Before performing the printer self-test, refer to Section 3.3 *Load Forms* page 3-3 for instructions on loading paper in the printer.

To start the test:

CAUTION

MARGINS ARE SET FOR 8.5" (OR 80 COLUMN) PAPER. PRINTING OFF OF FORM WILL LEAD TO PRINTER DAMAGE.

1. Load 8.5" forms.
2. Open the Keypad Door.
3. Press the Feature ▲ key once. The LCD will Show "Run Self Test".
4. Press the Enter key. The Printer self test will start (Figure 1-12). The display will alternate between the following:

< Diagnostics >

`Enter' To Stop

5. The self test may be stopped by pressing the Enter key or by closing the Keypad Door.

Figure 1-11. Self Test Sample

1.9 Interfacing

The three types of interfaces offered by the printer are RS-232 serial, RS-422 serial, and TTL level 8-bit PC compatible, parallel interface. Serial and parallel interface connectors are provided on the rear of the printer. The 25-pin serial connector is compatible for both RS-232 and RS-422.

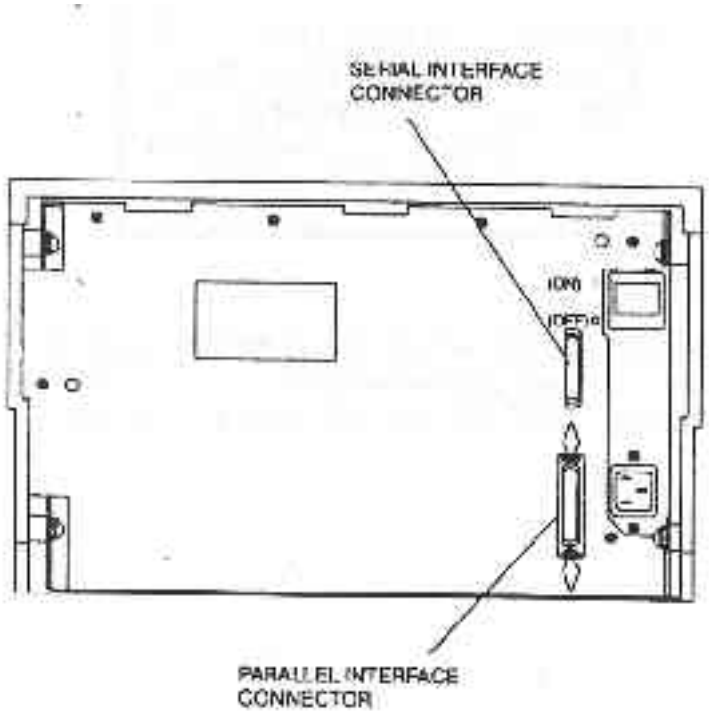


Figure 1-13: Interface Connectors

Refer to the documentation for your computer to determine the type of shielded interface cable needed and any unique pin-out configuration that may be required. This information should be given to your dealer or distributor to determine the correct cable for your use.

WARNING

BEFORE CONNECTING THE CABLE, MAKE CERTAIN BOTH THE HOST COMPUTER AND THE PRINTER ARE POWERED OFF.

Attach one end of the cable to the proper connector on the printer and the other end to the host computer. Secure the interface cable to the connector with the screws or wire clips provided.

1.10 RS-232 And RS-422 Serial Interface ..... Configuration

1. Set the power switch to On.
2. Open the Keypad Door. The first menu will appear on the display.

M1 PAGE FORMAT

M5 SERIAL CNTRL

3. Press the Next Menu key until you have accessed Menu 5
4. Press the Feature ▼ key one time to select Baud Rate Feature.
5. Press the Value ▲ or Value ▼ to change baud rate to match host computer.
6. Press the Enter key to save your selection.
7. Press the Feature ▼ key to select Serial RS-232.
8. Press the Value ▲ ▼ keys to select the desired serial mode [RS-232, RS-422, NONE]. Select NONE to disable the serial port.
9. Press the Enter key to save your selection.
10. Use the Feature ▼, Value ▲ ▼, and Enter keys to change any other required features in this menu.
    - Parity
    - Data Bits
    - DTR
    - HANDSHK
    - X-ON CTRL ROBUST
    - X-OFF CTRL ROBUST
    - MODEM CTRL
11. Close the Keypad Door to exit Setup Mode. Display will alternate:

Press 'Profile'

To Save Settings

12. Press the Profile key to permanently save the profile setting.

13. Press the On/Off Line key to place the printer back on line.

On Line Profile 1

These features must be changed in all profiles that are used.

Chapter 2:.....Keypad Operation

2.1 Keypad Configuration

This chapter describes the keypad, Ready LED, and LCD display. The locations of all keys and their functions are illustrated below.

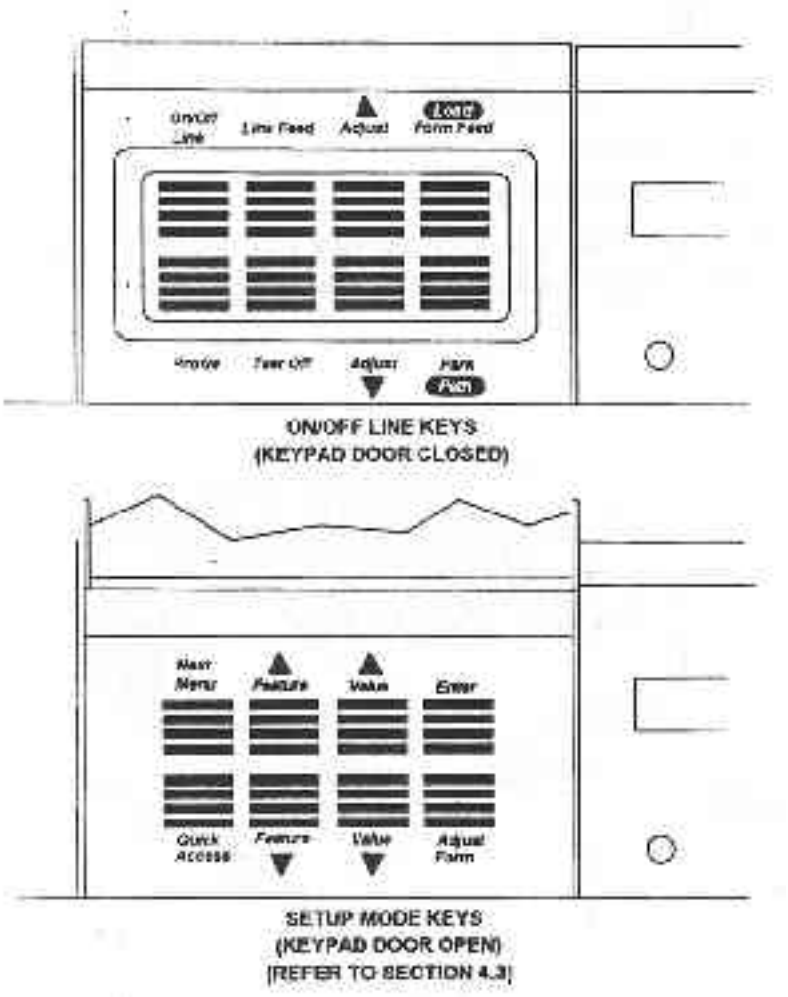


Figure 2-1. Keypad Configuration

2.2 Ready LED

The printer is equipped with one green LED indicator to signify READY status. Function of the Ready indicator is as follows:

- On - Printer is on line and ready to accept data.
- Off - Printer cannot accept data for any of the following reasons:

.....a - Printer is off line.
.....b - Printer is in an error condition.
.....c - Printer FIFO is full.
.....d - Printer is powered off.

- Blinking -Printer is receiving data and printing. This light indicates the Ready/Busy state of the interface.

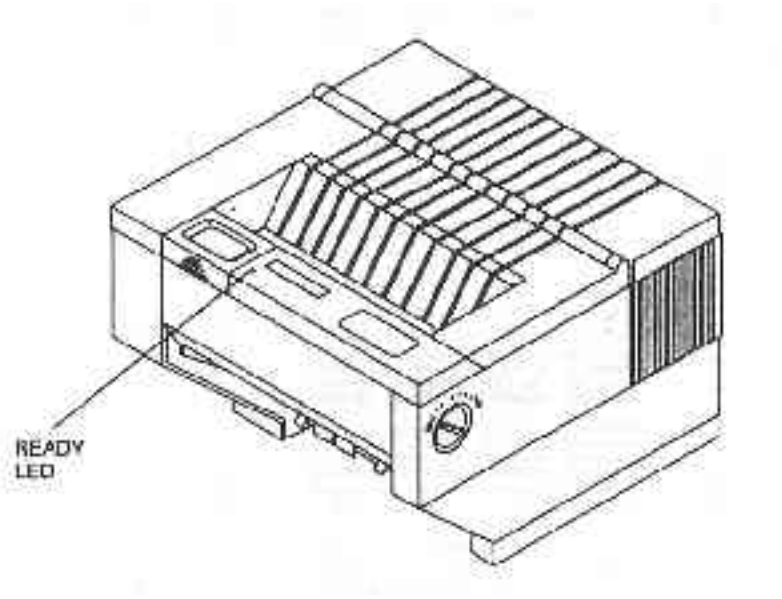


Figure 2-2. Ready LED

2.3..... On/Off Line Key Functions

On/Off Line key functions are the functions printed on the Keypad Door encircling the keypad. Primary key functions are used for normal operation. Setup Mode functions are active when the Keypad Door is raised and are explained in Chapter 4.

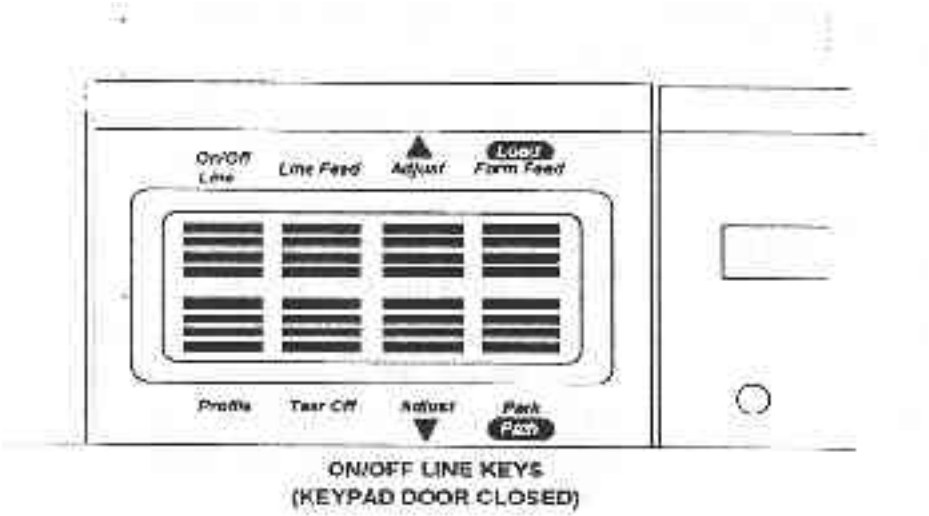


Figure 2-3. Primary Keys

On/Off Line Press this key to switch the printer between on line and off line status. This key is used in conjunction with the LCD display. The On/Off Line key is also used to continue after clearing an error condition or to acknowledge tearing off a form on a paper path change.

Load/ Form Feed If the display indicates a paper out, press this key to load paper into the main or alternate feed paths.

When continuous forms are loaded, press this key to advance the paper to the top of the next form.

Park/Path When paper is loaded, press the Park/Path key to `park' paper into the tractors.

When paper is not loaded, press the Park/Path key to change the paper path and attempt to load paper (on dual path units). Either Main or Alternate paper path can be selected using this key.

The Path key is only valid if the Path feature is set to "Either". Paper paths can also be selected by setting the path feature in a profile and selecting that profile. For additional instructions, see 3.8 - 3.13.

Adjust ▲ Press this key to move the form upward 1/144 inch for precise form alignment. When the key is pressed for more than 1/2 second, the paper advances continuously until the key is released.

Adjust ▼ Press this key to move the form downward 1/144 inch for precise form alignment. When the key is pressed for more than 1/2 second, the paper reverse feeds continuously until the key is released.

Tear Off Press this key to advance forms up to the tear bar so that the last printed form can easily be removed. Press the key a second time to move the form back into print position. Paper motion is determined by the value of the Manual Tear feature (see M2 Manual Tear).

To change the tear off position, press the Tear Off key, press Adjust ▲ or ▼ , then press the Tear Off key again. The new distance is automatically saved in the current profile.

Line Feed Press this key once to advance the paper by one line. When the key is pressed for more than 1/2 second, continuous line feeds are performed until the key is released.

Profile This key allows you to select one of ten user-defined profiles. To use this key, place the printer off line. Then press the Profile key. Available profile names are shown in the display window each time the Profile key is pressed. This key can be used only when the printer is off line. For more information about profiles, see Chapter 4.

After changing profiles, the printer attempts to park and reload the paper to reset top of form. The printer will automatically change paper paths or request a form be loaded depending on the Path feature setting. See Section 3.12 for details on selecting paper paths using the Profile key.

2.4 LCD Display

The printer signals various messages through the LCD display. Examples are shown below:

Features and Values:	Left Margin xxx
On Line Display:	On Line Profile 1
Off Line Display:	Off Line Profile 1
Paper Out Conditions:	< Paper Out Main >
	< Paper Out Alt >
Initial Display when Keypad Door is open:	M1 PAGE FORMAT

Chapter 3:.....Forms Handling

3.1 Recommended Types And Sizes

The following are guidelines for recommended paper types and sizes for use with the printer.

Continuous Forms (Main Paper Path)

Width - 3-1/2 to 10-5/8 inches (88.9 mm to 269.8 mm)
Individual Part Thickness - .005 inch maximum (.127 mm)
Total Form Thickness - .028 inch maximum (.711 mm)
Number of copies - 1 original plus 5 copies
Maximum Printable Width - 8.5 inches (215.9 mm)

Continuous Forms (Alternate Paper Path)

Width - 3 to 10-1/2 inches (76.2 mm to 266 mm)
Individual Part Thickness - .005 inch maximum (.127 mm)
Total Form Thickness - .028 inch maximum (.711 mm)
Number of copies - 1 original plus 5 copies
Maximum Printable Width - 8.5 inches (215.9 mm)

Cut Sheet Forms (Cut Sheet Path)

Width - 2-3/4 to 10-5/8 inches (69.9 mm to 269.8 mm)
Individual Part Thickness - .005 inch maximum (.127 mm)
Total Form Thickness - .028 inch maximum (.711 mm)
Number of copies - 1 original plus 5 copies
Maximum Printable Width - 8.5 inches (215.9 mm)
Minimum Form Length - 4.25 inches (110 mm)
Minimum Form Weight - 20 lb. Bond (75 g/m2)

3.2..... Paper Paths

For best results, use the main paper path for thicker, stiffer forms.

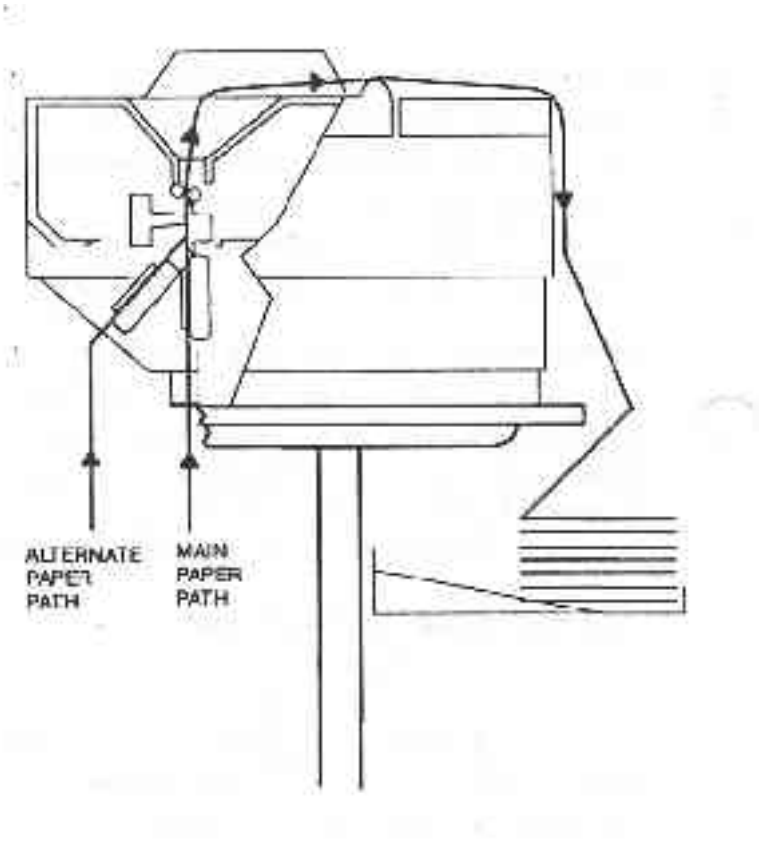


Figure 3-1. Paper Feed Paths

3.3 Load Forms

NOTE

To load the main tractor path on Dual Path printer, place alternate path tractors in center position. Main tractor doors cannot be opened with alternate tractors aligned in front. (Hint: Use least frequently changed paper in main tractors and frequently changed paper or narrow stock in the alternate path.) If both paths are used, main tractor path must be loaded first.

NOTE

If paper is to be loaded into alternate path, align the left tractors with alignment mark on printer for both feed paths before loading front most forms.

NOTE

Form Thickness Adjustment Knob automatically retracts printhead to allow for forms loading and repositions to print position after loading.

To access the tractors and load a continuous form into either tractor, proceed as follows: (For cut sheet forms, go directly to Step 8.)

1. Unlock both tractors by rotating the locking levers.
2. Align the left tractor with the alignment mark located on the body of the printer. Lock left tractor in place. Place the right tractor at the approximate forms width.

CAUTION

PRINTING PAST THE EDGE OF THE FORM DUE TO IMPROPER TRACTOR LOCATION CAN CAUSE DAMAGE TO THE PRINTHEAD.

3. Position the front paper guides and rear paper supports, on main path, equally across width of form. (Hint: For easy movement, grab the front paper guides and push up while sliding.)

NOTE

Proper position of paper supports will help prevent jams.

4. Open the left tractor door and place the left side of the form in the left tractor. Close tractor door. (Hint: Place form on lower 3 pins of tractor drive. Hold form in place by pressing against tractor housing before closing tractor door with other hand.)

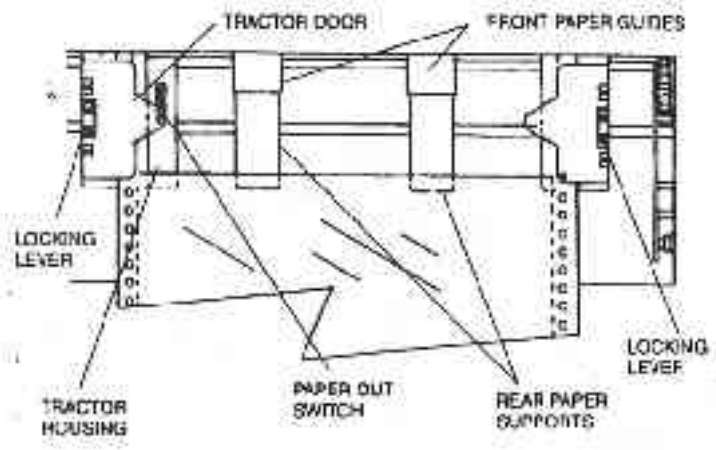


Figure 3-2. Load Paper In Tractors (Main Path shown)

5. Open the right tractor door and load the paper into the right tractor. Compare position of paper in left and right tractors and adjust as necessary to keep paper even. Improper alignment of paper feed holes (Figure 3-3) will result in paper jam. Close tractor door.

6. If necessary, move the right tractor to the right to slightly tension the paper. Lock the tractor in this position.

CAUTION

IMPROPER PAPER TENSION MAY CAUSE PAPER JAMS. PAPER SHOULD BE TENSIONED SUFFICIENTLY TO BE RELATIVELY FLAT BETWEEN THE TRACTORS, WHILE AVOIDING DISTORTION OF THE PAPER FEED HOLES.

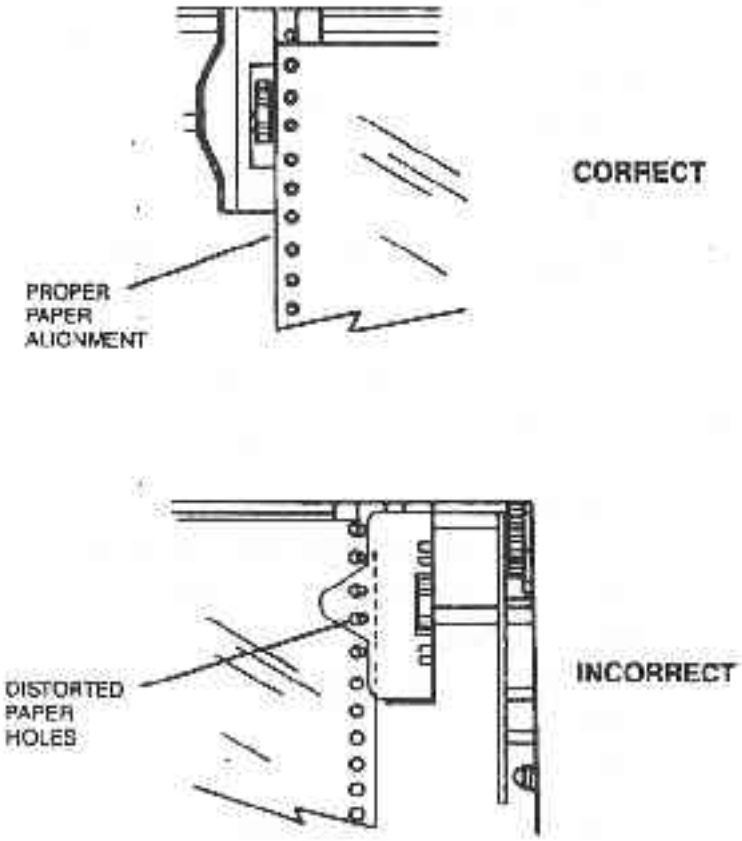


Figure 3-3 Forms Loading

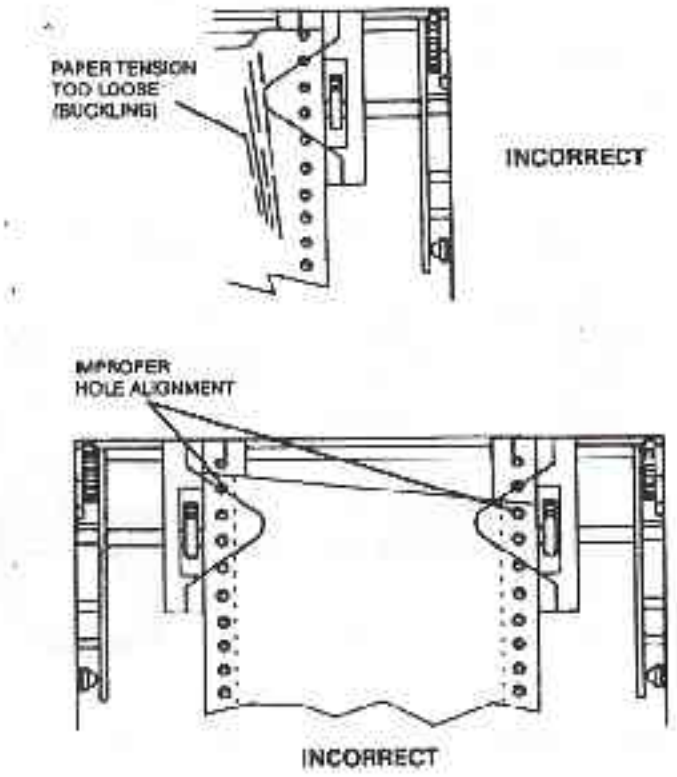


Figure 3-3. Forms Loading

7. Make sure the continuous forms are located directly under the tractors. The paper must hang straight. Incorrect positioning of the forms may cause a paper jam.

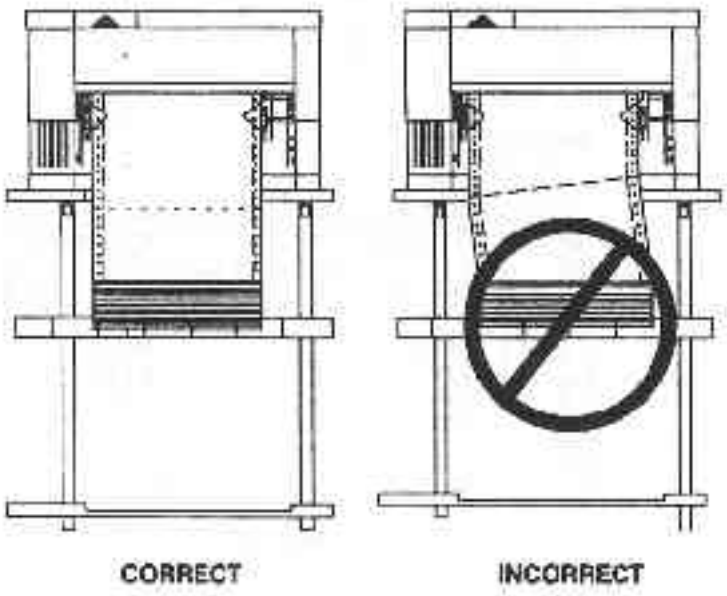


Figure 3-4 Placement Of Continuous Forms

8. Set the power switch to On. (For cut sheet forms, go directly to Step 10).

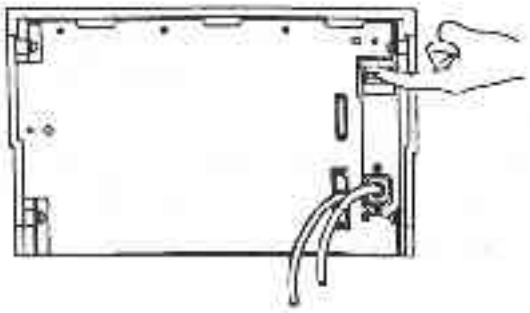


Figure 3-5. Turn On Power

9. After the printer initializes, press the Load key to load paper. When the load key is pressed, the Form Thickness Adjustment knob will automatically move to the correct location.

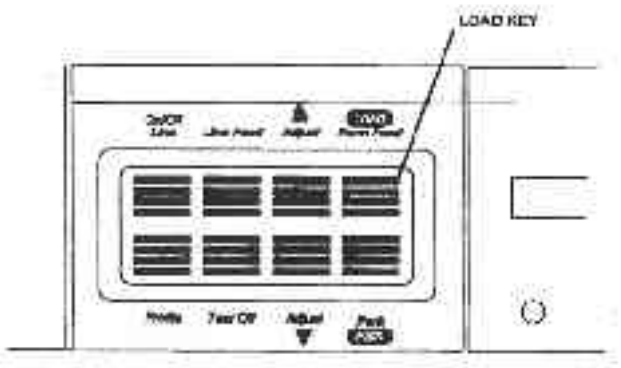


Figure 3-6. Press Load Key

10. **For Cut Sheet forms**, set left paper guide window at the "0" mark. Grab form in center with one hand and align left edge of form against left paper guide. (Do not fully insert form.)

    Use other hand to snug right paper guide against right edge of form. (Do not buckle forms between paper guides.)

    Push in form until leading edge is squarely against rollers. (Care should be taken to keep form straight.) Printer will automatically load form and go on line.

NOTE

To eject a cut sheet form for any reason,

NOTE

If cut sheet form length is between 4.5" and 6.0", verify that the Vertical Gap Position Feature is set to 0.0" (located under M8 FORM THICKNESS in the setup mode). See Section 4.6 for further instructions on how to change this setting. Failure to set vertical Gap for these forms may cause trailing edge of form to catch under guide during loading

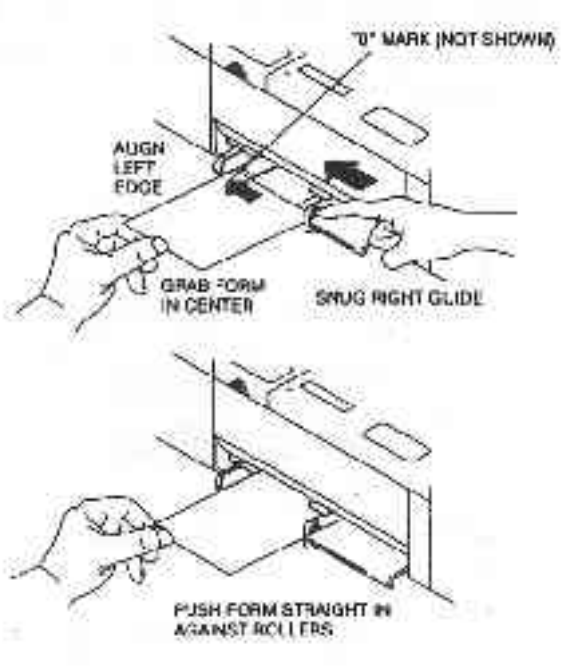


Figure 3-7. Loading Cut Sheet Form

3.4 Format Page

Set Form Length

To determine form length, first measure the length of the form (in inches) and multiply this value by the vertical lines per inch.

For example, if the form length is 11 inches and the vertical pitch is 6 lines per inch, then the form length would be:

11 inches x 6 lines per inch = form length 66 lines

To set the form length, open the keypad door and press the Quick Access key until "Form Length" appears in the display. Press the Value keys to change the setting and press the Enter key to save the setting.

Set Left and Right Margins

To determine left and right margins, measure the printed width of the form (in inches excluding pinfeed holes) and multiply this value by the font pitch. The scale on the tear off bar may be used to estimate margin location for 10 cpi. (see figure 3-8).

For example, if the printable form width is 6.5 inches and the font pitch is 10 characters per inch, then the form width would be:

6.5 inches x 10 cpi = right margin 65

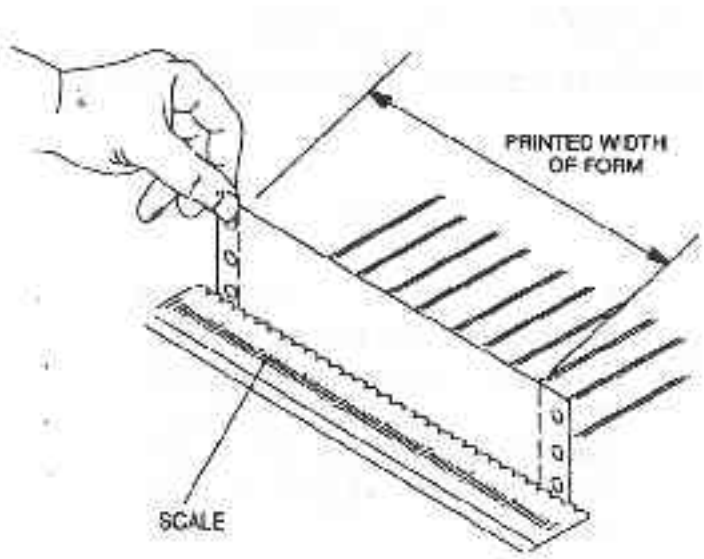


Figure 3.8 Tear Bar Scale

To set the right margin, press the Quick Access key until "Right Margin" appears in the display. Press the Value keys to change the margin setting and press the Enter key to save the setting. If you shift the left margin, you may want to shift the right margin by the same amount. Close the keypad door to exit Setup Mode. The LCD will read:

Press `Profile'
To Save Settings

Press Profile key to save settings.

Press the On/Off Line key to place the printer back on line.

3.5 Top Of Form Adjustment (Adjusting First Printline Location)

NOTE

Perform this adjustment immediately after loading paper to determine where the first line will print. Making this adjustment while printing on the page allows fine alignment without resetting line count.

When paper is loaded into the printer, the printer automatically positions the paper to print on the first line of the form. If you need to change the location of the first print line use the Adjust Form key, and proceed as follows:

1. To place the printer in Top of Form Adjust Mode, open the Keypad Door and press the Adjust Form key. The form will advance until the bottom of the first print line is positioned just above the tear off bar for viewing (see Figure 3-9). (For units equipped with cut sheet option, open the top access cover and use the metal tear edge just above the top rollers).

   If at top of form the LCD will alternate:

Adj. First Line
Use Value Keys

   If not at top of form the LCD will alternate:

Fine Adjustment
Use Value Keys

2. Use the Value ▲ and Value ▼ keys to move the paper up or down to the position desired for next line of print. The line directly above the tear bar will be the next print line (Figure 3-9).

3. Press the Adjust Form key or close Keypad Door. The printer will reverse feed the form back to print position.

4. This adjustment affects the Load feature and is automatically saved in memory for the current profile and will apply the next time forms are loaded.

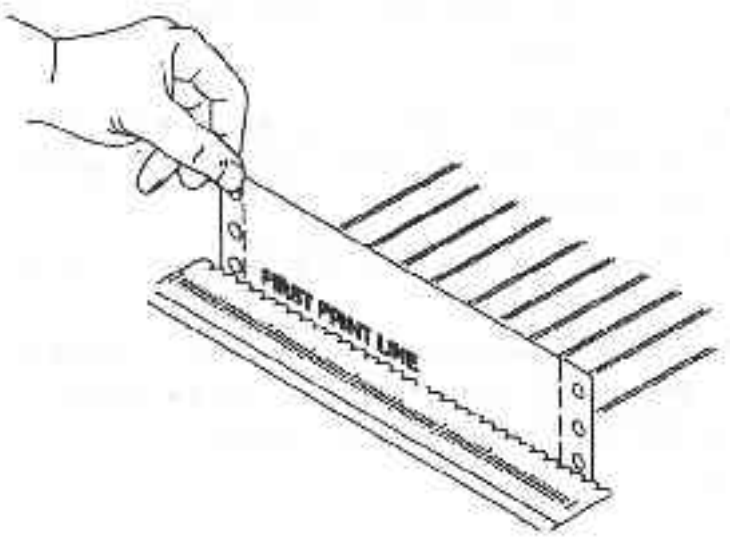


Figure 3-9. Set First Print Line

3.5 Tear Off Adjustment

In a demand document application, the form will be advanced to a tear off position when the Tear Off key is pressed. When the forms are in this position, the last printed form may be removed by pulling the perforation against the tear edge of the cover.

If the perforation does not come to rest at the tear edge, the tear off distance may be adjusted as follows:

1. Press the Tear Off key. The form should move up to the current tear location.

NOTE

By adjusting the tear distance to a large value, the form can be fed through a countertop, for example, if the printer is located under a counter.

2. Using the Adjust ▲ key or the Adjust ▼ key, move the paper until the perforation is located at the desired tear off position
3. Press the Tear Off key. The form will return to the current print position.
4. This adjustment affects the Tear Distance feature and is automatically saved in memory for the current profile and will be applied when forms are reloaded.

NOTE

For cut sheet units, to avoid excessive opening and closing of the top exit cover when alternating between short cut sheet forms and continuous tractor forms, adjust the tear off distance to the secondary tear bar (metal edge located immediately above top rollers) by using this procedure. (The value will be about 1-40/144 inches.)

NOTE

The function of the Tear Off key is affected by the Manual Tear feature located in the Forms Control Menu. Refer to Chapter 4 for a description of this feature.

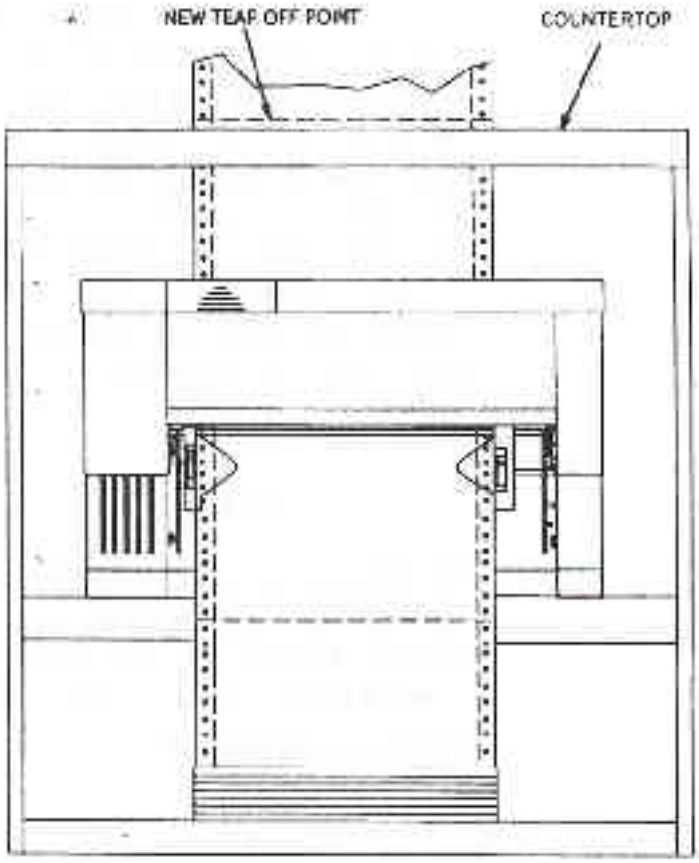


Figure 3-10. Printer Located Under Countertop

3.6 Form Thickness Adjustment

The distance from the printhead to the paper is automatically changed to accommodate the thickness of the forms whenever the unit is powered up or paper is loaded. The adjustment can be manually changed using the knob on the right-hand side of the printer, or adjusted automatically by changing the feature setting as outlined below.

CAUTION

IMPROPER FORM THICKNESS ADJUSTMENT CAN DAMAGE THE PRINTHEAD.

1. Load the form requiring this adjustment and run a print sample.
2. Inspect the print sample. The characters should be easy to read, with no missing dots. Be sure to check the last copy of multi-part forms for properly formed characters.

NOTE

To adjust form thickness automatically and store in memory, proceed with step 3. If a temporary adjustment is needed, adjust manually beginning with step 7.

3. If the print quality is unacceptable (too light, missing dots, or smearing), or paper handling is affected, adjust form thickness gap as follows:
   a. Open the Keypad Door to access Setup menu
   b. Press the Next Menu key to access Menu 8: Form Thickness.

M8 FORM THICKNESS

   c. Press Feature ▼ key to obtain this display:

Adj. Form Gap XX

4. Use the Value keys to adjust the form thickness gap. Form thickness setting will be stored in memory.

   a. Press the Value ▼ key once or twice to reduce the form gap (mo printhead closer to the form) if there is light print.

CAUTION

MOVING THE PRINTHEAD TOO CLOSE TO THE FORM CAN RESULT IN PAPER FEED ING PROBLEMS.

b. Press the Value ▲ key once or twice to increase the form gap (moves the printhead away from the form) if there is smudging, smearing or paper handling issues.

5. Once the adjustment has been made using the keypad, the printer will store the

NOTE

There is no direct correlation between form thickness position and number of parts in a multi-part form (e.g. adjustment control is not set to the fourth mark for a four-part form). Multi-part carbonless forms must be given time to cure before being separated to prevent light print quality. (Contact paper supplier for cure times.)

setting in memory only in the selected profile. The printer will continue to use this gap setting the next time forms are loaded.

6. Run another print sample. Return to step 2 and repeat until print quality is acceptable.

7. Manually adjust the form thickness setting as follows (temporary adjustment, not stored in memory):

   a. Turn knob clockwise one click until print quality is acceptable.
   b. If smudging occurs, thickness gap is too small. Turn knob one click counterclockwise until print quality is acceptable.

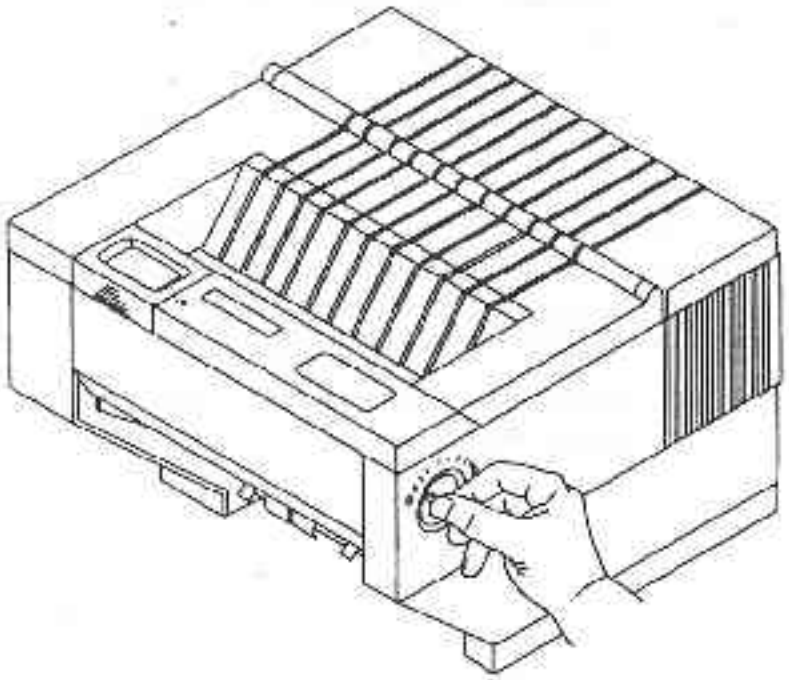


Figure 3-11. Manually Move Form Thickness Adjustment Knob

3.8 Heavy Forms Adjustment

The Heavy Forms feature allows the printhead to be positioned horizontally on the form to avoid labels, paper perforations, or other variations in form thickness that can cause paper handling issues.

This feature becomes active when paper advances more than 0.5". Refer to HF: On Feed Feature in M2 Forms Control.

The default location of the printhead is 2" from the left side of the printer.

To change the location of the printhead from the default value, follow these steps:

1. Load form in printer and open keypad door.
2. Press Menu key to access M2 Forms Control.
3. Press Feature ▼ key to access the Heavy Forms feature.
4. The value in the display represents the location of the printhead for form feeds and paper advances over 0.5".
5. Press the Value keys to change this setting.

   For example: A label is located on the form from 3 to 5 inches from the left edge of the form. Set the Heavy Form feature at 1.5 inches or 6.5 inches to insure that the printhead and ribbon guide is away from the label during high speed paper moves. The feature may also be set to avoid paper staples on the pin drive margins of the forms.

   If the entire form is jamming, set this value to 8.5" to keep the printhead away from the perforation folds (paper tents) during form feeding.

3.9 Changing From Main Paper Path To Alternate Path

If continuous forms are presently loaded in the printer, you may change to the alternate paper path by proceeding as follows:

(For cut sheet models, just insert the form. The following steps will be automatically executed by the printer.)

1. Press the On/Off Line key to take printer off line.
2. Press the Tear Off key to advance the form to the tear off point.
3. Remove the last printed form.
4. Press the Park key. The continuous forms will be backed down out of the paper path and held in the forms tractors. The display will appear as shown.

< Paper Out Main >

Load Profile x

5. Press the Path key. The printer will shift to the alternate path then attempt to load paper.
6. If paper is not loaded in the alternate path, the display will indicate so.

< Paper Out Alt >

Load Profile x

7. If paper is loaded, press On/Off Line key.

NOTE

To use the Path key, the `Path' feature setting must be set to `Either' in the current selected Profile. If the `Path' feature is set to `Main' or `Alt', the Path key is disabled. See Sections 3.13 - 3.14 for a description of paper path changing using Profiles.

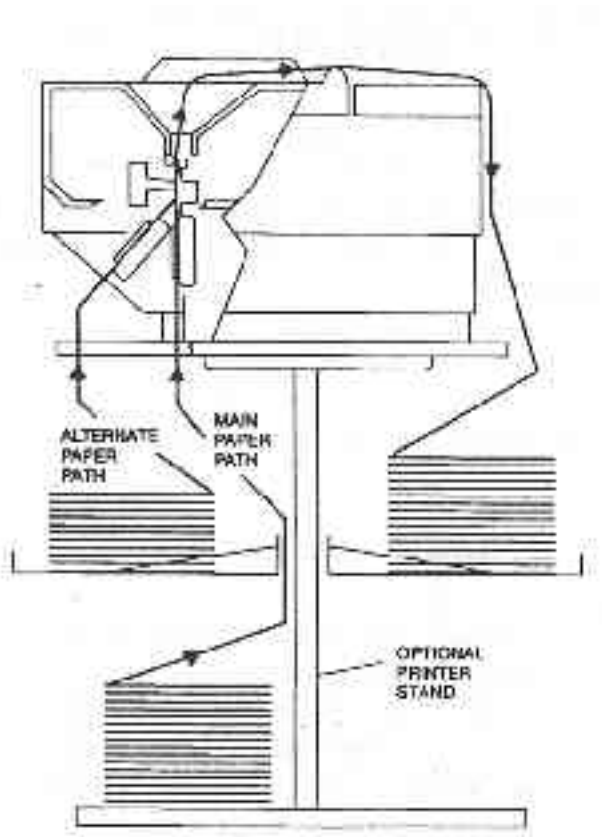


Figure 3-12. Main And Alternate Paper Paths (Cut Sheet Not Shown)

3.10 Changing From Alternate Paper Path .To Main Paper Path

If paper is loaded in the alternate printer path, you may change to the main paper path by proceeding as follows:

1. Press the On/Off Line key to take printer off line.
2. Press the Tear Off key to advance form to tear off point. Remove last printed form.
3. Press the Park key. The continuous forms will be backed down out of the paper path and held in the tractors. The display will appear as shown

< Paper Out Alt >

< Paper Out Main >

4. Press the Path key. The printer will shift to the main paper path and automatically load paper. If paper is not loaded in the main path, the display will indicate so.
5. If paper is loaded, press On/Off Line key.

NOTE

To use the Path key, the `Path' feature setting must be set to `Either' in the current selected Profile. If the `Path' feature is set to `Main' or `Alt', the Path key is disabled. See Sections 3.13 - 3.14 for a description of paper path changing using Profiles.

3.11 Paper Out Condition

When the printer runs out of paper, the following messages will appear in the display depending on paper path selected:

< Paper Out Main >
Load Checks

or

< Paper Out Alt >
Load Profile 2

1. Remove last printed form from the printer.
2. Load continuous forms. Refer to page 3-1.
3. Press the On/Off Line key to go back on line.

The alternating display indicates which path (Main, Alt) is empty and which form to reload.

NOTE

If the Profile has not been renamed to match the form being used, the display will indicate `Load Profile x' as shown in the example above. In this case, the form associated with Profile 2 should be loaded. For more information on naming Profiles, see the `Rename' feature located in the Profile Control Menu described in Chapter 4.

The printer may be configured to automatically change paper paths during a paper out condition. The Path feature must be set to "Either" for this to occur.

NOTE

This may be useful in applications where the printer is unattended or installed at a remote location. If this feature is enabled, the same forms must be loaded in both paper paths.

After changing paths, the printer will attempt to load. If paper is found, printing will continue. If no paper is installed, the unit will stop and indicate a paper out condition.

To enable this feature:

1. Open Keypad Door.
2. Press the Next Menu key until Menu 4 is displayed.

M4 PRINTER CNTRL

3. Press Feature ▼ until the feature is displayed.

Auto Path SW Off

4. Press Value ▲ or ▼ to select 'On', and then press the Enter key to save selection.
5. Close Keypad Door and press the Profile key to save profile.

Each Profile contains a `Path' feature which specifies the (Main, Alt, Either) paper path. When a profile is selected, the paper path may be automatically changed or the operator may be asked to load a new form in the currently selected paper path. The action taken depends on the value of the `Path' feature setting (located in Menu 2 Forms Control).

After using the Profile key to select a new profile, the operator should either press the On/Off Line key or the Load key if paper is not loaded. The printer will then park the current form. If the current form cannot be parked, the printer will advance the form to the tear bar and display:

< Tear Off Form >

< Press On/Offline >

After tearing off the current form and pressing On/Off Line, the printer will then park that form.

Example of profile names and paths:

Original Profile Name	New Profile Name	Path
Profile1	Checks	Main
Profile2	Invoice	Alternate
Profile3	Memos	Alternate
Profile4	Reports	Alternate

Example using same path:

The current profile is named "Invoice" and the paper path selected by that profile is alternate. The new profile named "Memos" specifies the same path (Alt). After selecting profile "Memos" and the printer has successfully parked the invoices, the following message will be displayed.

Load Memos

< Paper Out: Alt >

After placing memos into the alternate path, press the Load key. The printer will load the memos and resume normal operation.

Example using different path:

The current profile is named "Invoice" and the paper path selected by that profile is alternate. The new profile named "Checks" specifies the main paper path. After selecting profile "Checks" and the printer has successfully parked the invoices, the printer will load

the main paper path and resume operation. If there is no form loaded in the selected path (main), the following message will be displayed:

< Load Checks >

< Paper Out: Main >

After loading checks into the main paper path, press the Load key. The printer will load the checks and resume normal operation.

3.14 Selecting Paper Paths From The Host Computer Using DPCL Command

In demand document applications, the paper path may be selected by using Downline Profile Control Language (DPCL) sequences to select the active Profile. This command is available in all emulation modes. Selecting a profile using DPCL commands will allow paper path selection from the host computer. For more information on configuring features and profiles, see Chapter 4.

NOTE

In dual tractor units, the most frequently used form should be loaded in the main path and other forms in the alternate path. Now, changing profiles will prompt the operator to load the correct form in the alternate path. To ensure the correct form is loaded, the alternate path should be left empty when not in use. This will cause the printer to stop and indicate which form to load when the path is selected.

After the profile is configured, it may be selected from the host computer using DPCL sequences. The paper path will be selected according to the profile selection. Refer to previous section 3.13 for further information on paper path selection using profiles.

The DPCL sequence to change profiles is active in all emulations.

Select Profile (form) <n>
SC$$E1.118;<n>.X.

CODE	FORMAT													
ASCII:	ESC	$	$	E	1	.	1	1	8	.	<n>	.	X	.
DECIMAL:	27	36	36	69	49	46	73	49	56	59	n	46	88	46
HEXADECIMAL:	1B	24	24	45	31	2E	49	31	38	3B	n	2E	58	2E

Description: This command is used to select Profile n where values of n range from 1 to the maximum number of profiles supported (approximately 10). The Paper Path may be selected by the Host Computer by configuring the `Path' feature to Main, Alt, or Either, and by selecting the Profile using this sequence.

NOTE

Only the Main selection is available on single path units.

Example:
```
10 rem select Profile 2
20 Lprint chr$(27);"$$E1.I18;2.X."
```

Comment: See Chapter 4 for a description of Profile features including the `Path' feature.

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Chapter 4:..... Features and Profiles

4.1 Features

This chapter describes and explains the various user programmable features of the printer. Using the keypad, the printer can be easily configured to operate in a variety of host environments and provide print for common applications such as reports, checks, invoices, and labels.

The printer's features are grouped into the following 10 categories:

Menu Name	Feature Examples
M1 PAGE FORMAT	Lines/Inch, Form Length, Margins, etc.
M2 FORMS CONTROL	Load Dst, Horz Adj., etc.
M3 PERSONALITY	Emulations, Fonts, Character Sets, etc.
M4 PRINTER CONTROL	Auto LF, Auto CR, etc.
M5 SERIAL CONTROL	Baud Rate, Parity, Handshaking, etc.
M6 PARALLEL CONTROL	Handshaking, Ack After Busy, etc.
M7 PROFILE CONTROL	Naming, Saving Profiles, etc.
M8 FORM THICKNESS	Auto Form Gap, Retract Printhead, Adjust Form Gap, etc.
M9 DIAGNOSTICS	Print Profile, Print Test, Firmware Rev., etc.
M10 SYSTEM CONTROL	Reset NVRAM, Key Lock Out, Quick Access Key Setup, Ribbon Life Setup, etc..

NOTE

System Control Group must be activated for access. See Appendix D.

See pages 4-11 through 4-26 for a detailed listing and description of all features and values.

4.2 Profiles

A unique benefit of this printer is its ability to store feature settings for commonly used applications in what is called a Profile. Up to ten profiles may be named, stored in the printer's non-volatile memory, and recalled with a few key strokes. This avoids time consuming setup and reprogramming each time the application changes.

Following is an example of some common forms used and specific features that may be programmed into a profile when using these forms. For more information refer to Section 3.13 "*Selecting Paper Paths Using The Profile Key*".

Profile Name/Feature Value

Feature Name	P1 "Report"	P2 "Invoice"	P3 "Checks"	P4 "Statements"
Form Length	88	66	24	30
Lines/Inch	8	6	6	6
Right Margin	136	80	70	70
Horz Adj	0/144	5/144	8/144	12/144
Manual Tear	FF	TOF	TOF	TOF
Emulate	IBM PRO	IBM PRO	LA 120	LA 120
Font	DP 18	Draft 10	OCR A	Draft 10
Parallel	Enable	Disable	Disable	Enable
Path	Main	Either	Alternate	Alternate

In this sample, to change from printing "Report" to "Checks" do the following:

1. Take printer off line by pressing the On/Off Line key.
2. Park current form.
3. Change to the desired profile, in this case "Checks".
4. Load the appropriate forms ("Checks").
5. Place unit on line.

The Path feature specifies which paper path is selected. Profile 1 named "Report" selects the main path. Selecting Profile 2 leaves the path unchanged. Selecting Profile 3 and 4 selects the alternate path.

For an application that is not stored in a profile, call up the profile whose features most closely match the application and reprogram only the features requiring change. These changes will not alter the profile's permanent settings unless you save them when you exit Setup Mode.

4.3 Setup Mode Key Functions

To change features, open the Keypad Door to enter Setup Mode. Figure 4-1 shows the Setup Mode keys and their respective functions.

A brief description of each key function follows.

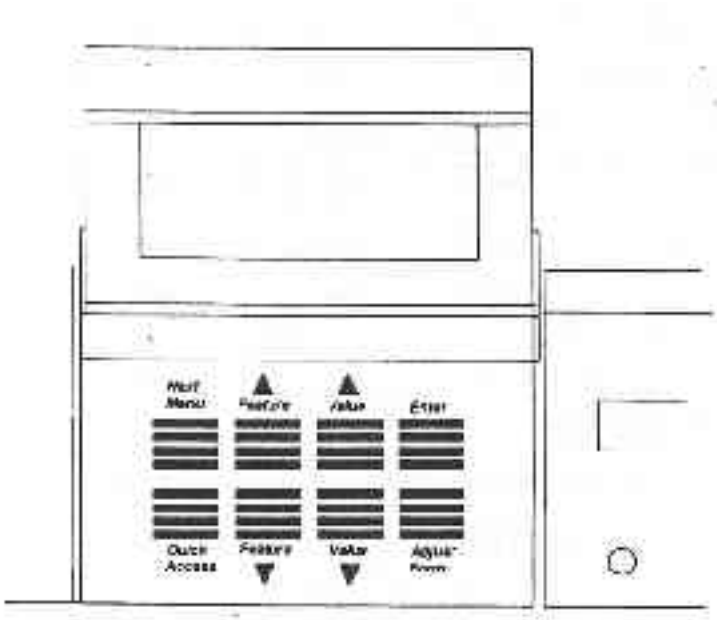

Figure 4-1. Setup Mode Keys

Next Menu The Next Menu key provides access to a specific group of features. Press this key to step through the printer features by menu. This prevents having to "cycle through" the entire list using the Feature key in order to get to the desired feature.

Quick Access This key provides immediate access to typical features required for quick setup. These include font, margins, form length, and lines/inch. The features accessed by this key can be changed to correspond to the user's needs.

Feature ▲▼ The Feature keys are used to select a specific feature. Press the Feature ▲ key to move the display up the features list. Press the Feature ▼ key to move the display down the features list. When a menu boundary is crossed in either direction, it will be displayed.

Value ▲▼ The Value keys are used to change the value of a feature. Press the Value ▲ key to increase feature values. Press the Value ▼ key to decrease feature values.

Enter The Enter key is used to accept new values for printer features. After the value of a feature has been changed, the Enter key is pressed to save the new settings into memory. Pressing the Enter key will also result in a beep.

Adjust Form This key enables the user to adjust the top of form setting (first print line location) using the Value ▲▼ keys

4.4 LCD Display In Setup Mode

In Setup Mode, the LCD display provides the following information:

Feature Name And Value:

Form Length 88

Menu Names:

M1 PAGE FORMAT

Diagnostic Tests: Self Test

4.5 Profile Feature Listing

To print a listing of the feature settings of a particular profile, follow the steps below.

1. Make certain 20 column or wider paper is loaded in the printer.
2. Press the On/Off Line key to take the printer off line.
3. Before entering Setup Mode, press the Profile key until it displays the profile you wish to print.
4. Open the Keypad Door and use the Next Menu key to go to Menu 9. The display will read:

M9 DIAGNOSTICS

5. Press the Feature ▼ key until display reads:
6. Press the Enter key. The printer will print a listing of the profile feature settings.

Print Profile

7. Close the Keypad Door to exit Setup Mode after printout is complete.
8. Press the On/Off Line key to return to normal operation.

4.6 Changing Features In A Profile

Feature settings in a profile may be changed through the keypad by following the steps below.

1. Press the On/Off Line key to take the printer off line.
2. Press the Park key to park paper.
3. Press the Profile key to select profile being changed.
4. Open the Keypad Door.

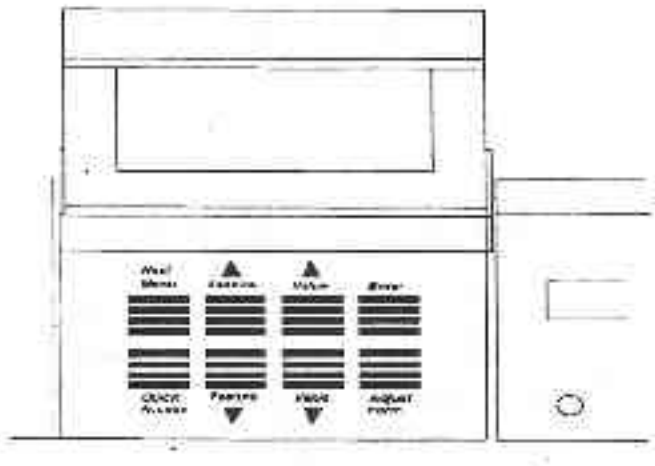

Figure 4-2. Changing Features In A Profile

5. Press the Next Menu key, as necessary, to scroll through the feature menus until you reach the menu containing the feature you wish to change.
6. Press the Feature ▲ or Feature ▼ key to scroll the display up or down until you reach the feature to be changed.
7. Press the Value ▲ key or Value ▼ key to scroll the display backward or forward until you reach the value you wish to set.
8. Press the Enter key to record the new value.
9. Repeat steps 5 through 8 as necessary until all features are correctly set for your application.

10. Close the Keypad Door to exit Setup Mode. The alternating display will read:

Press ‘Profile’

To Save Settings

To answer "Yes", press the Profile key. This will permanently record the change in non-volatile memory for that profile.

To answer "No", press any other key. This will make the change temporary, thus not changing the original profile setting. These settings will be valid until profiles are changed again or the printer is powered off.

11. Press Load key to load paper (resets top of form).
12. Press the On/Off Line key to return to operation .changed again or the printer is powered off.

As an example, assume the profile you are presently using defines the lines per inch as 6. To permanently change the lines per inch to 8, proceed as follows:

1. Press the On/Off Line key to take the printer off line.
2. Press Park key to park paper.

NOTE

To maintain correct top of form alignment when a profile change is made, the paper should be parked (if not already parked) and reloaded so that the printer can reset the top of form for the new profile.

3. Open the Keypad Door to enter Setup Mode.
4. Press the Feature ▼ key to select Lines/Inch.
5. Press the Value ▲ key to change the Lines/Inch to 8 lines.
6. Press the Enter key to save the new Lines/Inch value.

7. Close the Keypad Door to exit Setup Mode. The LCD will read:

Press `Profile'

Press the Profile key to save entry.

To Save Settings

8. Press the Load key to load paper (resets top of form).
9. Press the On/Off Line key to place the printer back on line.

After pressing the On/Off Line key, the printer will operate with the vertical motion defined as 8 lines per inch. The next time this profile is selected, or if the printer power is switched off and back on, the lines per inch will remain at 8 lines per inch.

4.7 User Programmable Features

MENU 1: PAGE FORMAT

Printer Displays	Values	Description
Lines/Inch ###	1 2 3 4 6 8 12	Vertical pitch for printing text in lines per inch
Form Length ###	1 . 200	Lines per page resets top and bottom margins. Sets top of form at current position
Top Margin ###	1 . . 200	Number of lines from the top of form and the first print line Value cannot exceed bottom margin.
Bottom Margin ###	1 . . 200	Bottom margin The last print line allowed on the form Value cannot exceed form length.
Left Margin ###	1 . RM-1	The left margin can be set from 1 to the right margin minus one.
Right Margin ###	LM . . MLL	The right most print position in the current horizontal pitch Maximum Line Length See Appendix A.
Clear Horz Tabs		Clear Horizontal Tabs Pressing the Enter key will clear all horizontal tabs.
Horz Tab ### xxx	Set/Clr	Horizontal Tabs Pressing the Value key selects the column (#) where a horizontal tab may be set or cleared. Pressing the Enter key will Set or Clr (clear) a tab in that column. Up to 158 horizontal tabs can be set.
Clear Vert Tabs		Clear Vertical Tabs Pressing the Enter key will clear all horizontal tabs.
Vert Tab ### xxx	Set/Clr	Vertical Tabs Pressing the Value key selects the line (##) where a vertical tab may be set or cleared. Pressing the Enter key will Set or Clr (clear) a tab in that line.

MENU 2: FORMS CONTROL

Printer Displays	Values	Description
Load ###/144"	0 0/144 . . . . . . Current Form Length In Inches	This feature is used to align the first printline of a form and the printhead. This feature is normally set using the Adjust Form key. This feature is active only during paper loading. Increments are in inches or 1/144th of an inch.
Load Crg Move xxx	On Off	The printhead carriage moves in conjunction with a paper load. The printhead carriage remains out of the paper path during a paper load. This improves paper handling on certain (thin) forms.
Horz Adj xxx/144"	0/144 . . . . 144/144	This feature allows the user to logically offset the form horizontally to the left, up to 1 inch. This feature is active immediately when set. Valid Horz Adj values are 0 through 144/144ths of an inch.
Tear x xxx/144"	0 0/144 . . . 11 0/144	This feature determines the distance the paper is moved when the Tear Off key is pressed. Increments are in inches or 1/144th of an inch.
Manual Tear xxx	FF	The printer will perform a form feed before moving to the tear position after pressing the Tear Off key.
	TOF	The printer will move to the tear position after printing past the next forms boundary, when the Tear Off key is pressed.
	No FF	This value will move the paper the tear distance only. No form feeds are performed.
Manual Time ##s	OFF	The Tear Off key must be pressed to return the forms to the print position.

	1 . . . 30	The time in seconds that the form will be in the tear position before automatically returning to the print position This feature works only with the Manual Tear key.

Printer Displays	Values	Description
Auto Tear xxx	OFF	The printer moves the form into the tear position if the form is at top and no data is being transmitted.
	IDLE	The printer moves the form into the tear position if the form is at top and no data is being transmitted.
	PAGE	Moves the form to the tear bar position on every page break while on line. The form will retract after the time specified by the "Auto Time ##" feature has expired.
Auto Time ###s	1 . . . 30	The time in seconds that the form will be in the tear position after more data is sent to the printer This feature works only when the Auto Tear feature is ON.
HF: Pos crg x.x"	0.0" 0.1" 0.2" . . . 8.5"	Specifies the position of the carriage, when the Heavy Forms feature is enabled. The maximum value is dependent on the current value of the Horz Adj xxx/144" feature.
HF: xxxxxxxxxx	On Feed > x.x" 0.0" 0.1" 0.2" . 5.0"	Specifies when the Heavy Forms sequence is initiated. On a paper feed greater than x.x inches the carriage is positioned to the location specified by the HF:Pos crg x.x" feature. The default = .5" which is 3 lines @ 6 LPI.
	On page break	On a form feed (FF) or paper move that crosses a forms boundary or bottom margin (page break), the carriage will be positioned to the location specified by the HF: Pos crg x.x" feature.
	Disabled	Heavy forms sequence is disabled.

Path xxxx 4-12	Either Main Alt.	Specifies which paper path is selected when the profile is selected. The straight paper path The 45º continuous paper path or the friction feed (cut sheet) paper path.
Printer Displays	**Values**	**Description**
Paper Speed ###	3 . . 10	This feature controls the paper feed speed in inches per second. Slower speeds may improve paper handling of certain forms.

MENU 3: PERSONALITY

Printer Displays	Values	Description
Emulat xxxxxxxx	IBM Pro IBM Grph. LA 120 Epson FX DS-180 Display	This feature selects the desired emulation. Escape sequences for each emulation are listed in the "Programmer's Manual." Hex display feature See "Troubleshooting and Maintenance" for further information.
Font xxxxxxxxxx	DP 10 DP 12 DP 13.3 DP 16 DP 18 DP 20	Data processing fonts (9x9) (9x10) (9x9) (9x9) (9x10) (9x9) Italic print quality will vary when using DP fonts.
	Draft 10 Draft 12 Draft 15 Draft 16.4 Draft 17.1 Draft 20	Draft fonts (9x12 matrix) (9x12) (9x12) (9x11) (9x14) (9x12)
	Courier 10 Prestige 12 OCR_A 10 OCR_B 10 Helvetica 12	NLQ font (18x24 10 cpi) NLQ font (18x20 12 cpi) NLQ font (18x36 10 cpi) NLQ font (18x36 10 cpi) NLQ font (18x20 12 cpi)
Setxxxxxxxxx	7 Bit ASCII DEC Supplmt1 IBM Code 437 IBM Code 850 Epson Italic Epson Graph Epson Ital/Gr	Refer to "Programmer's Manual" for character tables.

Nat. xxxxxxxx 4-14	USA UK France Germany Italy Switzerland Canadian Fr Japan Latin Am Spain Denmark Norway Finland Sweden Spain II Denmark II Sp/Lat Am Nor/Den Swed/Fin France II	All nationalities are available in all symbol sets, fonts, and emulations (except OCR A and B) using Setup Mode. The actual nationality selected using emulation escape sequences vary depending on emulation. Refer to the Programmer's manual for each emulation.
IBM CHAR Set	1 or 2	

Print Zero as	0	Prints Zero without a slash
#	∅	Prints Zero with a slash

MENU 4: PRINTER CONTROL

Printer Displays	Values	Description
Auto LF xxx	Disable	No line feed with carriage return
	Enable	Performs a line feed with carriage return
Auto CR xxx	Disable	No carriage return with line feed
	Enable	Performs a carriage return with line feed
Wrap xxx	Disable	Printable data past the right margin is ignored.
	Enable	Performs a carriage return line feed if data exceeds the right margin
Print xxxxxxxx	Bidirect	Bi-Directional printing
	Unidirect	Unidirectional printing Prints left-to-right only
Auto Path SW xx	ON	When this feature is set to `ON' and a paper out occurs while printing, the printer will automatically change to the other paper path and continue printing if the forms are loaded successfully. Path feature must be set to 'Either'
	OFF	This feature is valid only on dual tractor units.
Vert Graphic xxx	ON	Specifies status of the TI-885 raster graphics mode, if installed.
	OFF	When ON Anadex graphics is enabled when DS-180 Emulation is selected.
Horz Graphic xxx	ON OFF	Specifies status of the TI-885 horizontal graphics mode, if installed.
Power Up xxxxxxx	On Line Off Line	Specifies whether printer powers up into on line or off line status
Buffer Size xxxx	512 . . . . Max	Specifies the size of the data buffer. Lower limit of this range may be limited by "Window Size" feature. Depends on buffer option installed

Window Size xxxx 4-16	256 . . . . . Max Buffer Size Less 1024	Window (FIFO size) Specifies how many bytes of data must be emptied out of a full data buffer before the communication interface will go into the "Ready" mode Upper limit of this range is limited by the "Buffer Size" feature.
Dbl Strike xxx	ON OFF	Prints in unidirectional double strike mode. Used for higher contrast on multi-part forms Normal print
Ribbon xx% Used	0...100%	Indicates what percentage of the ribbon has been consumed.
DGCL xxxxxxx	Disable Enable	Disables recognition of Barcode Transparency commands Enable recognition of Barcode Transparency Commands.
Exit Mode xxxxxx	Adjust Return No Adj BC-300	Adjust the form to the next logical line feed boundary upon exiting the Barcode Task mode. Return the form to the last active vertical position upon exiting the Barcode Task mode. See the ^J000 command. Position the form directly below the last printable pass of the Task mode upon exiting the Task mode. Emulates the Barcode 300 exit mode
Command Char xxx	33 255	Defines the default command character Example: 94 represents the ^ character.
Overlap xxxxxxx	Disable Enable	Disables one dot overlap when printing barcodes Enables one dot overlap when printing barcodes
DW Term	Disable Enable	Double wide print is not affected by line terminations Double wide print is cancelled by CR, LF, FF, and VT. Valid only when DS-180 Emulation is selected.

MENU 5: SERIAL CONTROL

Printer Displays	Values	Description
Baud Rate xxxx	110 300 600 1200 1800 2400 4800 9600 19.2k	Refer to the documentation of your host computer to determine the baud rate.
Serial xxxxxx	RS-232 RS-422 OFF	Selects serial configuration Cable must be configured to match. See Appendix B. Selecting OFF disables both serial configurations.
Parity xxxxx	None Even Odd Space Mark	Refer to the documentation for your host computer to determine parity. Space 8th Bit only Mark 8th Bit only
Data Bits xxxxxxx	7 8	Refer to the documentation for your host computer to determine data bits.
DTR xxxxxxx	 Enable Disable	Hardware Handshaking DTR (Data Terminal Ready) Busy on when: Buffer filled to high water mark Printer off line Paper out condition Error conditions Busy off when: buffer below low water mark Will remain high at all times
Handshk xxxxxxx	ENQ_ACK ETX_ACK X-ON/ X-OFF XON+ETX XON+ENQ NONE	Specifies whether to use software handshaking
X-ON Ctrl xxx	Single Robust	Specifies which type of X-ON handshaking control is active
X-OFF Ctrl xxx	Single Robust	Specifies which type of X-OFF handshaking control is active

Modem Ctrl xxx	On Off	Activates the following signals: RTS (Request to Send) CTS (Clear to Send) Disables the above signals (RTS is held high)

MENU 6: PARALLEL CONTROL

Printer Displays	Values	Description
Handshk on xxxx	Busy < or > Ack	Parallel interface handshaking Active when: Buffer filled to high water mark Printer off line Paper out condition Error conditions Inactive when: buffer below low water mark
Ack xxxxxx Busy	After Before	Ack will occur after busy. Ack will occur before busy.
8th Bit xxxxxxx	Enable Disable	Printer will honor the 8th bit. Printer will ignore the 8th bit.
Parallel xxxxxxx	Enable Disable	Parallel port is enabled. Parallel port is disabled. The printer will ignore any data sent to the parallel port. Handshaking will indicate busy.

MENU 7 : PROFILE CONTROL

Printer Displays	Values	Description
Rename: xxxxxxxx	0.....9 A.....Z a.....z Space	Profile Name This feature allows you to give the current profile a customized name. To change the current name: 1. Press the Value key until the desired "flashing" character is displayed. 2. Press the Enter key to store that character and to skip to the next character. This new name will be displayed next to On Line/Off Line when Setup Mode is exited.
Save Profile		Pressing the Enter key will save into non-volatile RAM all the current feature values including those affected by the application.
Reset Profile		Pressing the Enter key will reset the current profile features to the factory default.
Ser Prt	Off 1 . . n	The profile specified by this feature is selected on each serial print job.
Par Prt	Off 1 . . n	The profile specified by this feature is selected on each parallel print job.
Port Time	1 sec . 1200 sec	The amount of time the non-active port is held busy, after the active port goes active.
Max Profile xx	1 2 3 4 . . . n	This feature is used to limit the number of active profiles, thus eliminating the need to cycle through unused profiles. This feature is universal and can be changed in any profile. 'n' varies (up to 18) according to the version of firmware resident in the printer.

MENU 8: FORMS THICKNESS CONTROL

Printer Displays	Values	Description
Auto Form Gap		Allows the user to perform an immediate automatic form thickness adjustment. Thickest part of form should be used when making this adjustment.
Quiet/HIGH	Quiet/ HIGH Whisper/ HIGH	Prints up to six-part forms. Default value Prints unidirectional, up to six-part forms.
Adj Form Gap xxx	0-198 Units	Allows the user to specify/change the form thickness distance. Pressing Value ▼ key causes form thickness gap to decrease by 1 unit. Pressing Value ▲ key causes form thickness gap to increase by 1 unit.
Hor Gap Pos xx.x	0.0" . . 8.5	Specifies the horizontal form location of the automatic form thickness adjustment.

VR Gap Pos xx.x	0.0” . . . Form Length in Inches	Specifies the vertical form location of the automatic form thickness adjustment. This is in tenths of an inch and is limited by the current form length.

MENU 9: DIAGNOSTICS

Printer Displays	Values	Description
Print Profile		Pressing the Enter key will print the current profile features. Paper must be loaded in the printer before pressing the Enter key. To stop test, close the Keypad Door or press the Enter key
P/N: ###### xx	Main Carriage	Main controller firmware revision number. Carriage controller firmware revision number.
Test Printhead		Pressing the Enter key will result in testing each printwire in the printhead. Paper must be loaded in the printer before pressing the Enter key. To stop test, close the Keypad Door or press the Enter key.
Run Mode Test		Pressing the Enter key will result in printing font renditions (Double-high, Emphasize, etc.) in the current symbol set. Paper must be loaded in the printer before pressing the Enter key. To stop the test, close the Keypad Door or press the Enter key.
Alignment Test #	1-10	Pressing the Enter key will result in printing an alignment pattern. This is used for fine adjust bi-directional print alignment. Determine best sample 1-10. Use the Value keys to select the corresponding value 1-10. Press the Enter key to save the new value. The test will now reprint.. **CURRENT SETTING** will print beside the new setting. Paper must be loaded in the printer before pressing the Enter key.
Run Self Test		Pressing the Enter key will result in printing an ASCII ripple pattern. Paper must be loaded in the printer before pressing the Enter key. To stop the test, close the Keypad Door or press the Enter key.

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Chapter 5:.....Maintenance

5.1 Scheduled Maintenance

This chapter provides scheduled maintenance and troubleshooting procedures that can be performed by the operator. Any troubleshooting or maintenance beyond the level presented in this chapter should be performed by a qualified technician.

WARNING

MAKE CERTAIN THE PRINTER IS DISCONNECTED FROM THE AC POWER SUPPLY BEFORE REACHING INTO THE UNIT TO PERFORM ANY CLEANING OR MAINTENANCE TASK.

CAUTION

DO NOT USE CLEANERS, SOLVENTS OR LUBRICANTS ON ANY OF THE WORKING PARTS OF THE PRINTER.

The scheduled maintenance that should be performed is periodic cleaning (approximately every 3 months). Clean the cover with a soft, non-abrasive cloth.

Use a small vacuum cleaner to remove dust from the carriage, platen, paper tractors, paper out sensors, and printer throat. A dry, lint-free cloth may be used to clean accumulated dirt from the carriage shafts and the platen.

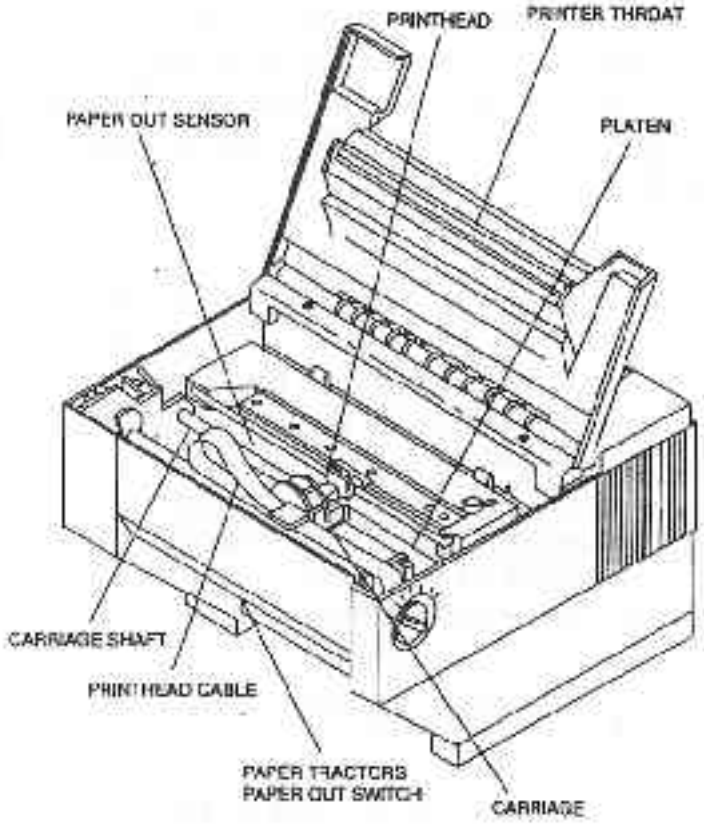


Figure 5-1. Cleaning The Printer

5.2 Error Messages

Paper Out Condition (Main Tractors)

When the printer runs out of paper, the following message will appear in the display:

< Paper Out: Main >

Load Profile 1

The printer will automatically go off line when the paper supply is depleted.

To recover from a paper out condition:

1. Load paper into the main tractors.
2. Press the Load key to load forms.
3. Press the On/Off Line key to go back on line.

The error message will be cleared from the display after paper is loaded.

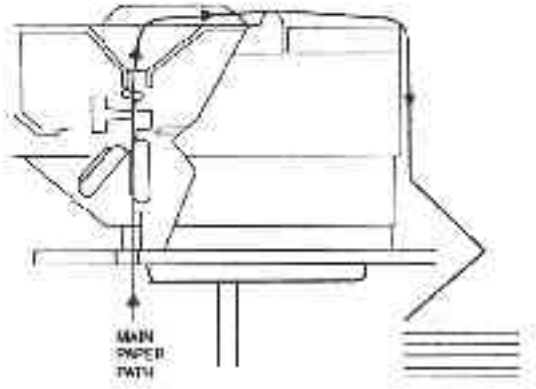


Figure 5-2. Main Tractor Path

Paper Out Condition (Alternate Tractors)

When the alternate tractors run out of paper, the following message will appear in the display:

< Paper Out: Alt >

Load Profile 1

1. Load paper into Alternate tractors.
2. Press Load key to load forms.
3. Press On/Off Line key to continue.

   The error message will be cleared from the display after paper is loaded.

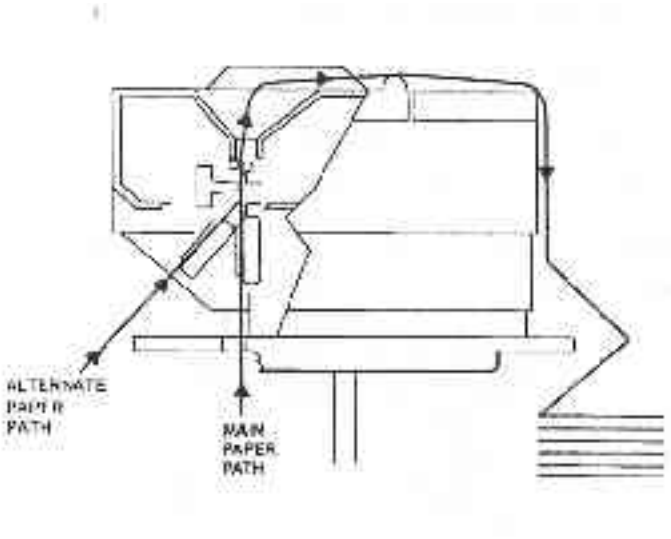


Figure 5-3. Alternate Tractor Path

Paper Jam

Paper jams may occur for several different reasons including: incorrect forms loading, form thickness adjustment set too close, or form out of specification. Check the value of the features that affect form thickness adjustment: Horizontal gap, vertical gap, heavy forms, and adjust forms gap.

To clear a paper jam:

1. Turn the printer power off.
2. Manually rotate the Form Thickness Adjustment Knob counterclockwise so that the printhead is the maximum distance away from the platen.
3. Open the access cover.
4. For tractors: Paper that has not reached the platen may be removed by opening the tractors and pulling the paper straight down.
5. For cut sheet: Paper that has not reached the platen can be dislodged by pressing Park and/or Line Feed and by pulling the paper straight out.
6. Carefully, remove all paper fragments. Make certain no paper fragments are left on the platen, ribbon guide, or paper sensor. Make certain ribbon and guide are factory approved and are in the correct position and not twisted.
7. Close the access cover.
8. Turn the printer power on. When the power is switched on, the printer resets the carriage and checks the paper path. The printer will indicate a paper out condition if paper needs to be reloaded.
9. Reload paper as necessary.
10. The form thickness adjustment will automatically reposition for normal operation.

Carriage Jam

If the carriage is unable to move because of foreign objects in the printer or because of mechanical failure, the following messages will alternate in the display.

< Carriage Jam >

Press On/Off Line Key

To recover from this error condition:

1. Press the On/Off Line key to take the printer off line.
2. Open the access cover.
3. Clear the obstruction and make certain the carriage can move freely.
4. Close the access cover.

WARNING

PRINTHEAD MAY BE HOT

5. Press the On/Off Line key to place the printer on line. When the printer goes on line, the printer will reset the carriage, check the paper path, and clear the error message from the display. The printer will indicate a paper out condition if the paper needs to be reloaded.
6. The form thickness adjustment will automatically reposition for normal operation.

Keypad Lockout

The following message is displayed momentarily after pressing a key which has been locked out or delayed.

<< Key Locked >>

This feature can be changed by using the instructions located in Appendix D.

Cover Open

The following message is displayed on the keypad whenever the cover is open:

< Cover Open >

To resume normal operation, close the cover. The following message is displayed whenever the cover is closed:

Ribbon Replaced?

Y=Profile N=Onln

Pressing the Profile (Y) in response to this message will cause the printer to reset the Ribbon Usage feature to 0%, indicating a new ribbon was installed. Pressing the On/Off Line key (N) will resume normal operation without affecting the ribbon usage value. However, if the ribbon is at 100% usage, it must be replaced before printing may continue.

5.3 Printer Diagnostics

Printer Diagnostics

The following printer diagnostics are available to aid in troubleshooting printer malfunctions. They are accessed while in the Setup Mode under Menu 9 Diagnostics. To initiate these diagnostics, perform steps 1-5.

NOTE

Paper must be loaded prior to performing printer diagnostics.

1. Open the Keypad Door to access Setup Menu.
2. Press Next Menu key until the display appears as shown.

M9 DIAGNOSTICS

3. Press Feature ▼ key until display indicates name of diagnostic to be performed. For example:

Run Self Test

4. Press Enter key to start the selected test. LCD display will alternate as follows:

<Diagnostics>

5. Press Enter key to stop, or close the Keypad Door.

`Enter' To Stop

Print Profile

This test prints a complete listing of feature settings for the current profile. This is normally used to obtain a quick list of the printer feature settings that can be compared with the computer system.

```
Profil 1

  M1 PAGE FORMAT

    Lines/Inch      6
    Form Length    66
    Top Margin      1
    Bottm Margin   66
    Left Margin     1
    Right Margin   80

  M2 FORMS CONTROL

    Load  0  72/144"
    Load Crg Mov  On
    Horz Adj  0/144"
    Tear  6  14/144"
    Manual Tear    FF
    Manual Time   15s
    Auto Tear    Page
    Auto Time     15s
    HF: Pos crg 2.0"
    HF: On Feed>0.5"
    Path        Either
    Paper Speed    10

  M3 PERSONALITY

    Emulate  IBM Pro
    Font     Draft 10
    Set IBM Code 437
    Nat.           USA
    IBM Char Set    1
    Print Zero as   0

  M4 PRINTER CNTRL

    Auto LF   Disable
    Auto CR   Disable
    Wrap       Enable
    Print    Bidirect
    Auto Path Sw Off
    Vert Graphic Off
    Horz Graphic Off
    Power Up   Online
    Buffer Size  12K
    Window Size  512
    Dble Strike  Off
    Ribbon    0% Used
    DGCL       Enable
    Exit Mode Adjust
    Command Char  94
    Overlap   Disable
    DW Term   Disable
```

Figure 5-4. Print Profile

```
M5 SERIAL CNTRL

  Baud Rate    9600
  Serial     RS-232
  Parity       None
  Data Bits       8
  DTR         Enable
  Handshk XON_XOFF
  XON Ctrl   Single
  XOFF Ctrl Single
  Modem Ctrl    Off

M6 PARALLEL CTRL

  Handshak on BUSY
  ACK  before BUSY
  8th Bit    Enable
  Parallel   Enable

M7 PROFILE CNTRL

  Ser Prt       OFF
  Par Prt       OFF
  Port Time      8s
  Max Profiles  10

M8 FORM THICKNES

  Quiet/HIGH
  Adj Form Gap  36
  Hor Gap Pos 2.0"
  VR Gap Pos  1.0"

M9 DIAGNOSTICS

  Alignment Tst  5
  P/N:    107023 09
  P/N:    104500  P
  P/N:    107033 06
```

Figure 5-4. Print Profile (Cont'd)

Firmware Part Number (P/N: xxxxxx - xx)

This feature is normally used by service personnel to determine what level and type of firmware is installed in the printer. The information is also included in the "Print Profile" feature, Figure 5-4, M9 Diagnostics.

oi

Test Printhead

This test verifies that the individual print head impact wires and the controlling electronics are operating properly. It may be used to identify the cause if dots are missing on the print out. In this test, one complete line is printed using each wire in the print head. The wire is noted in the test print out.

NOTE

To prevent printing off the page, 80 column paper should be used for this test.

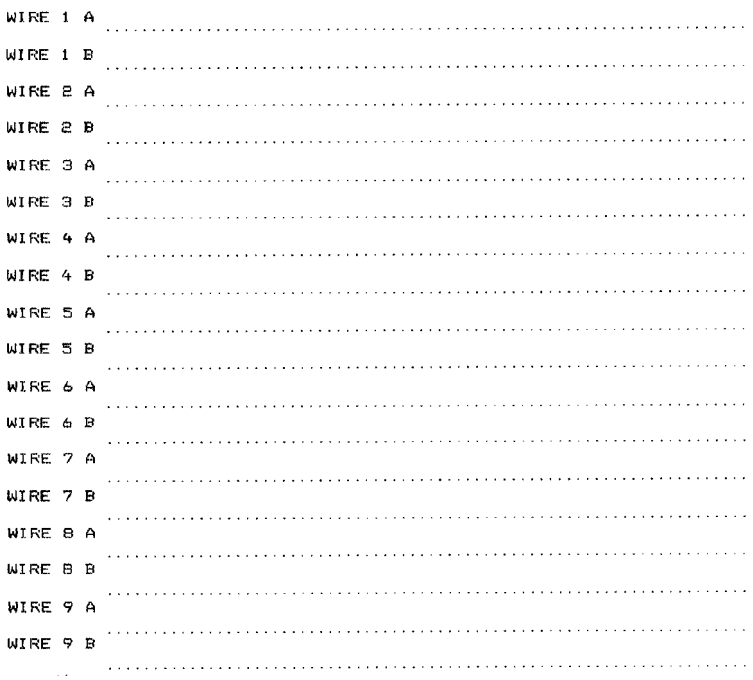


Figure 5-5. Printhead Test

Run Mode Test

This test (requiring 80 column paper) prints the current Symbol set in all fonts available in the printer.

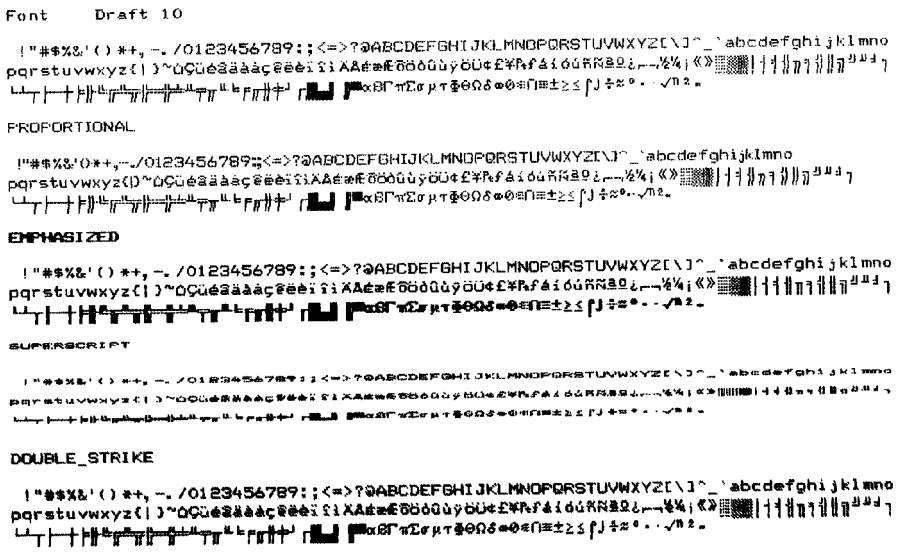


Figure 5-6. Run Mode Test

Run Self Test

This test (requiring 80 column paper) prints a continuous ASCII ripple pattern and tests the internal logic of the printer. If this test runs, the printer has passed all internal diagnostics.

Figure 5-7. Run Self Test

Display Mode

This test (requiring 80 column paper) is accessed while in Setup Mode under M3 PERSONALITY, then selecting Emulate Disply. It is used to aid in program debugging or problem isolation. When Emulate Display is selected, all data being sent to the printer from the computer is passed through the normal printer logic and printed in a hex dump format. Escape sequences and control codes are not executed. The output from the display mode can be compared to the control codes and escape sequences listed in the "Programmer's Manual". With this information you can determine if escape sequences are correct for the emulation selected.

Example: Assume that the printer is set up for Proprinter Emulation. The illustration below shows two lines of text that were printed by the printer. The display dump of this data is shown below.

Below is an example of Display Mode showing “This is a test of display mode. ABCDEFG” printed. The 1B 24 24 50 2E is an internal code used by the printer and should be ignored. The remainder of the data shows the HEX codes for the data printed. The 0D 0A is the HEX code for a carriage return and line feed. Note they are printed on the right side as “.”, as are all control codes

```
1B 24 24 50 2E 54 68 69    73 20 69 73 20 61 20 74    .$$P.This is a t
65 73 74 20 6F 66 20 64    69 73 70 6C 61 79 20 6D    est of display m
6F 64 65 2E 20 41 42 43    44 45 46 47 0D 0A          ode. ABCDEFG..
```

Figure 5-8. Display Mode Test

5.4 Troubleshooting

NOTE

Please read this section before continuing symptom analysis.

The following diagnostic tests are used to aid in isolating possible printer malfunctions. These tests will assist the operator in determining printer/host problems. Additional information for printer error recovery is described under Error Messages. For host to printer communication problems, it is suggested that the operator read the Interface Functional Description of this manual prior to symptom analysis. The operator should also be familiar with displaying and setting of printer features. Refer to the chapters on "Features" for this information.

The following section lists symptoms and corrective actions to be performed for each symptom. Prior to starting the symptom analysis, it is suggested that the printer be powered off for approximately 30 seconds and then powered back on. This will clear any possible bad data in memory and reload Profile settings. Verify settings by running the Print Profile diagnostic as described on page 5-9, and compare the output to your desired configuration. If no changes are needed, rerun the print job. If problem persists, go to the Troubleshooting Table and locate the symptom that best describes the problem you are experiencing. Perform the corrective actions listed for the symptom. If the problem still exists after performing the corrective actions, or if there is not a symptom that corresponds to the problem you are experiencing, call a qualified technician for further assistance.

In the table, some corrective actions indicate to the operator to check a `Feature Value' to make sure it is set correctly. An incorrect feature value can vary between host systems, applications, configurations, etc., and may cause the particular symptom. For example:

The operator may need to check the setting of the Parallel Enable/Disable feature found under Menu 6 (Parallel Control) and verify that the Parallel port is Enabled.

1.5 Troubleshooting Table

Symptom	Corrective Action
No Host Communication Serial	Verify properly selected profile.
	Check interface cable (pin outs), cable connections, or try a new cable.
	Verify emulation selected.
	Verify baud rate, serial type (RS-232, RS-422), parity, data bits, DTR, handshaking.
	Is serial port disabled?
	Reset profile and re-setup the printer.
No Host Communication Parallel	Verify properly selected profile.
	Check interface cable (pin outs), cable connections, or try a new cable.
	Verify emulation selected.
	Handshaking (Ack and/or Busy), 8th bit control
	Is parallel port disabled?
	Reset profile and re-setup the printer.
No Power/Blank Display	Verify power plug connection to the printer.
	Verify power plug connection to power outlet.
	Try another power outlet.
Paper Feeding Problems Tractors	Verify Heavy Forms feature setting is on (See Sections 3.7 - 3.8). Try changing the value of the Heavy Forms feature described in Section 3.8.
	Verify that the ribbon guide is fully seated on the printhead.
	Verify power plug connection to the printer.
	Verify paper tension. Adjust tractors if paper is too tight or too loose causing buckling (See Section 3.3).
	Make sure the paper holes are aligned properly in tractors
	Equally space rear paper supports and front paper guides between tractors.
	Verify forms are hanging straight down from the tractors and the front of the printer is aligned with the edge of the table top or stand.
	Verify that there are no twists in the ribbon.
	Do not print off the edge of the form or on the paper staples.
	Verify that the left tractor is positioned to the alignment mark and that the left and right margins are set properly.
	Verify form thickness is within the specification.
	Reduce Print Speed (under M2 Forms Control in Setup Mode) and/or move paper to Main paper path on dual path units only.

Symptom	Corrective Action
Paper Feeding Problems Cut Sheet*	Remove any paper jams by pressing Line Feed and Adjust ▲ or ▼.
	Turn power off, open access cover and remove any foreign objects.
	Adjust the right edge guide to the correct width and reload paper. (See Section 3.3)
	If form is 4.5 inches to 6.0 inches long, verify that the Vertical Gap position is set to 0.0 inches. (Located under M8 Form Thickness. See Sections 4.6 - 4.7)
	Reduce Paper Speed (Located under M2 Forms Control. See Sections 4.6 - 4.7)
	If vertical spacing is not exactly 6 or 8 lines/inch (exceptionally thick, stiff, and long forms), adjust Cut Sheet Comp. feature value.
Skewed Print On Cut Sheet Forms	Make sure to grab the form in the center and align left edge of the form against the left edge guide.
	Verify that the right edge guide is positioned properly against the form.
	Reduce the Paper Speed (Located under M2 Forms Control. See Sections 4.6 - 4.7)

* To avoid vertical inaccuracy, do not print using Double High, Double Strike, Superscript or Twelve dot high characters over the last 2 inches of a cut sheet form.

Symptom	Corrective Action
Improper Print Alignment between first and last sheet of form (Delimitation)	Keep top exit cover closed while printing. Do not allow form to spill over front of printer. Do not touch the form as it is printing.
	Reduce Paper Speed (Located under M2 Forms Control. See Sections 4.6 - 4.7)
	Verify that the form thickness setting is correct for the application and increase forms thickness setting, if necessary.
Carriage Jam	Turn off power, open front access cover, and check for foreign object.
	Verify label is not stuck to the ribbon guide.
	Verify form thickness setting.
	Verify that the top access is fully closed.

Symptom	Corrective Action
No Print	Verify installation of ribbon and ribbon guide.
	Run a self test. See "Diagnostic Tests".
	Verify form thickness setting as described under the "Form Thickness Adjustment" of this manual.
Short Ribbon Life	Inspect failed ribbon. Ribbon should have two distinct wear bands. If only one band is visible, ribbon is defective
	If ribbon fabric shows vertical runs, printhead gap is too small or printhead is damaged. Check print gap and printhead.
	Ribbon life can be affected by application. Heavy Graphics, Barcode and printing can shorten ribbon life.
Parallel	Check interface cable (pin outs), cable connections, use a shielded cable, or try a new cable.
	Verify emulation selected.
	Handshaking (Ack and/or Busy), 8th bit control
	Reset profile and re-setup the printer.
Corrupted Print Serial	Verify properly selected profile.
	Check interface cable (pin outs), cable connections, or try a new cable.
	Verify emulation selected.
	Verify baud rate, serial type (RS-232, RS-422), parity, data bits, DTR, handshaking.
	Reset profile and re-setup the printer.
Loss Of Data Buffer Overflow Parallel	Check interface cable (pin outs), cable connections, or try a new cable.
	Verify emulation selected.
	Handshaking (Ack and/or Busy), 8th bit control
	Reset profile and re-setup the printer.
Loss Of Data Buffer Overflow Serial	Check interface cable (pin outs), cable connections, or try a new cable.
	Verify emulation selected.
	Verify baud rate, serial type (RS-232, RS-422), parity, data bits, DTR, handshaking.
	Reset profile and re-setup the printer.
Printhead Moves But No Printing Occurs	Check Form Length feature. Form length must be equal to the length of the form being used.

Symptom	Corrective Action
Printhead Pauses At End Of Print Lines	Printhead thermal protection is activated. Make sure printer has proper air flow and is not located in an excessively hot area. Printer will exit this mode automatically after cooling.
Printer Will Not Switch Paths	Change the Path Value to "Either" under M2 Forms Control. (See Sections 3.9 - 3.14)
First Print Line Location Is Wrong	Readjust the first print line using the instructions in Section 3.5. Park and reload.
Print Contrast On Last Sheet Is Too Light	Verify that the forms thickness setting is correct for the form being used.
	Enable the Double Strike feature under M4 Printer Control. (See Sections 4.6 - 4.7)
	Select an NLQ Font listed in Section 3.5.
Printer Is Too Noisy	Enable Whisper/LOW feature under the M8 Forms Thickness Control Menu. (See Sections 4.6 - 4.7)

Appendix A.....Printer Specifications

A.1 Printer Characteristics

- **Printhead:**

  18 wire with a rated life of 200,000,000 draft characters.

- **Maximum Line Length:**

  Main Tractor Path 8.5 inches (223 mm)
  (85 columns @ Draft 10, 83 columns @ lp10)
  Alternate Tractor Path 8.5 inches (223 mm)
  (85 columns @ Draft 10, 83 columns @ lp10)

- **Vertical Pitch:**

  1, 2, 3, 4, 6, 8 and 12 lines per inch and variable spacing, depending on the emulation.

A.2 Emulations

- Epson FX-80
- DEC LA-120
- IBM Graphics Printer
- IBM Proprinter XL
- DS-180

A.3 Font Specifications

- **Available Fonts/Typefaces:**

Font	Pitches	Matrix (H x W)	Max Print Speed (CPS)
DP	10, 12, 13.316,18, 20	9x10	622
Draft	10, 12, 15, 16.4,17.1, 18, 20	9x12	467
Courier	10	18x24	116
Prestige	12	18x20	140
Helvetica	12	18x24	140
OCR A	10	18x36	116
OCR B	10	18x36	116

- **Graphic Densities:**

Horizontal Dots/Inch	60 72 80 90 120 240
Vertical Dots/Inch	72 dots/inch and variable spacing, depending on emulation.

- **International Character Sets:**

Epson Nationalities	DEC Nationalities	TI Nationalities
USA	USA	USA
France	U.K.	France
Germany	Finland	U.K.
U.K.	Sweden	Germany/Austria
Denmark I	Norway/Denmark	Sweden/Finland
Sweden	Germany	Denmark/Norway
Italy	France	Spain/Latin America
Spain I		Switzerland
Japan		Canadian French
Norway		
Denmark II		
Spain II		
Latin America		

A.4 Paper Feed Specifications

- **Paper Types:**

  Main Tractor - 3.5 inches to 8.5 inches (88.9 mm to 215.9 mm), 1 to 6 part, .028 inches (.711 mm) max. thickness. Individual parts not to exceed .005 inches (.127 mm) thickness without factory approval.

  Alternate Tractor - 3 inches to 8.5 inches (76.2 mm to 215.9 mm), 1 to 6 part, .028 inches (.711 mm) max. thickness. Individual parts not to exceed .005 inches (.127 mm) thickness without factory approval.

  Cut Sheet - 2-3/4 inches to 8.5 inches (69.8 mm to 215.9 mm), 1 to 6 part,.028 inches (.711 mm) max. thickness. Individual parts not to exceed .005 inches thickness (.127 mm) without factory approval.

- **Access:**

  Bottom - Main Tractor Path
  Front - Alternate Tractor Path or Cut Sheet Path

- **Feed Direction:**

  Forward - Continuous
  Reverse - Continuous

- **Forms Tear Off:**

  Zero forms tear off

- **Paper Slew (Paper Advance):**

  Slew speed is 10 IPS (inches per second) maximum and is programmable. Cut sheet slew is 10 IPS maximum.

A.5 Forms Mode Change

- **Parking Forms:**

  The forms are reverse fed into the tractors, so that the alternate paper path may be selected. The new forms are then reloaded to the previously set top of form and top margin.

- **Tear Off:**

  A key may be used to advance the forms a predefined distance, so the last printed form can be removed without wasting the next form. The distance advanced is programmable by the user. The forms are returned to print position when the key is pressed again, or after a user specified timeout period.

A.6 Communications Interface

- **Communications Buffer Size:**

  12K depending on RAM option installed. Size and handshaking limits are programmable.

- **RS-232/RS-422 Serial Interface Characteristics:**

  Baud Rates: 110, 300, 600, 1200, 1800, 2400, 4800, 9600,19.2Kb

  Protocol Types: X-ON/X-OFF, ETX/ACK, ENQ/ACK, DTR

- **Centronics-Compatible Parallel Interface Characteristics:**

  36 pin Amphenol Configuration
  Protocol Types: BUSY, ACK

A.7 Operator Panel Functional Description

- **Display Description:**

  1 line by 16 character LCD. In addition, an LED is used to indicate READY (On Line) status.

- **Key Switch Layout:**

8 keys

A.8 Ribbon Cartridge/Drive

- Stationary cartridge with an average life of 7-10 million characters (depending upon printing application).

A.9 Physical

- 17.0 inches (431 mm) wide x 15.7 inches (398 mm) deep x 12.3 inches (312 mm) high (Dual Tractor top roller version)
- 17.0 inches (431 mm) wide x 15.7 inches (398 mm) deep x 11.3 inches (287 mm) high (Standard Model)
- 17.0 inches (431 mm) wide x 16.7 (424 mm) inches deep x 2.3 inches (312 mm) high (Cut Sheet Model)
- Weight: 45 lbs (20.4 Kg) (Standard and Dual Tractor Model); 46 lbs (20.9 kg) (Cut Sheet Model)

A.10 Electrical

- **Power Requirements:**

  97 V to 132V, 57 to 63 Hz or 195V to 264V, 47 to 53 Hz

  Auto Select Power Supply

A.11 Shock And Vibration

The printer meets NSTA pre-shipment requirements.

A.12 Environmental

- **Temperature:**

  Non-operating: -30° to 180° F (-34° to 82° C)
  Operating: 40° to 104° F (5° to 40° C) up to 7000 ft.
  Derate linearly from 78° to 104° F (25° to 40° C) between 7000 and 10,000 ft.

- **Humidity:**

  Non-operating: 10 to 90% RH non-condensing
  Operating: 20 to 80% RH non-condensing

- **Noise Level:**

  Less than 65 dBA
  Less than 57 dBA with optional covers

- **Electrostatic Discharge:**

  Will withstand 15kV discharge with shielded cables.

A.13 Compliance

This unit will comply with the following at the time of production.

- **Safety:**

  UL 1950
  CSA C22.2 No 950M-1989
  EN60950
  TÜV GS Mark
  CE Mark

- **EMC:**

  FCC Class A
  EN 55022 Class A
  EN 50082-1
  EN 61000-3-2
  EN 61000-3-3
  CE Mark

Appendix B.....Interface Specifications

B.1 Parallel Interface

- **Data Transmission:**

  7 or 8 bit

- **Synchronization:**

  Externally supplied Data Strobe

- **Handshaking:**

  Acknowledge (Busy before Acknowledge or Busy after Acknowledge)

  Busy (Acknowledge before Busy or Acknowledge after Busy)

- **Logic Level:**

  Input data and all interface signals are TTL compatible.

  Two output signals control the handshaking on the parallel interface, the BUSY signal and the ACKNOWLEDGE signal. An incoming DATA STROBE will cause BUSY to go high.

PAPER END: The PAPER END signal is an active high signal that will go high when paper out is detected.

ERROR: The ERROR signal will go low with the detection of an error condition. A fatal printer error condition exists when ERROR is low, PAPER END is low and SELECT is high.

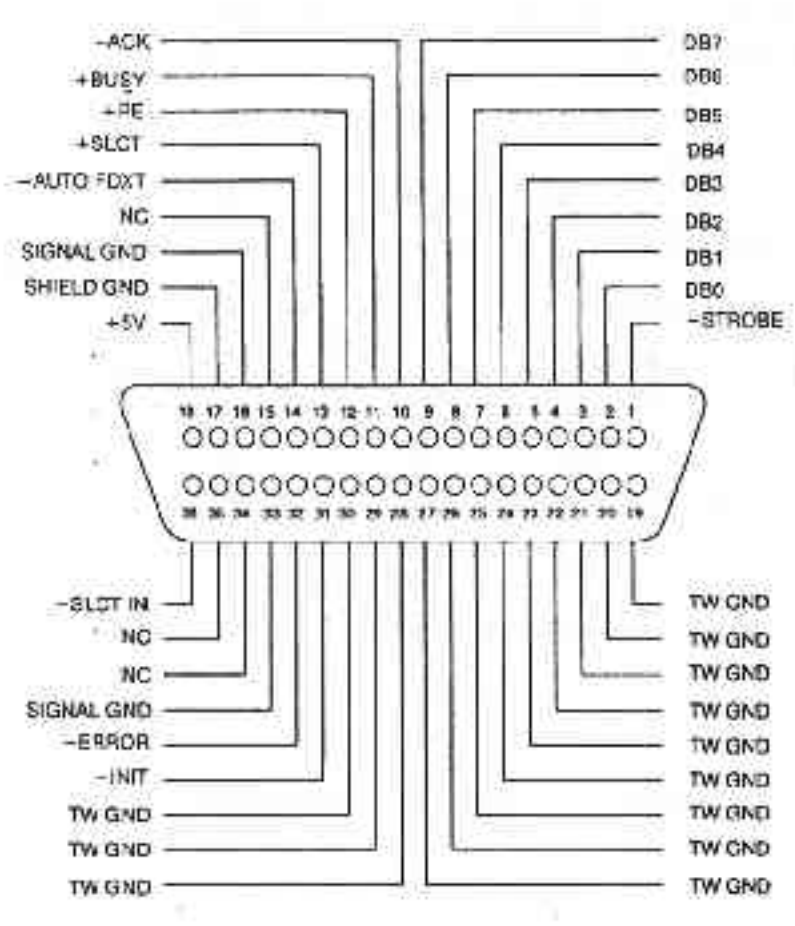
SELECT: When the printer is ready to receive data, the SELECT signal is set high. This signal will go low when:

The On/Off Line key is pressed.
There is a carriage jam.
Paper out is detected.
Fatal errors.

	SIGNAL			
CONDITION	**+BUSY**	**+PAPER END**	**+SELECT**	**-ERROR**
READY	LOW	LOW	HIGH	HIGH
FIFO FULL	HIGH	LOW	HIGH	HIGH
PAPER OUT	HIGH	HIGH	LOW	LOW
CRG JAM	HIGH	LOW	LOW	LOW

OFF LINE	HIGH	LOW	LOW	HIGH
FATAL ERROR	HIGH	LOW	HIGH	LOW

+ Active high
- Active low



***Pin 18 can source up to 375 mA.**

Figure B-1. 36 Pin Parallel Interface Connector

B-2

The following diagrams illustrate the signal timing of the parallel interface when Acknowledge is issued before Busy.

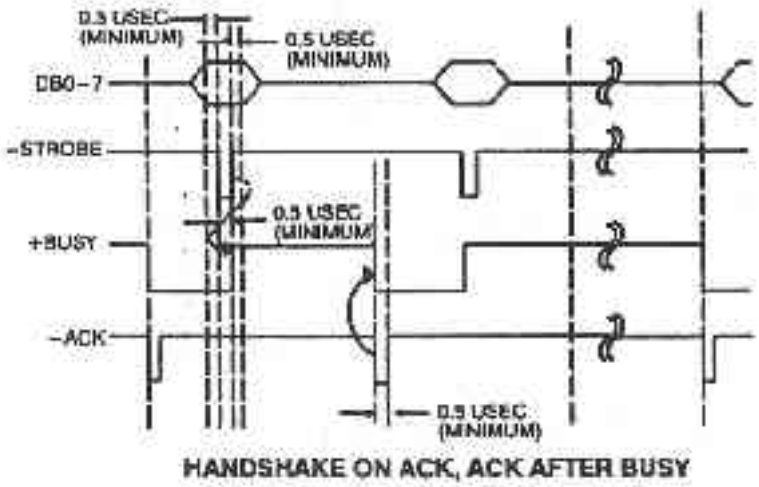


Figure B-2. Signal Timing Patterns (Sheet 1 of 2)

The following diagrams illustrate the signal timing of the parallel interface when Acknowledge is issued before Busy.

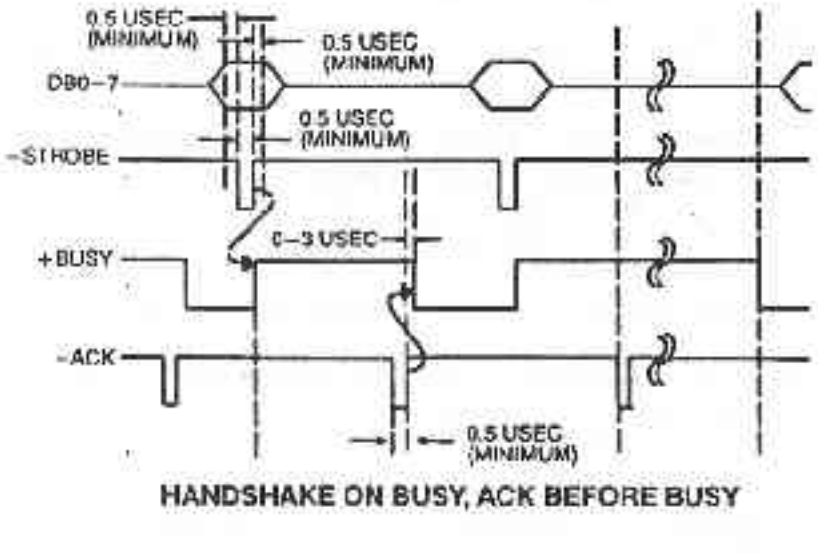


Figure B-2. Signal Timing Pattern (Sheet 2)

B.2 Parallel Interface Enable/Disable

1. Set the power switch to On.
2. Press the On/Off Line key.
3. Open the Keypad Door. The first menu will appear on the display.

4. Press the Next Menu key until you have accessed Menu 6. The display will appear as shown.

M6 PARALLEL CONTROL

5. Press the Feature ▼ key to select the Parallel feature.
6. Press the Value ▲ key to select enable/disable.
7. Press the Enter key to accept your selection.

   There are three additional features which allow you to configure the parallel interface to suit your needs: Handshake, [BUSY, ACK], [ACK, BUSY, BEFORE, AFTER], and [8th Bit ENABLE, DISABLE]. All three features are contained in Menu 6, Parallel Control. Each feature is explained in detail in Chapter 4. After you finish your parallel interface configuration, continue with step 8.

8. Close the Keypad Door to exit Setup Mode. The alternating message will be displayed.

Press `Profile'
To Save Settings

9. Press the Profile key to save the setting in non-volatile memory.
10. Press the On/Off Line key to place the printer back on line.

B.3 RS-232 Serial Interface

- **Data Transfer Rates (Baud Rate):**

110	2400
300	4800
600	9600
1200	19200
1800	

- **Synchronization:**

Start-Stop Bits

- **Data Format:**

Start Bit:	1
Data Bits:	7 or 8
Parity:	odd, even or no parity
Stop Bit:	1 for reception
	1 for transmission

If the host serial interface is configured for 7 Bit data with no parity, data from host computer must contain two stop bits.

- **Handshaking Protocols:**

X-ON/X-OFF: (DC1/DC3) In this protocol, the printer will respond with the DC3 (X-OFF) character when:

Print buffer is nearly full.
Paper out condition exists.
Carriage jam condition detected.
Printer is off line.

When the printer is ready for more data, it will transmit the DC1 (X-ON) character.

ETX/ACK:	The host will include the ETX character at the end of a string of data. When the printer detects the ETX character, it transmits an ACK character to the host, indicating it is ready for more data.
ENQ/ACK:	The host will include the ENQ character at the end of a string of data. When the printer detects the ENQ character, it transmits an ACK character to the host, indicating it is ready for more data.
XON + ETX:	Enables XON/XOFF and ETX/ACK.
XON + ENQ:	Enables XON/XOFF and ENQ/ACK.

Serial port configuration can only be selected through the front panel. Only one handshaking protocol can be selected at a time. The DTR protocol can be selected with any handshaking protocol. If the user selects modem control, the printer will only receive and transmit data if RTS, CTS and DSR are honored and provided by the host.

X-ON CTRL: Only when `Robust' X-ON CTRL is selected, DC1 will be transmitted every 4 seconds while the printer is idle and ready to accept data. Also, if no data is being transmitted and the printer is printing, a DC1 will be transmitted every 256 bytes as the FIFO goes empty.

X-OFF CTRL: Only when `Robust' X-OFF CTRL is selected, DC3 will be transmitted every time a character is received while the serial interface is not ready to accept data.

SIGNAL	PIN	NO MODEM CONTROL	MODEM CONTROL
DTR	20 11	When the printer is ready to accept data, this line will be high (+ EIA LEVEL). This line will go low (- EIA LEVEL) when: a. Print buffer is nearly full (within 512 bytes). b. Paper out condition exits. c. Carriage jam condition detected. d. Printer is off line.	When the printer is ready to accept data , this line will be high (+ EIA LEVEL). This line will go low (- EIA LEVEL) when: a. Print buffer is nearly full (within 512 bytes). b. Paper out condition exits. c. Carriage jam condition detected. d. Printer is off line.
RTS	4	This signal will always be held high.	RTS will be held high when the interface is ready to transmit data.
CTS	5	CTS is always assumed high.	The interface will monitor the CTS signal generated by the host in response to RTS. When this signal goes on (high), the host is ready to receive data.
DSR	6	DSR is always assumed high.	If DSR is low, the interface will ignore all data received on the serial port. This signal must hold high for the interface to receive and transmit data.
DCD	8	Same as DSR.	Same as DSR.

B.4 Serial Interface Selection

1. Set the power switch to On.
2. Press the On/Off Line key.
3. Open the Keypad Door. The first menu will appear on the display.
4. Press the Next Menu key until you have accessed Menu 5. The display will appear as shown.

M5 SERIAL CNTRL

5. Press the Feature ▼▲ keys to select the Serial feature.
6. Press the Value ▼ key to select RS-232, RS-422, or disable.
7. Press the Enter key to accept your selection.

There are five additional features which allow you to configure the serial interface to suit your needs: Parity, Data Bits, DTR, Handshake and Modem Control. All five features are contained in Menu 5, Serial Control. Each feature is explained in detail in Chapter 4. After you finish your serial interface configuration, continue with step 8.

8. Close the Keypad Door to exit Setup Mode. The messages will alternate on the display as shown.

Press `Profile'

To Save Settings

9. Press the Profile key to save profile.
10. Press the On/Off Line key to place the printer back on line.

RS-232 Serial Interface Connector Pin Assignment

PIN	SIGNAL NAME

1	Frame Ground
2	Transmitted Data
3	Received Data
*4	Request To Send
*5	Clear To Send
*6	Data Set Ready
7	Signal Ground
*8	Data Carrier Detects
9	No Connect
10	No Connect
11	Data Terminal Ready
12	No Connect
13	No Connect
14	Reserved
15	Reserved
16	Reserved
17	Reserved
18	Reserved
19	Reserved
20	Data Terminal Ready
21	No Connect
22	No Connect
23	No Connect
24	No Connect
25	No Connect

*These signals are available only when the Modem Control feature is enabled.

RS-422 Serial Interface Connector Pin Assignment

PIN	SIGNAL NAME
1	Frame Ground
2	Reserved
3	Reserved
4	Reserved
5	Reserved
6	Reserved
7	Signal Ground
8	Reserved
9	No Connect
10	No Connect
11	No Connect
12	No Connect
13	No Connect
14	Transmitted Data (+)
15	Transmitted Data (-)
16	Received Data (+)
17	Received Data (-)
18	Data Terminal Ready (+)
19	Data Terminal Ready (-)
20	Reserved
21	No Connect
22	No Connect
23	No Connect
24	No Connect
25	No Connect

Appendix C.....Default Tables

Profiles are user definable sets of default parameters that can be used to setup the printer for predetermined functions(s). All profiles reside in the non-volatile printer memory and are retained when the printer is powered off. Upon power up, the last selected profile configuration is loaded into the printer control system.

All profiles are defaulted to the same factory settings.

C.1 Menu 1 Page Format

Feature Default	User P1	User P2	User P3	User P4
Lines/Inch 6				
Form Length 66				
Top Margin 1				
Bottom Margin 66				
Left Margin 1				
Right Margin 80				
Clear Horz Tabs	*******	*******	*******	*******
Horz Tab ### xxx				
Clear Vert Tabs	*******	*******	*******	*******
Vert Tab ### xxx				

*** These features cannot be user defined.

C.2 Menu 2 Forms Control

Feature Default	User P1	User P2	User P3	User P4
Load 0 72/144"				
Load Crg Move On				
Horz Adj 0/144"				
*Tear x x/144"				
Manual Tear FF				
Manual Time 15s				
Auto Tear OFF				
Auto Time 5s				
HF: Pos Crg 2.0”				
HF: On Feed >0.5”				
Path Either				
Paper Speed 10				

* Varies depending on Top Access cover configuration.

C.3 Menu 3 Personality

Feature Default	User P1	User P2	User P3	User P4
Emulate IBM PRO				

Font DP 10				
SetIBM Code 437				
Nat. USA				
IBM Char 1				
Print Zero as 0				

C.4 Menu 4 Printer Control

Feature Default	User P1	User P2	User P3	User P4
Auto LF Disable				
Auto CR Disable				
Wrap Enable				
Print Bi-direct				
Auto Path SW OFF				
Vert Graphic OFF				
Horz Graphic OFF				
Power Up On Line				
Buffer Size 12K				
Window Size 512				
Dbl. Strike OFF				
Ribbon % Used				
DGCL Enable				
Exit Mode Adjust				
Command Char 94				
Overlap Disable				
DW Term Disable				

C.5 Menu 5 Serial Interface

Feature Default	User P1	User P2	User P3	User P4
Baud Rate 9600				
Serial RS-232				
Parity None				
Data Bits 8				
DTR Enable				
Handshk X-ON_X-OFF				
XON Ctrl Single				
XOFF Ctrl Single				
Modem Ctrl OFF				

C.6 Menu 6 Parallel Interface

Feature Default	User P1	User P2	User P3	User P4
Handshak On Busy				
Ack before Busy				
8th Bit Enable				
Parallel Enable				

C.7 Menu 7 Profile Control

Feature Default	User P1	User P2	User P3	User P4
Rename: Profile 1				
Save Profile	*******	*******	*******	*******
Reset Profile	*******	*******	*******	*******
Ser Port Off				
Par Port Off				
Port Time 8s				
Max Profiles 10				

*** These features cannot be user defined.

C.8 Menu 8 Form Thickness Control

Feature Default	User P1	User P2	User P3	User P4
Auto Form Gap	xxxx	xxxx	xxxx	xxxx
Quiet/HIGH				
Adj. Form Gap 36				
Hor Gap Pos 2.0"				
VR Gap Pos 1.0"				

C.9 Menu 9 Diagnostics

Feature Default	User P1	User P2	User P3	User P4
Print Profile	*******	*******	*******	*******
P/N: ###### xx	*******	*******	*******	*******
Test Printhead	*******	*******	*******	*******
Run Mode Test	*******	*******	*******	*******
Alignment Tst 5	*******	*******	*******	*******
Run Self Test	*******	*******	*******	*******

*** These features cannot be user defined.

To change these settings, follow the direction in Chapter 4 "Features". It is suggested that the user execute the "Print Profile" feature for each used profile and enter each altered value into the applicable default table or attach it to this manual.

C.10 Menu 10 System Control

Feature Default	User P1	User P2	User P3	User P4
Reset NVRAM				
Reset Key Lock				
Key Lockout, All Unlocked				
Reset Quick List Font DP 10 Lines/Inch 6 Form Length 66 Left Margin 1 Right Margin 80	xxxx	xxxx	xxxx	xxxx
Add Quick Ftr	xxxx	xxxx	xxxx	xxxx
Delete Quick Ftr	xxxx	xxxx	xxxx	xxxx
Cut Sheet Comp 5				
Cut Sht Time Off				
Ribbon Life 10M				
Replace Ribn 95%				
Check Ribbon 85%				
*Config				

* Depends on mechanical configuration. Resets to `Tractor' only on NVRAM failures.

Appendix D.....System Administration

D.1 Features Available In System Control Menu

This appendix describes how to access features which are not normally available while the printer is in Setup Mode. These features are found in Menu 10 System Control.

By accessing this menu you can:

Reset all profiles and system information to factory defaults.

Reset the Key Lock Out feature to factory defaults.

Selectively lock out individual keypad functions such as Setup Mode using the Key Lock Out feature.

Reset the Quick Access List to factory defaults

Add features to the Quick Access List

Delete features from the Quick Access List

Change the mechanical configuration of the printer

NOTE

Use of these features may be restricted by removing this appendix from the manual.

To access this menu do the following:

1. Load paper in the printer.
2. Place the printer on line (READY LED On).
3. Press the following keys in the order indicated below:
   a. Profile
   b. Park/Path
4. Open the Keypad Door and Menu 10 can be found using the Next Menu key.

Menu 10: System Control

Displayed Function	Values	Description Of Features
Reset Printer NVM		Pressing the Enter key will reset all profiles to their factory defaults. This will also set top of form to the current position. To clear the printer buffer and all features set in RAM, turn the printer OFF. To reset the physical top of form , park and load the paper. The LCD will momentarily display "Resetting NVRAM" and after reset is complete "NVRAM Reset" when the Enter key is pressed. To properly reset the NVRAM, remove paper before turning off the printer
Reset Key Lock		Pressing the Enter key will reset all Key Lock features to factory defaults. The LCD will momentarily display Key Lock Reset when the Enter key is pressed.
Key Lock Functions Off Line Load/FF Setup Adj Up Adj Down Tear Off Line Feed Profile Park/Path	Unlock Lock	Use the Value ▲▼ keys to scroll through the available key list. If the Enter key is pressed, the Values "lock" or "unlock" will toggle, respectively. The selected values are automatically saved. This feature can be set or reset from any profile. Any Key Functions necessary to clear an error, such as Paper Out, Carriage Jam, etc., are functional immediately, regardless if that key has been turned off or delayed. The Key Function displayed will be active when pressed. The Key Function displayed will be inactive. The user will not be able to activate the function. Pressing an inactive key causes the LCD to display "KEY LOCKED". In order to enter Setup Mode if setup is locked, the printer must be on line and the following keystrokes must be entered consecutively: a. Press Profile b. Press Park/Path c. Open the Keypad Door
Reset Quick List		Resets the list of features accessed by the Quick Access key to the default features.
Add Quick FTR		Use Value ▲▼ keys to select feature to add to Quick Access key. Press Enter key. This feature can now be accessed using Quick Access key.
Delete Quick FTR		Use Value ▲▼ keys to select feature to delete to Quick Access key. Press Enter key. This feature will no longer be accessible from the Quick Access key.

Cut Sheet Comp	0-24	Adjusts the vertical feed rate for cut sheet forms This feature is used when exceptionally thick, stiff and long forms are not printing at exactly 6 lines/inch or 8 lines/inch. Increasing this value compresses the vertical spacing. Decreasing this value expands the vertical spacing. This is factory set to the correct value and rarely needs to be adjusted.

Cut Sheet Time	Off 1 - 300	Disabled Automatically switches from cut sheet path to tractor path after "x" (1-300) seconds. This feature saves time by reloading tractor forms and going "On Line" after last cut sheet form is printed. The Path feature (located under M2 Forms Control) must be set to Either to enable this feature.
Ribbon Life xx M	1...50	This feature indicates the ribbon cartridge life in millions of character. When the Ribbon xx% Usage feature reaches 100%, the printer displays: < Ribbon Life End > The ribbon must be replaced. This feature value should not be changed unless otherwise specified on the ribbon cartridge box. The feature defaults to 10 M characters which is based on the DP font. The number of characters printed per ribbon will vary based on actual application. The printer stores this value in dots per ribbon to ensure percent usage is correct for any font or print mode including barcodes.
Replace Ribn xx%	0...100	This feature sets the % usage limit at which the printer displays: < Replace Ribbon > Ribbon xx% Used This indicates the ribbon is near its end of life and should be replaced. This message replaces the normal on line/off line display.
Check Ribbon xx%	0...100	This feature sets the % limit at which the printer displays: < Check Ribbon > Ribbon xx% Used The printed media should be checked for acceptable print contrast. This message will disappear from the display whenever the printer is taken off line. It will then only be displayed on power up.

Config	Tractor Trac-Fric	Sets the mechanical configuration of the printer. This is set to the correct value at the factory. This feature is useful if the firmware or main electronics controller board is replaced. The value is automatically saved.

D.2 Key Functions That Can Be Locked

Menu 10: System Control

Displayed Function	Description Of Function
Off Line	Disables the ability to place the printer Off Line This function is disabled only when paper is properly installed in the printer. Profile Select, Clear Buffer, Font Select, Setup, Park and Load keys are also disabled because they are only active when the printer is off line.
Park/Path	Disables the ability to Park the form.
Adj. Up	Disables the ability to make minor adjustments in the print position
Form Feed	Disables the ability to perform a form feed from the key pad
Adj. Down	Disables the ability to make minor adjustments in the print position
Tear Off	Disables the ability to move the paper to the tear off position from the key pad The Automatic Tear Off feature, if set, is still active.
Line Feed	Disables the ability to perform a line feed from the key pad
Profile	Disables the ability to change profiles
Setup	Disables the ability to enter Setup Mode

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Appendix E..... Ribbon Life Monitor

This feature provides the ability to control the usage level of the ribbon and helps prevent inadvertent usage past its functional life. The printer displays a "Check" or "Replace" message on the keypad at user designated limits. If the ribbon reaches the end of it's life, the printer will stop printing and indicates the ribbon must be replaced.

By adjusting the check and replace limits, the operator can be prompted to replace the ribbon at a usage level best suited for that specific application. This feature may also be used for monitoring ribbon wear before starting a long unattended print job.

The Ribbon Life Monitor feature counts all dots printed on the ribbon regardless of print mode (graphics, barcodes, NLQ ...). The percent of total ribbon life is then calculated. This percent usage may be checked by entering setup mode and selecting the "Ribbon xx% Used" feature located in the M4 PRINTER CONTROL Group.

M4 PRINTER CTRL

Ribbon xx% Used

Each time the Top Access cover is opened and then closed, the printer will desplay the following:

Ribbon Replaced?

Y=Profile, N=Onln

Press the Profile key if the ribbon was replaced. If not, press the Online key.

This feature may be adjusted like any other feature in the Setup mode. Normally the Ribbon Usage feature is not adjusted in Setup mode unless a partially used ribbon is installed. In this case the percent usage should be estimated and the features set accordingly.

The user definable Check, Replace, and Ribbon Life features are found in the M10 SYSTEM CONTROL feature group. For more information on these features, refer to Appendix *D System Administration.*

E.1 Ribbon Monitor Operation

Check Ribbon

As the printer operates, the Ribbon Life Monitor maintains a running total of the number of dots which have been printed since the feature was last reset. The ribbon usage value is determined by dividing the total number of dots printed by the ribbon life limit. When the ribbon usage value exceeds the "Check Ribbon" value, the printer will continue printing and will flash the following message on the keypad display:

< Check Ribbon >

Ribbon xx% Used

This message indicates that the ribbon cartridge is approaching the life limit and should be checked for wear. The user should install a new ribbon, if it needs to be replaced. This message will appear from the keypad display whenever the user takes the printer off line. It will then be displayed only at power up.

Replace Ribbon

If the current ribbon cartridge is left in the printer after the "Check Ribbon" message, printing will continue until the ribbon usage exceeds the "Replace Ribbon" value. At this point, the printer, will continue printing and will flash the following message on the keypad display:

< Replace Ribbon >

Ribbon xx% Used

This message indicates that it is now time to replace the ribbon cartridge. It will remain in the keypad display in place of the "On Line" display text.

If the current ribbon cartridge is left in the system, printing will continue until the ribbon cartridge usage value reaches 100%. At this point the printing will stop and the following message will be displayed on the keypad display:

< Ribbon Life End >

This message indicates that the end of the ribbon life has been reached. No further printing will take place until the ribbon cartridge is changed and the ribbon life monitor feature is reset, or the ribbon usage value is changed to a value less than 100%.

setting the Ribbon Life Monitor Feature

There are two methods to change the value of the Ribbon Life Monitor Feature:

1. Replace the ribbon by using the following procedure:

Open top access cover to replace the ribbon cartridge. At this point the message on the keypad display will change to:

Cover Open

When the top access cover is closed the keypad display will change to:

Ribbon Replaced?

Y = Profile N = Onln

This message will be displayed whenever the top access cover is opened and then closed.

Pressing the Profile key (Y) in response to this message will cause the printer to reset the ribbon usage feature to 0%, reset the, carriage, and resume operation. Pressing the On Line key (N) in response to this message will cause the printer to reset the carriage and resume operation without effecting the ribbon usage value. However, if the ribbon is at 100% usage, it must be replaced before printing may continue.

2. Enter Setup mode and manually change the value of the ribbon usage feature to some value less than 100%. For additional information on setting features, refer to Chapter 4 *Features and Profiles* in the User's Manual.

Appendix F.....ASCII Conversion Chart

ASCII CHR	DECIMAL VALUE	HEX VALUE	ASCII CHR	DECIMAL VALUE	HEX VALUE
NUL	0	00	ESC	27	1B
SOH	1	01	FS	28	1C
STX	2	02	GS	29	1D
ETX	3	03	RS	30	1E
EOT	4	04	US	31	1F
ENQ	5	05	SP	32	20
ACK	6	06	!	33	21
BEL	7	07	”	34	22
BS	8	08	#	35	23
HT	9	09	$	36	24

LF	10	0A	%	37	25
VT	11	0B	&	38	26
FF	12	0C	’	39	27
CR	13	0D	(	40	28
SO	14	0E	)	41	29
SI	15	0F	*	42	2A
DLE	16	10	+	43	2B
DC1	17	11	,	44	2C
DC2	18	12	-	45	2D
DC3	19	13	.	46	2E
DC4	20	14	/	47	2F
NAK	21	15	0	48	30
SYN	22	16	1	49	31
ETB	23	17	2	50	32
CAN	24	18	3	51	33
EM	25	19	4	52	34
SUB	26	1A	5	53	35

ASCII CHR	DECIMAL VALUE	HEX VALUE
6	54	36
7	55	37
8	56	38
9	57	39
:	58	3A
;	59	3B
<	60	3C
=	61	3D
>	62	3E
?	63	3F
@	64	40
A	65	41
B	66	42
C	67	43
D	68	44
E	69	45
F	70	46
G	71	47
H	72	48
I	73	49
J	74	4A
K	75	4B
L	76	4C
M	77	4D
N	78	4E
O	79	4F
P	80	50

ASCII CHR	DECIMAL VALUE	HEX VALUE
Q	81	51
R	82	52
S	83	53
T	84	54
U	85	55
V	86	56
W	87	57
X	88	58
Y	89	59
Z	90	5A
[	91	5B
\	92	5C
]	93	5D
^	94	5E
_	95	5F
`	96	60
a	97	61
b	98	62
c	99	63
d	100	64
e	101	65
f	102	66
g	103	67
h	104	68
i	105	69
j	106	6A
k	107	6B

ASCII CHR	DECIMAL VALUE	HEX VALUE
l	108	6C
m	109	6D
n	110	6E
o	111	6F
p	112	70
q	113	71
r	114	72
s	115	73
t	116	74
u	117	75

ASCII CHR	DECIMAL VALUE	HEX VALUE
v	118	76
w	119	77
x	120	78
y	121	79
z	122	7A
{	123	7B
|	124	7C
}	125	7D
~	126	7E
DEL	127	7F

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Appendix G.....ASCII Character Sets

G.1 ASCII Character Sets

A Character Set is a collection of characters (i.e. letters, numbers, and symbols) organized into a "Set" where each character is assigned a unique code. The printer supports the following Character Sets which are selected automatically when the emulation is selected.

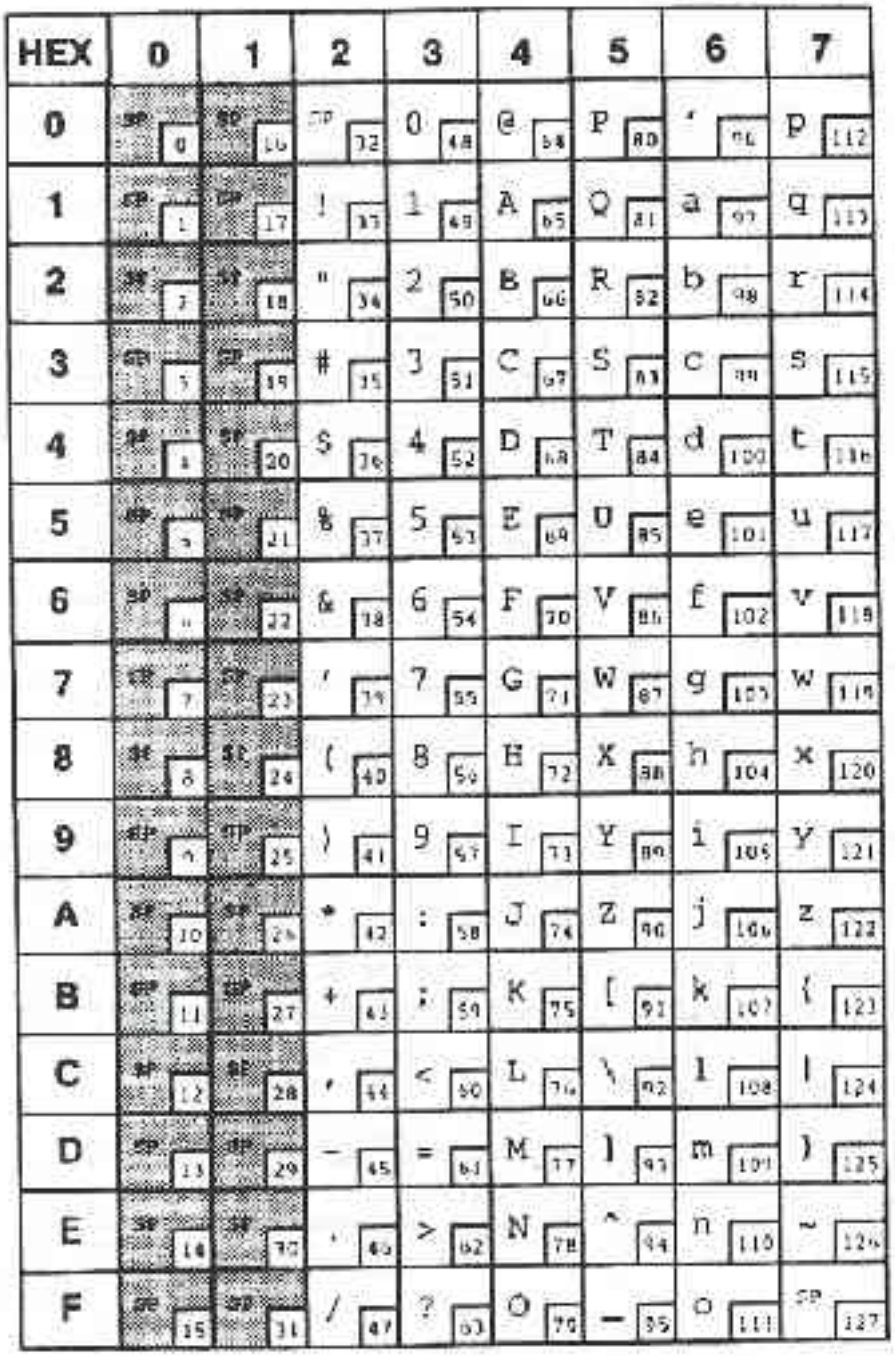
Emulation	Default Character Set	Setup Mode Feature ("Set xxxxxxxxxxxx")
TI 885 (Optional)	7 Bit ASCII	Set 7 Bit ASCII
IBM Proprinter XL	IBM Code Page 437	Set IBM Code 437 Set IBM Code 850
Epson FX-80	Epson Italic	Set Epson Italic Set Epson Graph Set Epson Ital/Gr
DEC LA-120	DEC Supplemental	Set DEC Supplement

To select a Character Set different from the default select the emulation then character set.

Each character set table contains characters which may be printed or executed as Control Codes. This is determined by the currently selected emulation. Refer to the chapter for the emulation selected to determine how to print or execute these codes. When IBM Proprinter emulation is selected the Setup Mode feature "IBM Char Set x" is used as follows. Refer to the Users Manual for instructions on changing this feature.

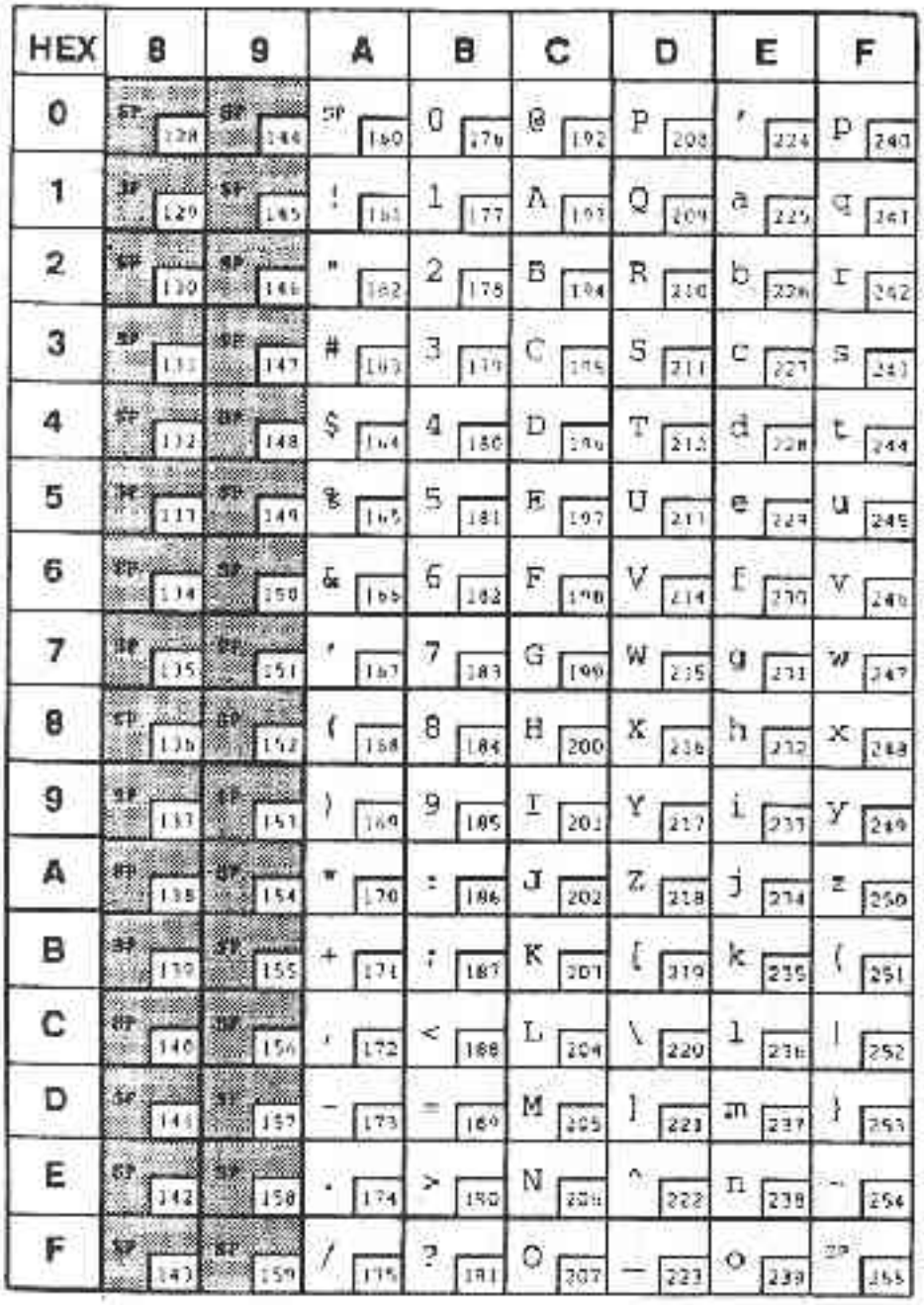
Setup Feature (IBM Char Set x)	Proprinter Escape Sequence	Description
IBM Char Set 1	ESC 7	ASCII Codes 3-6 and 128-159 are treated as control codes
IBM Char Set 2	ESC 6	ASCII Codes 3-6 and 128-159 are decoded as printable characters.

G.2 7 Bit ASCII Character Set



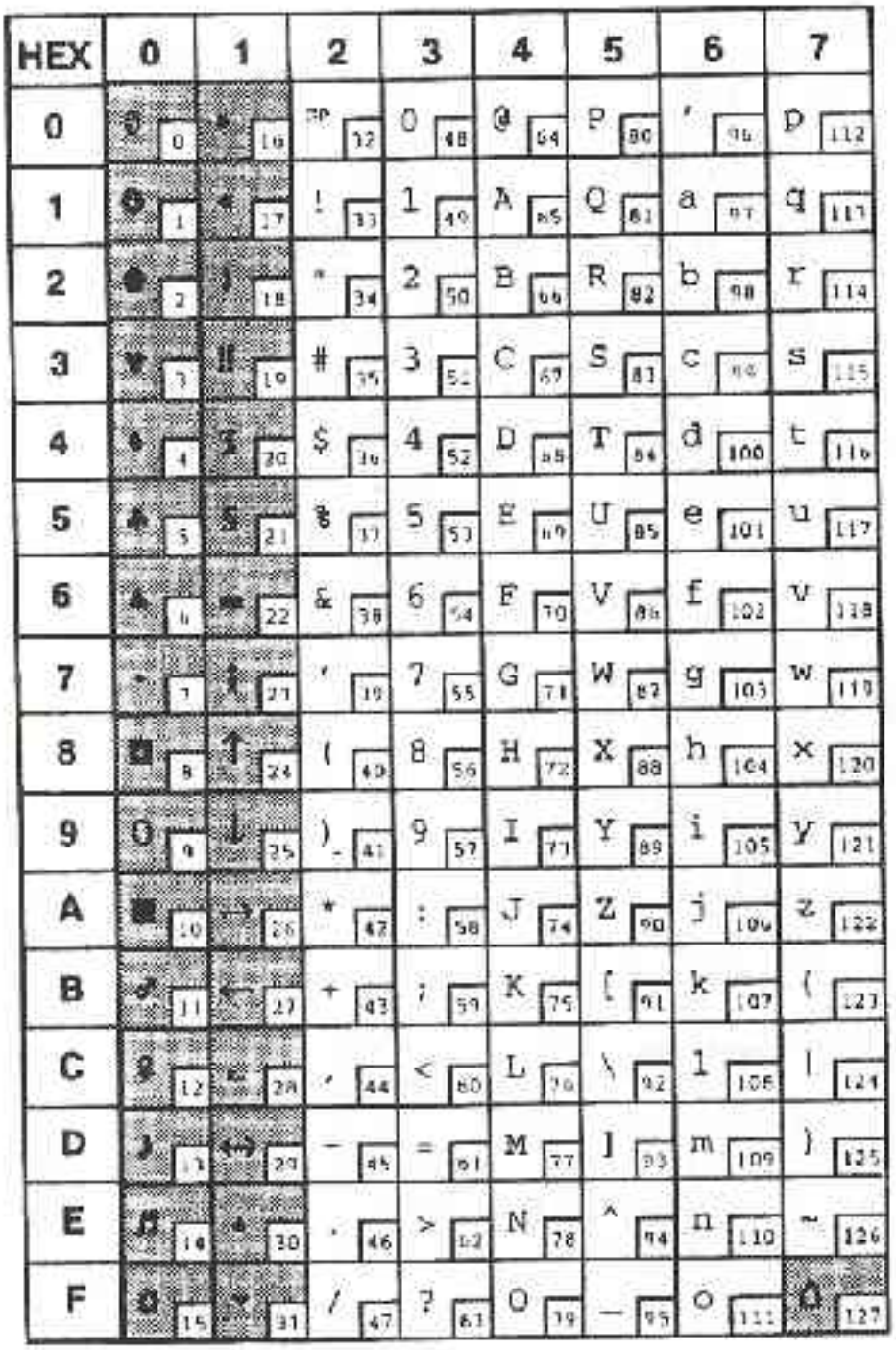
HEX	0	1	2	3	4	5	6	7
0	NUL 0	DLE 16	SP 32	0 48	@ 64	P 80	` 96	p 112
1	SOH 1	DC1 17	! 33	1 49	A 65	Q 81	a 97	q 113
2	STX 2	DC2 18	" 34	2 50	B 66	R 82	b 98	r 114
3	ETX 3	DC3 19	# 35	3 51	C 67	S 83	c 99	s 115
4	EOT 4	DC4 20	$ 36	4 52	D 68	T 84	d 100	t 116
5	ENQ 5	NAK 21	% 37	5 53	E 69	U 85	e 101	u 117
6	ACK 6	SYN 22	& 38	6 54	F 70	V 86	f 102	v 118
7	BEL 7	ETB 23	' 39	7 55	G 71	W 87	g 103	w 119
8	BS 8	CAN 24	(40	8 56	H 72	X 88	h 104	x 120
9	HT 9	EM 25	) 41	9 57	I 73	Y 89	i 105	y 121
A	LF 10	SUB 26	* 42	: 58	J 74	Z 90	j 106	z 122
B	VT 11	ESC 27	+ 43	; 59	K 75	[91	k 107	{ 123
C	FF 12	FS 28	, 44	< 60	L 76	\ 92	l 108	| 124
D	CR 13	GS 29	- 45	= 61	M 77	] 93	m 109	} 125
E	SO 14	RS 30	. 46	> 62	N 78	^ 94	n 110	~ 126
F	SI 15	US 31	/ 47	? 63	O 79	_ 95	o 111	DEL 127

7 Bit ASCII Character Set (Cont'd)

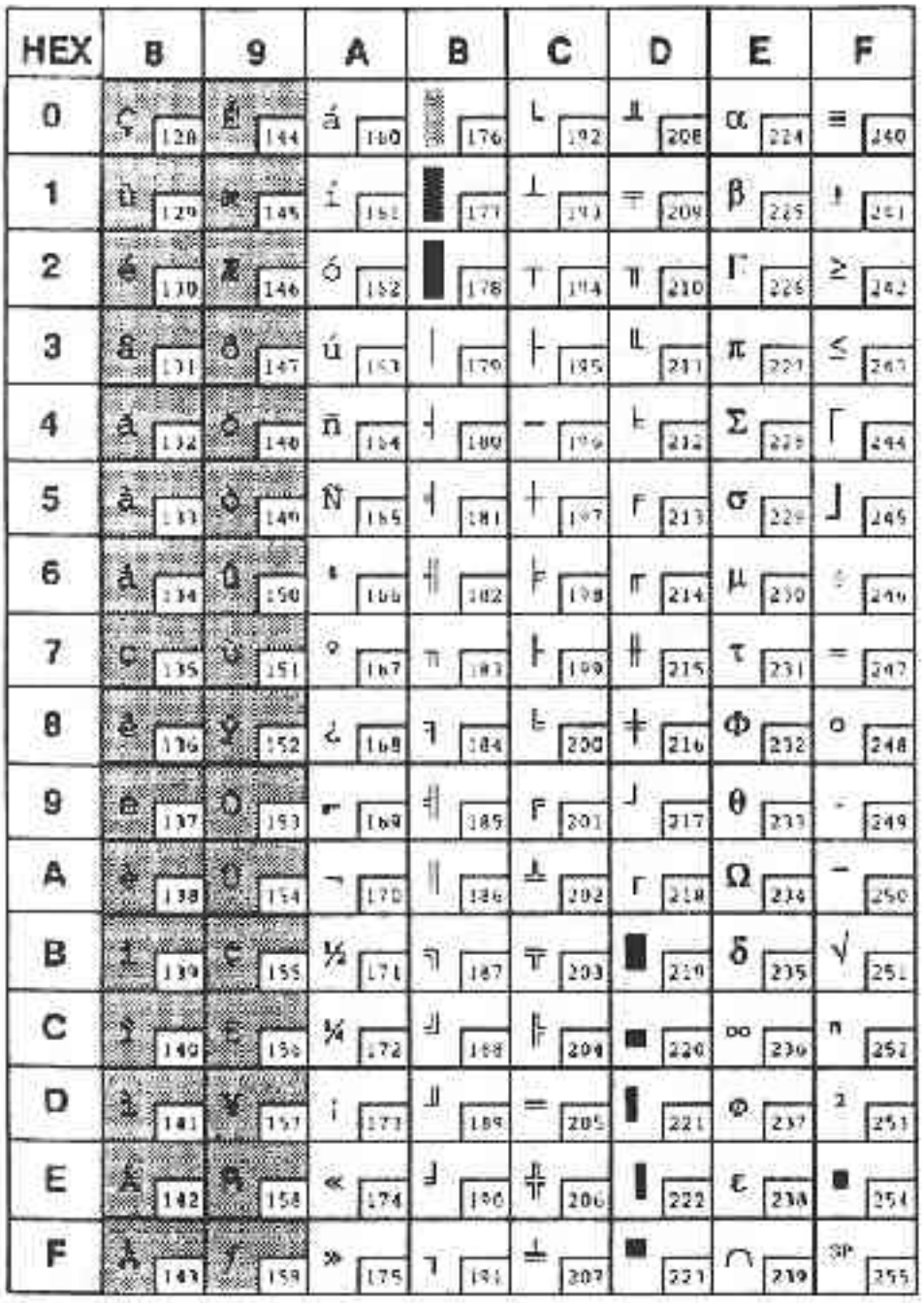


HEX	8	9	A	B	C	D	E	F
0	SP 128	SP 144	SP 160	0 176	@ 192	P 208	' 224	p 240
1	SP 129	SP 145	! 161	1 177	A 193	Q 209	a 225	q 241
2	SP 130	SP 146	" 162	2 178	B 194	R 210	b 226	r 242
3	SP 131	SP 147	# 163	3 179	C 195	S 211	c 227	s 243
4	SP 132	SP 148	$ 164	4 180	D 196	T 212	d 228	t 244
5	SP 133	SP 149	% 165	5 181	E 197	U 213	e 229	u 245
6	SP 134	SP 150	& 166	6 182	F 198	V 214	f 230	v 246
7	SP 135	SP 151	' 167	7 183	G 199	W 215	g 231	w 247
8	SP 136	SP 152	(168	8 184	H 200	X 216	h 232	x 248
9	SP 137	SP 153	) 169	9 185	I 201	Y 217	i 233	y 249
A	SP 138	SP 154	* 170	: 186	J 202	Z 218	j 234	z 250
B	SP 139	SP 155	+ 171	; 187	K 203	[219	k 235	{ 251
C	SP 140	SP 156	, 172	< 188	L 204	\ 220	l 236	| 252
D	SP 141	SP 157	- 173	= 189	M 205	] 221	m 237	} 253
E	SP 142	SP 158	. 174	> 190	N 206	^ 222	n 238	~ 254
F	SP 143	SP 159	/ 175	? 191	O 207	_ 223	o 239	DP 255

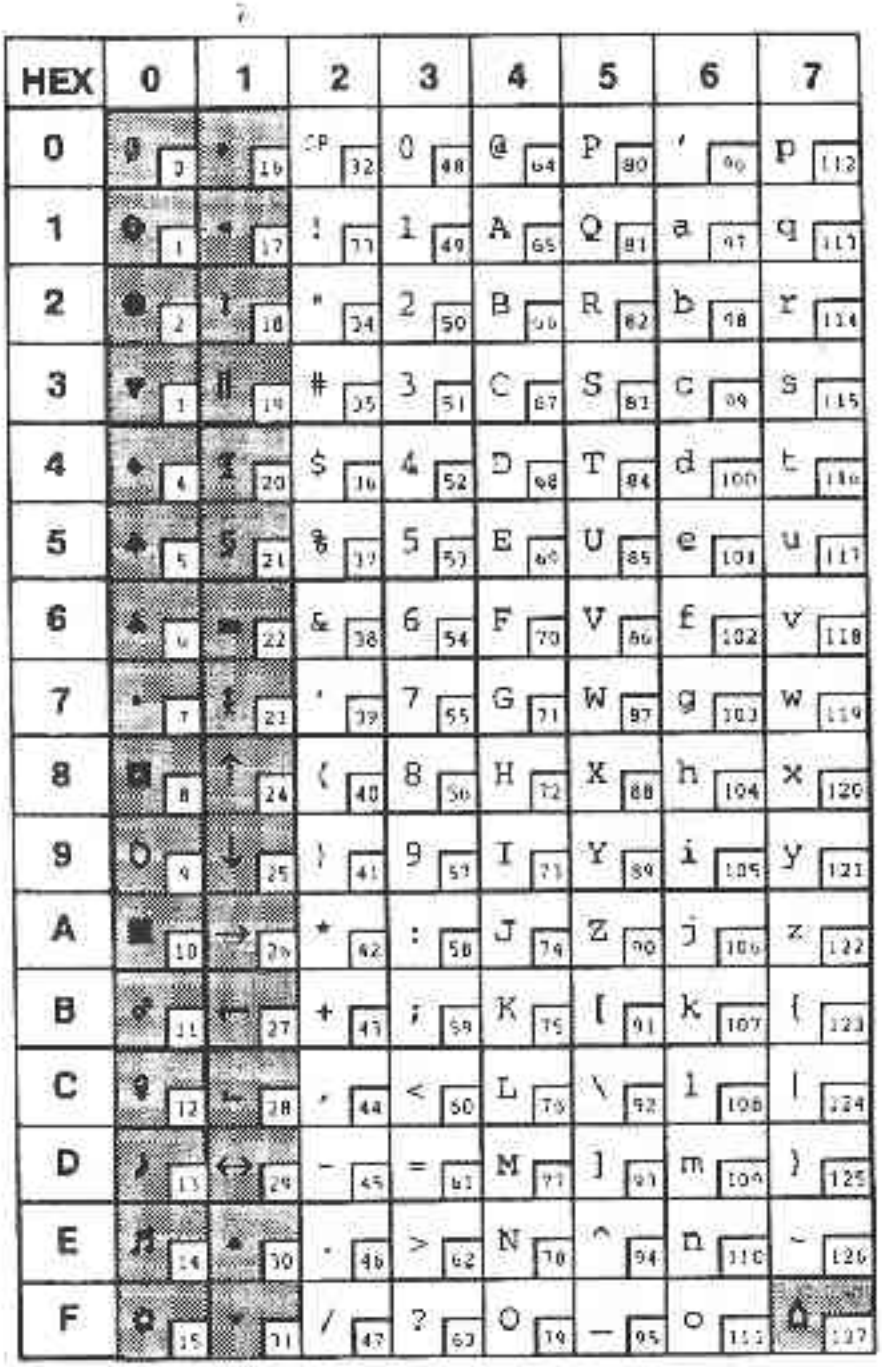
G-3 **IBM Code Page 437 Symbol Set**



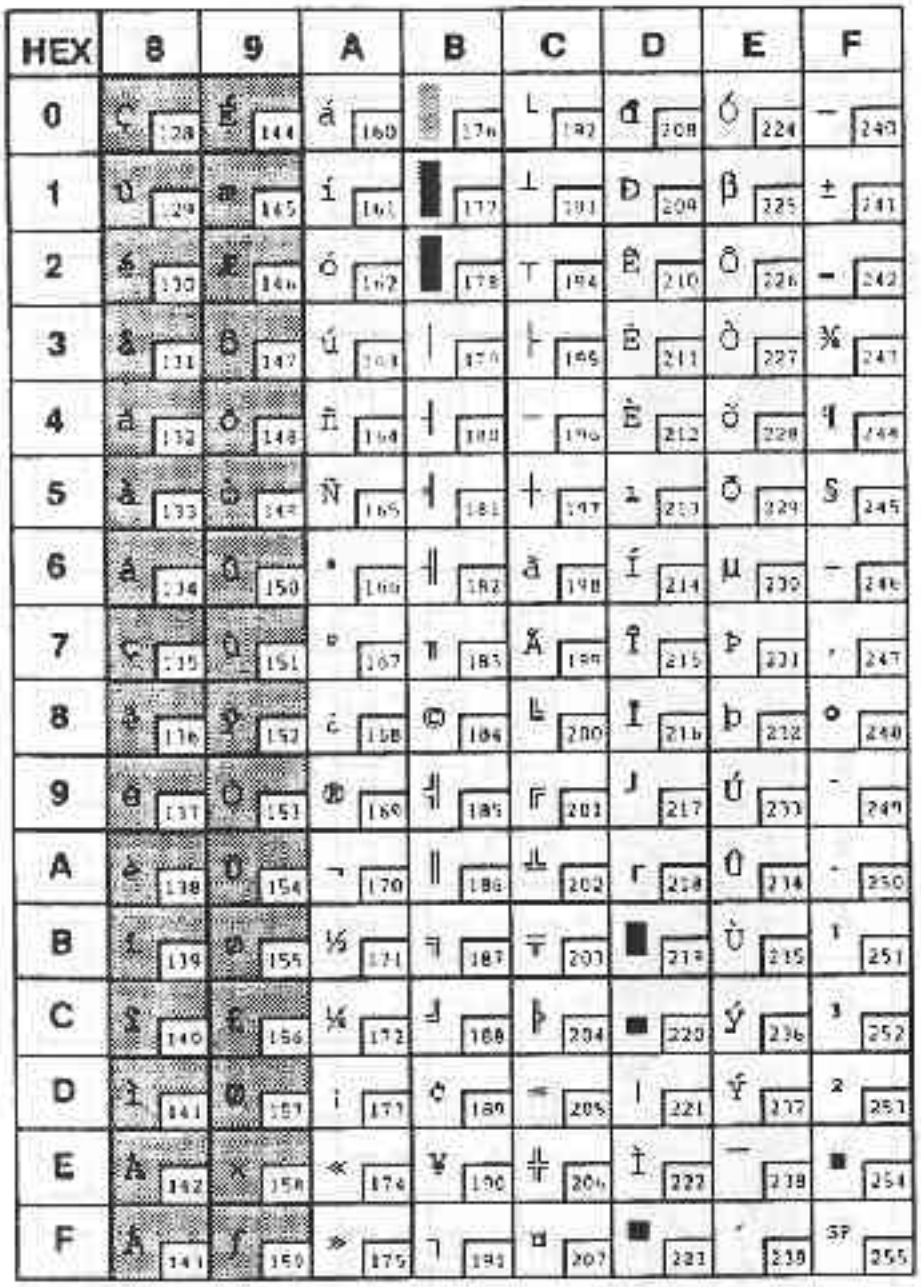
M Code Page 437 Symbol Set (Cont'd)



G-5 **IBM Code Page 850 Symbol Set**



G-6 **BM Code Page 850 Symbol Set (Cont'd)**



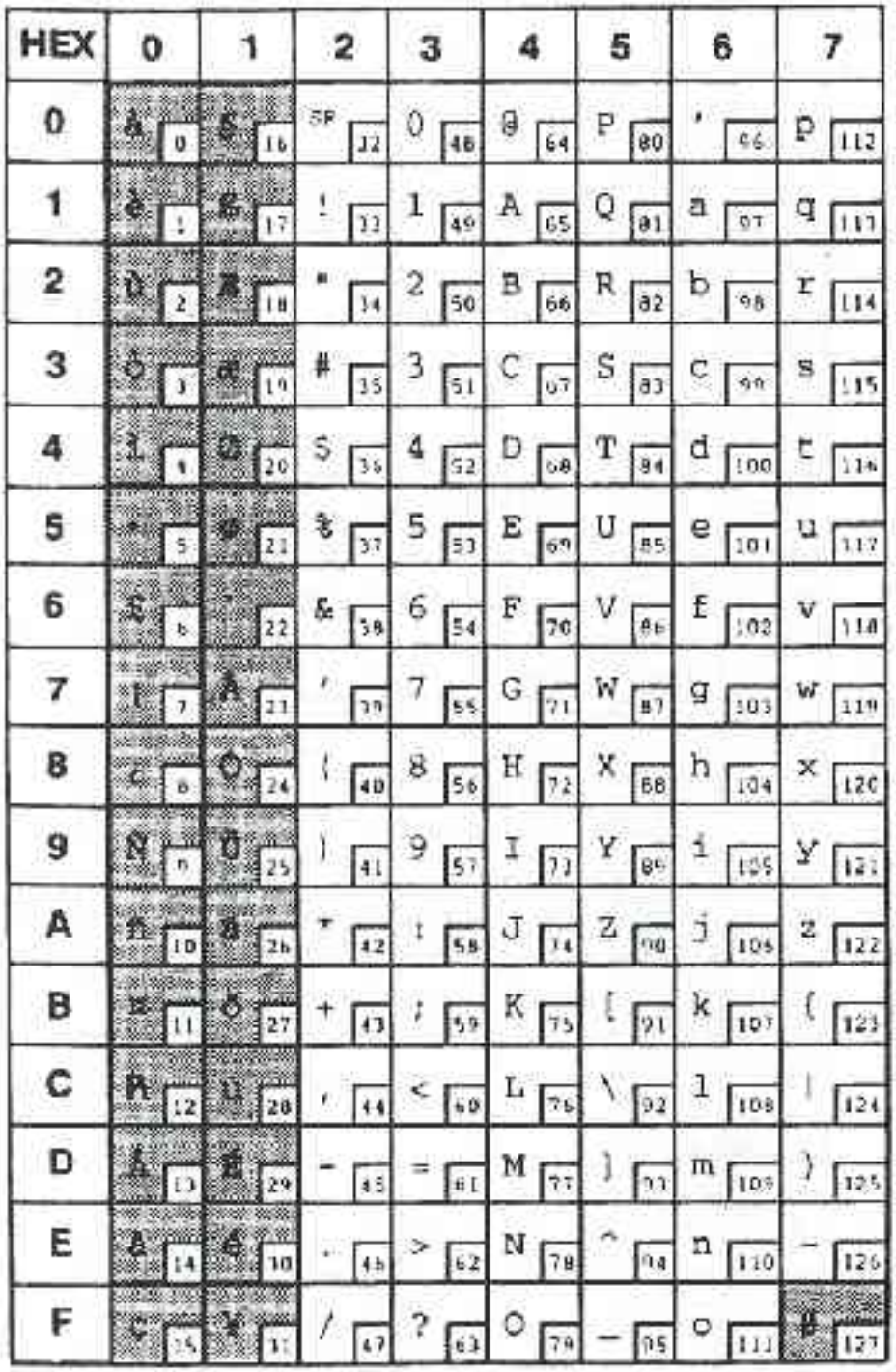
G-7 **Epson Italic Symbol Set**

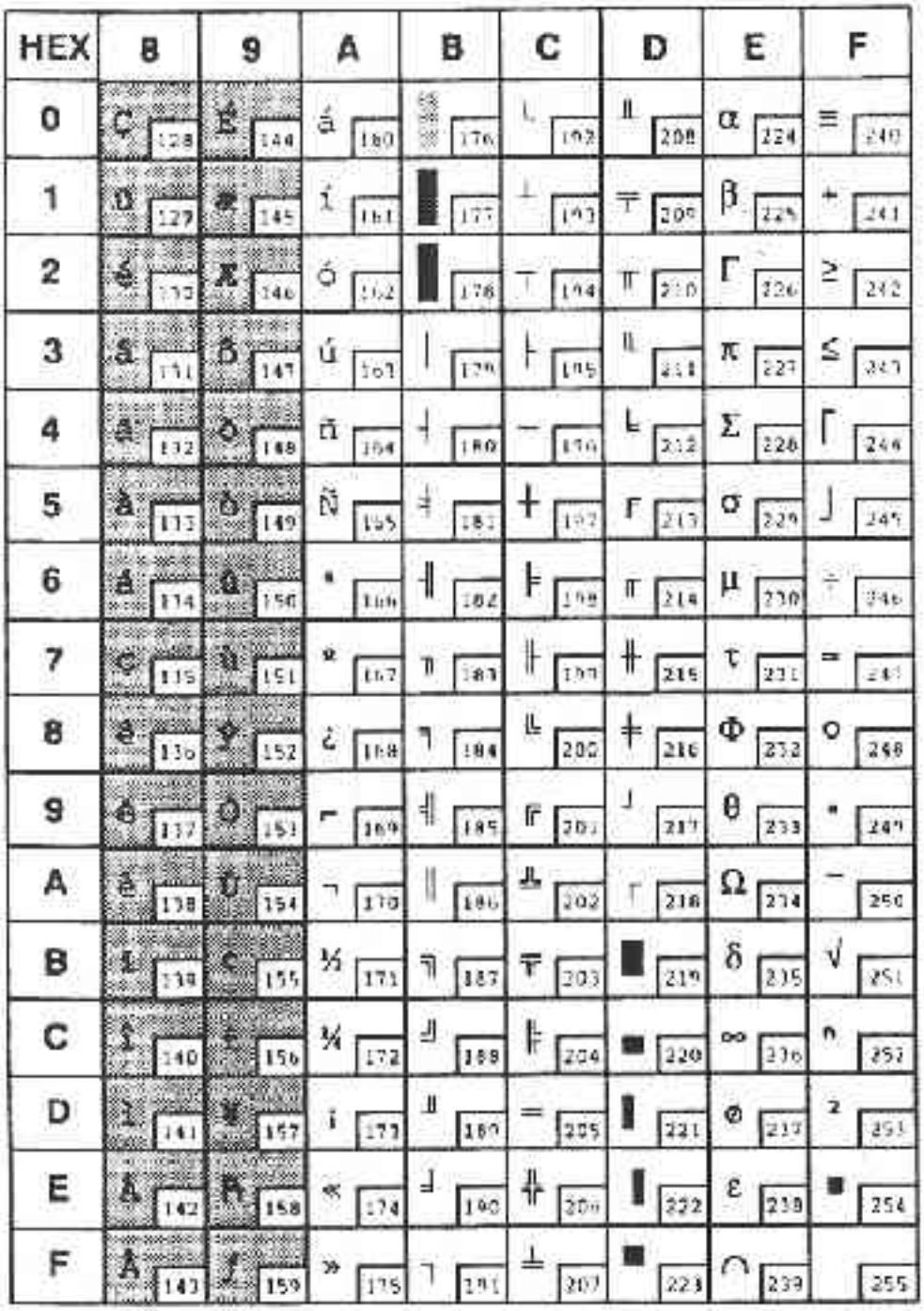
HEX	0	1	2	3	4	5	6	7
0	0	16	SP 32	0 48	@ 64	P 80	` 96	p 112
1	1	17	! 33	1 49	A 65	Q 81	a 97	q 113
2	2	18	" 34	2 50	B 66	R 82	b 98	r 114
3	3	19	# 35	3 51	C 67	S 83	c 99	s 115
4	4	20	$ 36	4 52	D 68	T 84	d 100	t 116
5	5	21	% 37	5 53	E 69	U 85	e 101	u 117
6	6	22	& 38	6 54	F 70	V 86	f 102	v 118
7	7	23	' 39	7 55	G 71	W 87	g 103	w 119
8	8	24	(40	8 56	H 72	X 88	h 104	x 120
9	9	25	) 41	9 57	I 73	Y 89	i 105	y 121
A	10	26	* 42	: 58	J 74	Z 90	j 106	z 122
B	11	27	+ 43	; 59	K 75	[91	k 107	{ 123
C	12	28	, 44	< 60	L 76	\ 92	l 108	| 124
D	13	29	- 45	= 61	M 77	] 93	m 109	} 125
E	14	30	. 46	> 62	N 78	^ 94	n 110	~ 126
F	15	31	/ 47	? 63	O 79	_ 95	o 111	127

n Italic Symbol Set (Cont'd)

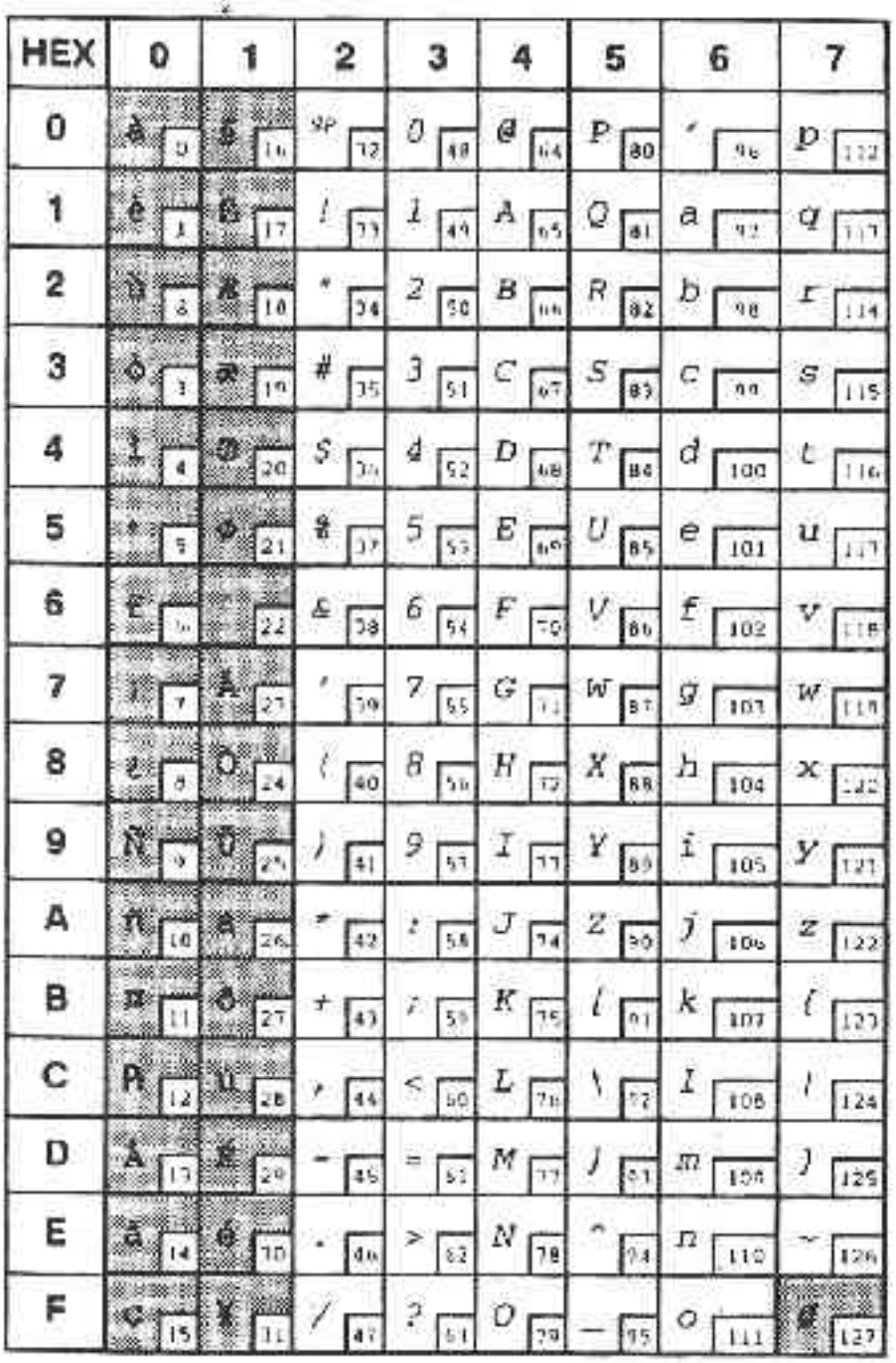
HEX	8	9	A	B	C	D	E	F
0	Ä 128	Ş 144	° 160	0 176	@ 192	P 208	' 224	p 240
1	è 129	£ 145	¡ 161	1 177	A 193	Q 209	a 225	q 241
2	ü 130	¤ 146	¢ 162	2 178	B 194	R 210	b 226	r 242
3	ö 131	æ 147	# 163	3 179	C 195	S 211	c 227	s 243
4	ì 132	Ø 148	$ 164	4 180	D 196	T 212	d 228	t 244
5	ı 133	ø 149	¥ 165	5 181	E 197	U 213	e 229	u 245
6	Ğ 134	150	& 166	6 182	F 198	V 214	f 230	v 246
7	ğ 135	Å 151	' 167	7 183	G 199	W 215	g 231	w 247
8	¿ 136	ö 152	(168	8 184	H 200	X 216	h 232	x 248
9	Ñ 137	Ü 153	) 169	9 185	I 201	Y 217	i 233	y 249
A	ñ 138	ä 154	* 170	: 186	J 202	Z 218	j 234	z 250
B	¤ 139	ö 155	+ 171	; 187	K 203	[219	k 235	{ 251
C	Ñ 140	ü 156	, 172	< 188	L 204	\ 220	l 236	| 252
D	Ä 141	ß 157	- 173	= 189	M 205	] 221	m 237	} 253
E	Ä 142	ö 158	. 174	> 190	N 206	^ 222	n 238	~ 254
F	C 143	¥ 159	/ 175	? 191	O 207	_ 223	o 239	Ø 255

G.6 Epson Graphics Symbol Set



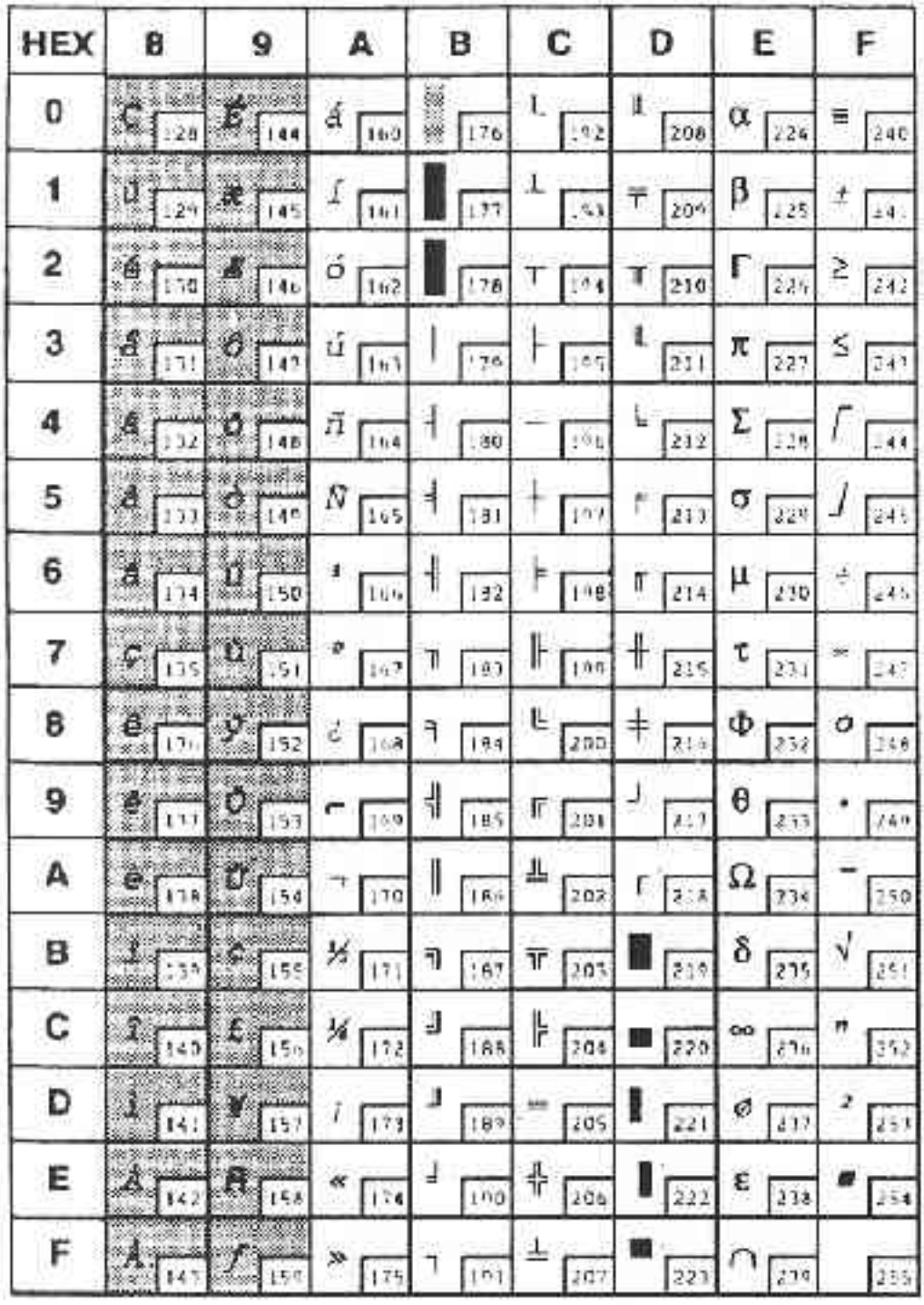

HEX
8
9
A
B
C
D
E
F
0
1
2
3
4
5
6
7
8
9
A
B
C
D
E
F

G-11 **Epson Italic Graphics Symbol Set**

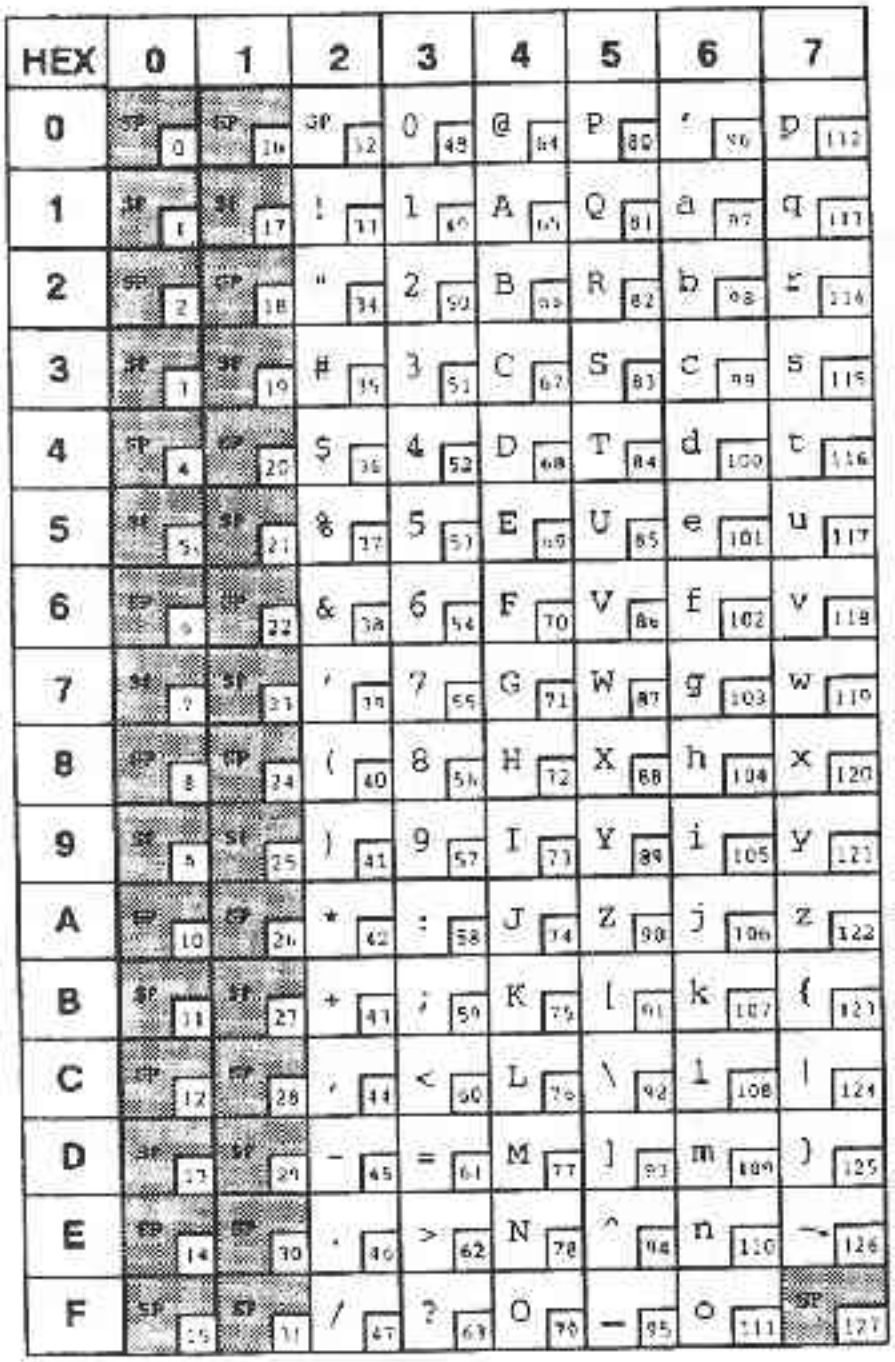


HEX	0	1	2	3	4	5	6	7
0	0	16	SP 32	0 48	@ 64	P 80	` 96	p 112
1	1	17	! 33	1 49	A 65	Q 81	a 97	q 113
2	2	18	" 34	2 50	B 66	R 82	b 98	r 114
3	3	19	# 35	3 51	C 67	S 83	c 99	s 115
4	4	20	$ 36	4 52	D 68	T 84	d 100	t 116
5	5	21	% 37	5 53	E 69	U 85	e 101	u 117
6	6	22	& 38	6 54	F 70	V 86	f 102	v 118
7	7	23	' 39	7 55	G 71	W 87	g 103	w 119
8	8	24	(40	8 56	H 72	X 88	h 104	x 120
9	9	25	) 41	9 57	I 73	Y 89	i 105	y 121
A	10	26	* 42	: 58	J 74	Z 90	j 106	z 122
B	11	27	+ 43	; 59	K 75	[91	k 107	{ 123
C	12	28	, 44	< 60	L 76	\ 92	l 108	| 124
D	13	29	- 45	= 61	M 77	] 93	m 109	} 125
E	14	30	. 46	> 62	N 78	^ 94	n 110	~ 126
F	15	31	/ 47	? 63	O 79	_ 95	o 111	127

son Italic Graphics Symbol Set (Cont'd)



‡C Supplemental Symbol Set

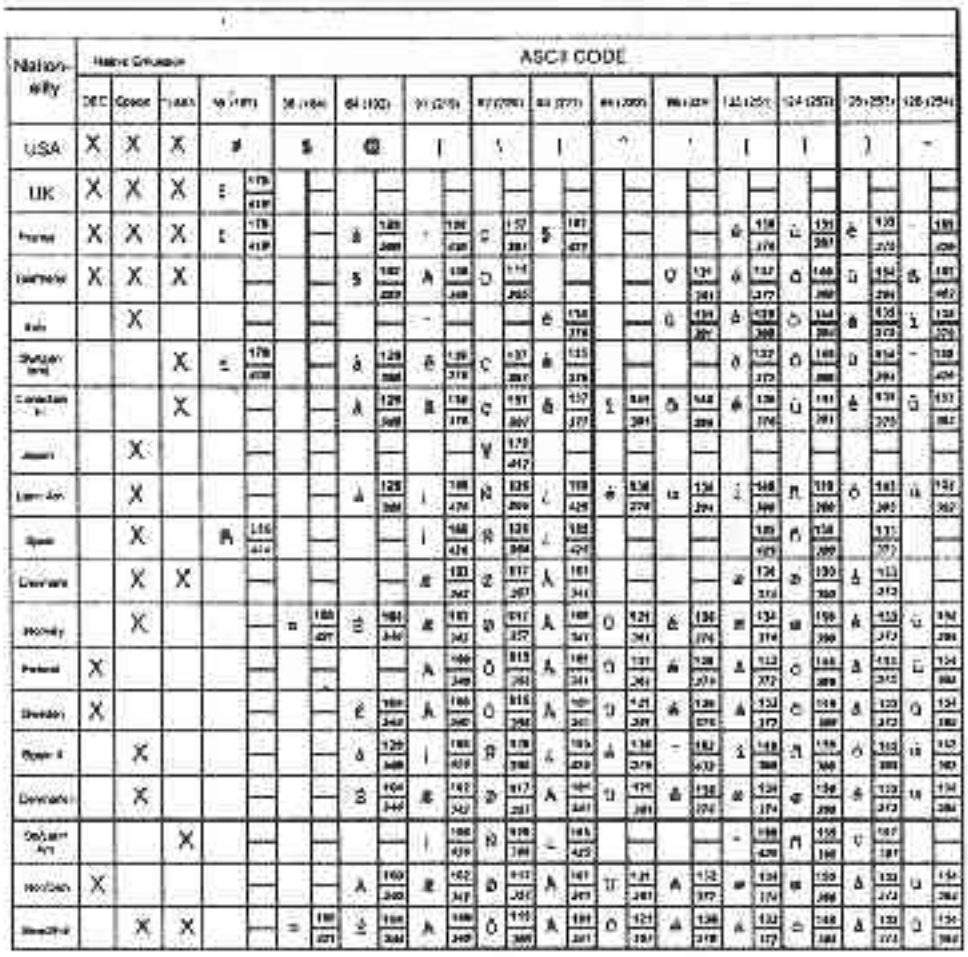


HEX	0	1	2	3	4	5	6	7
0	SP 0	SP 16	SP 32	0 48	@ 64	P 80	‘ 96	p 112
1	SP 1	SP 17	! 33	1 49	A 65	Q 81	a 97	q 113
2	SP 2	SP 18	" 34	2 50	B 66	R 82	b 98	r 114
3	SP 3	SP 19	# 35	3 51	C 67	S 83	c 99	s 115
4	SP 4	SP 20	$ 36	4 52	D 68	T 84	d 100	t 116
5	SP 5	SP 21	% 37	5 53	E 69	U 85	e 101	u 117
6	SP 6	SP 22	& 38	6 54	F 70	V 86	f 102	v 118
7	SP 7	SP 23	’ 39	7 55	G 71	W 87	g 103	w 119
8	SP 8	SP 24	(40	8 56	H 72	X 88	h 104	x 120
9	SP 9	SP 25	) 41	9 57	I 73	Y 89	i 105	y 121
A	SP 10	SP 26	* 42	: 58	J 74	Z 90	j 106	z 122
B	SP 11	SP 27	+ 43	; 59	K 75	[91	k 107	{ 123
C	SP 12	SP 28	, 44	< 60	L 76	\ 92	l 108	| 124
D	SP 13	SP 29	- 45	= 61	M 77	] 93	m 109	} 125
E	SP 14	SP 30	. 46	> 62	N 78	^ 94	n 110	~ 126
F	SP 15	SP 31	/ 47	? 63	O 79	_ 95	o 111	SP 127

DEC Supplemental Symbol Set (Cont'd)

HEX	8	9	A	B	C	D	E	F
0	DP 128	DP 144	DP 160	° 176	À 192	? 208	à 224	? 240
1	DP 129	DP 145	¡ 161	± 177	Á 193	Ñ 209	á 225	ñ 241
2	DP 130	DP 146	¢ 162	² 178	Â 194	Ò 210	â 226	ò 242
3	DP 131	DP 147	£ 163	³ 179	Ã 195	Ó 211	ã 227	ó 243
4	DP 132	DP 148	? 164	? 180	Ä 196	Ô 212	ä 228	ô 244
5	DP 133	DP 149	¥ 165	µ 181	Å 197	Õ 213	å 229	õ 245
6	DP 134	DP 150	? 166	¶ 182	Æ 198	Ö 214	æ 230	ö 246
7	DP 135	DP 151	§ 167	· 183	Ç 199	Œ 215	ç 231	œ 247
8	DP 136	DP 152	¤ 168	? 184	È 200	Ø 216	è 232	ø 248
9	DP 137	DP 153	© 169	¹ 185	É 201	Ù 217	é 233	ù 249
A	DP 138	DP 154	ª 170	º 186	Ê 202	Ú 218	ê 234	ú 250
B	DP 139	DP 155	« 171	» 187	Ë 203	Û 219	ë 235	û 251
C	DP 140	DP 156	? 172	¼ 188	Ì 204	Ü 220	ì 236	ü 252
D	DP 141	DP 157	? 173	½ 189	Í 205	Ÿ 221	í 237	ÿ 253
E	DP 142	DP 158	? 174	? 190	Î 206	? 222	î 238	? 254
F	DP 143	DP 159	? 175	¿ 191	Ï 207	ß 223	ï 239	DP 255

G-14 **Nationality Overlay Character Set**



Appendix H.....Quick Reference

H.1 Epson FX

ASCII Command	Epson FX Command Description
NUL	Terminates horizontal and vertical tab escape sequences
BEL	Sounds the print buzzer
BS	Backspace
HT	Horizontal tab
LF	Line feed
VT	Vertical tab
FF	Form feed
CR	Carriage return
SO	Shift out Selects enlarged mode for the current line
SI	Shift in Selects condensed printing
DC1	Device control 1 Enable printer
DC2	Device control 2 Cancels condensed printing
DC3	Device control 3 Disable printer
DC4	Device control 4 Cancels enlarged mode
CAN	Cancel Cancel text in the print buffer
ESC	Initiates an escape sequence
ESC SO	Selects enlarged mode
ESC SI	Selects condensed printing
ESC !	Master Print mode selection
ESC #	Cancel Most Significant Bit (MSB) function
ESC %	Select character set from ROM or from RAM
ESC &	Define User-defined characters in RAM
ESC *	Select Graphic mode
ESC -	Select/Cancel underlining
ESC /	Select Vertical Tab Channel
ESC 0	Set line spacing to 1/8 inch
ESC 1	Set line spacing to 7/72 inch
ESC 2	Set line spacing to 1/6 inch
ESC 3	Set line spacing to n/216 inch
ESC 4	Select italic character set

ESC 5	Cancel italic character set
ESC 6	Enable upper character set (80 hex to 9F hex and FF hex).
ESC 7	Enable extended control codes (Turns off ESC 6).
ESC 8	Disable paper out detector
ESC 9	Enable paper out detector
ESC :	Copies resident characters (ROM) to RAM
ESC <	Enable one line unidirectional printing
ESC =	Set MSB to 0 (Sets 8th bit low)
ESC >	Set MSB to 1 (Sets 8th bit high)
ESC ?	Reassign graphic codes
ESC @	Resets printer
ESC A	Set line spacing to n/72 inch
ESC B	Set vertical tabs
ESC C	Set forms length in lines
ESC C	Set forms length in inches when first variable is a null
ESC D	Set horizontal tab
ESC E	Select emphasized printing
ESC F	Cancel emphasized printing
ESC G	Select double-strike printing
ESC H	Cancel double-strike printing
ESC I	Enable/disable printing of characters stored in the lower control code area 00hex to 31 hex)
ESC J	Perform an immediate line feed of n/216 inch
ESC K	Select single-density graphics
ESC L	Select double-density graphics
ESC M	Select Elite (12 cpi) mode
ESC N	Set perforation skip to n lines
ESC O	Disable perforation skip mode
ESC P	Select Pica (10 cpi) mode
ESC Q	Set right margin
ESC R	Select international character set
ESC S	Select Superscript or Subscript characters
ESC T	Cancel Superscript or Subscript characters
ESC U	Select/Cancel Unidirectional print mode
ESC W	Select/Cancel Enlarged print mode
ESC Y	Select high speed double-density graphics
ESC Z	Select quadruple-density graphics
ESC ^	Select 9-pin graphics
ESC b	Set up vertical tabs for Vertical tab channel c
ESC l	Set left margin
ESC j	Perform an immediate reverse line feed of n/216 inch
ESC k	Select NLQ Typestyle
ESC p	Select/Cancel Proportional printing

ESC s	Select/Cancel half-speed printing
ESC x	Select NLQ or Draft Print
DEL	Deletes the last text character in the print buffer

H.2 IBM Proprinter

ASCII Command	IBM Proprinter Command Description
NUL	Terminates horizontal and vertical tab escape sequences
BEL	Sounds the print buzzer
BS	Backspace
HT	Horizontal tab
LF	Line feed
VT	Vertical tab
FF	Form feed
CR	Carriage return
SO	Shift out Selects Double wide mode for the current line
SI	Shift in Selects condensed printing
DC1	Device control 1 Enable printer
DC2	Device control 2 Selects 10 character per inch (10 cpi)
DC3	Device control 3 Disable printer
DC4	Device control 4 Cancels double wide printing
CAN	Cancel Cancel text in the print buffer
ESC -	Select/Cancel underlining
ESC 0	Set line spacing to 1/8 inch
ESC 1	Set line spacing to 7/72 inch
ESC 2	Activate line spacing set by ESC A
ESC 3	Set line spacing to n/216 inch
ESC 4	Set top of form at current position
ESC 5	Select/Cancel automatic line feed
ESC 6	Select character set 2
ESC 7	Select character set 1
ESC 8	Disable paper out detector
ESC 9	Enable paper out detector
ESC :	Select 12 characters per inch
ESC <	Enable one line unidirectional printing
ESC =	Start downloading characters
ESC A	Set line spacing to n/72 inch
ESC B	Set vertical tabs
ESC C	Set forms length in lines

ESC C NUL	Set forms length in inches when first variable is a null
ESC D	Set horizontal tab
ESC E	Select emphasized printing
ESC F	Cancel emphasized printing
ESC G	Select double-strike printing
ESC H	Cancel double-strike printing
ESC I	Enable/disable printing of characters stored in the lower control code area (00hex to 31 hex).
ESC J	Perform an immediate line feed of n/216 inch
ESC K	Select normal density graphics
ESC L	Select double-density graphics (half speed)
ESC N	Set perforation skip to n lines
ESC O	Disable perforation skip mode
ESC P	Select/Cancel proportional printing
ESC Q	Disable the printer
ESC R	Reset tabs to default settings
ESC S	Select Superscript or Subscript characters
ESC T	Cancel Superscript or Subscript characters
ESC U	Select/Cancel Unidirectional print mode
ESC W	Select/Cancel Double-wide printing
ESC X	Set left and right margin
ESC Y	Select normal speed double-density graphics
ESC Z	Select high density graphics
ESC [@	Select double-high printing
ESC \	Select Characters from All Characters table
ESC ^	Select a character from the All Characters table
ESC _	Select/Cancel overlining
SP	Moves print position one character space to right

H.3 DEC LA-120

ASCII Command	DEC LA-120 Command Description
NUL	Null character
BEL	Sounds the printer buzzer
BS	Backspace
HT	Horizontal tab
LF	Line feed
VT	Vertical tab
FF	Form feed
CR	Carriage return
CAN	Cancel Cancel text in the print buffer
ESC	Introduces an escape sequence
ESC (A	Select UK character set language
ESC (B	Select USA character set language
ESC (C	Select Finland character set language
ESC (E	Select Norway/Denmark character set language
ESC (H	Select Sweden character set language
ESC (K	Select Germany character set language
ESC (R	Select France character set language
ESC [20h	Enable auto carriage return
ESC [20l	Disable auto carriage return
ESC 3	Set vertical tab at current line
ESC D	Execute a line feed
ESC E	Execute a carriage return line feed
ESC H	Set horizontal tab at current column
ESC J	Set vertical tab at current line
ESC 2.	Clear all horizontal tabs.
ESC [4	Clear all vertical tabs
ESC [n a	Advance by n columns
ESC [c	Request for product ID
ESC [0c	Request for product ID
ESC [n d	Go to line number n
ESC [n e	Advance by n lines
ESC [g	Clear horizontal tab at current column
ESC [0g	Clear horizontal tab at current column
ESC [2g	Clear all horizontal tabs
ESC [3g	Clear all horizontal tabs
ESC [1g	Set vertical tab at current line
ESC [4g	Clear all vertical tabs
ESC [n r	Set top margin to n

ESC [n;0;r	Set top margin to n
ESC [;n r	Set bottom margin to n
ESC [0;n r	Set bottom margin to n
ESC [n1;n r	Set top and bottom margins to n1 and n2
ESC [n s	Set left margin to n
ESC [n;0 s	Set left margin to n
ESC [;n s	Set right margin to n
ESC [0;n s	Set right margin to n.
ESC [n1;n2 s	Set left and right margins to n1 and n2.
ESC [n u	Set horizontal tab at column n
ESC [n1;n2..;n16 u	Set horizontal tabs at column n1 .... n16
ESC [n v	Set vertical tab at line n
ESC [n1;n2..;n16 v	Set vertical tabs at line n1 .... n16
ESC [w	Select 10 characters per inch
ESC [0w	Select 10 characters per inch
ESC [1w	Select 10 characters per inch
ESC [2w	Select 12 characters per inch
ESC [3w H-8	Select 13.2 characters per inch
ESC [4w	Select 16.5 characters per inch
ESC [5w	Select 5 characters per inch
ESC [6w	Select 6 characters per inch
ESC [7w	Select 6.6 characters per inch
ESC [8w	Select 8.25 characters per inch
ESC [z	Select 6 lines per inch
ESC [0z	Select 6 lines per inch
ESC [1z	Select 6 lines per inch
ESC {2z	Select 8 lines per inch
ESC [3z	Select 12 lines per inch
ESC [4z	Select 2 lines per inch
ESC [5z	Select 3 lines per inch
ESC [6z	Select 4 lines per inch.
ESC [n`	Go to column n.
ESC L	Set horizontal tab at current column.
ESC [nt	Set form length to n.
DEL	Cause no printer operation.

H.4 TI-885 (Optional)

ASCII Command	TI-885 Command Description
NUL	Null Character
BEL	Sound The Printer Bell
BS	Backspace
HT	Horizontal Tab
LF	Line Feed
VT	Vertical Tab
FF	Form Feed
CR	Carriage Return
	Select Enlarged Mode (By Line)
	Escape
C \	Select 10-Pitch Characters
ESC 6	Select 10-Pitch Characters
ESC P D ESC \	Select 16 2/3-Pitch Characters
ESC 7	Select 16 2/3-Pitch Characters
ESC P I ESC \	Select 5-Pitch Characters
ESC P J ESC \	Select 8 1/3-Pitch Characters
ESC P K ESC \	Select 12-Pitch Characters
ESC P M ESC \	Select Double-Wide Pitch
ESC P N ESC \	Cancel Double-Wide Pitch
ESC P O ESC \	Select Enhanced Characters
ESC P P ESC \	Cancel Enhanced Characters
ESC b	Select Bi-directional Print
ESC u	Cancel Bi-directional Print
ESC [Ns	Set Left Margin
ESC [; Ns	Set Right Margin
ESC [N1;N2;s	Set Left And Right Margin
ESC [Nr	Set Top Margin
ESC [;Nr	Set Bottom Margin
ESC [N1;N2;r	Set Top And Bottom Margin
ESC [Nt	Set Form Length
ESC C n or ESC 2 n	Set Form Length

ESC P L O ESC \ or ESC@	Load Default Form
ESC H	Set Horizontal Tab At Current Print Column
ESC [g or ESC [0g	Clear Horizontal Tap At Current Print Column
ESC [Nu	Set A Horizontal Tab
ESC [N1;N2;N16u	Set Horizontal Tabs
ESC [2g	Clear All Horizontal Tabs
ESC [N`	Tab Right To Column N
ESC [Na	Tab Right N Columns
ESC J	Set Vertical Tab At Current Print Line
ESC [1g	Clear Vertical Tab At Current Print Line
ESC [Nv	Set A Vertical Tab
ESC [N1;N2;Nkv	Set Vertical Tabs
ESC [4g	Clear All Vertical Tabs
ESC [Nd	Tab To Line N
ESC [Ne	Advance Paper N Lines
ESC 2	Set Line Spacing To 1/6 Inch
ESC 0	Set Line Spacing To 1/8 Inch
ESC A	Set Line Spacing To n/72 Inch
ESC 3	Set Line Spacing To n/216 Inch
ESC K	Select Single-Density Graphics (60 dpi)
ESC L	Select Double-Density Graphics (120 dpi)
ESC @	Reset Printer
ESC [c	Product Identification

H.5 DS-180

ASCII Command	DS-180 Command Description
NUL	Null Character
BEL	Sound The Printer Bell
BS	Backspace
HT	Horizontal Tab
LF	Line Feed
VT	Vertical Tab
FF	Form Feed
CR	Carriage Return
SO	Select Double Wide Print
SI	Cancel Double Wide Print
ESC	Escape
DEL	Delete
ACK or GS	Exit Anadex Graphics With Forms Correction
ETX	Exit Anadex Graphics With No Forms Correction
ESC [5w	Select 5-Pitch Characters
ESC [6w	Select 6-Pitch Characters
ESC [7w	Select 6.6-Pitch Characters
ESC [8w	Select 8.25-Pitch Characters
ESC [w or ESC [0w	Select 10-Pitch Characters
ESC [1w	Select 10-Pitch Characters
ESC [2w	Select 12-Pitch Characters
ESC [3w	Select 13.2-Pitch Characters
ESC [4w	Select 16.5-Pitch Characters
ESC $ 1	Enable Continuous Underline
ESC $ 2	Disable Continuous Underline
ESC (A	Select Character Set - United Kingdom
ESC (B	Select Character Set - US ASCII
ESC (C	Select Character Set - Finland
ESC (H	Select Character Set - Sweden
ESC (E	Select Character Set - Norway/Denmark
ESC (R	Select Character Set - France
ESC (K	Select Character Set - Germany
ESC $ 5	Select Alternate Character Set
ESC $ 6	Cancel Alternate Character Set
ESC [ns or ESC [n;0s	Set Left Margin
ESC [;ns or ESC [0;ns	Set Right Margin

ESC [n1;n2s	Set Left And Right Margin
ESC [nr or ESC [n;0r	Set Top Margin
ESC [;nr or ESC [0;nr	Set Bottom Margin
ESC [n1;n2r	Set Top And Bottom Margin
ESC [nt	Set Form Length
ESC 1	Set Horizontal Tab At Current Print Column
ESC [g or ESC [0g	Clear Horizontal Tab At Current Print Column
ESC [nu	Set A Horizontal Tab
ESC [n1;n2;n16 u	Set Horizontal Tabs
ESC [2g	Clear All Horizontal Tabs
ESC [3g	Clear All Horizontal Tabs
ESC 2	Clear All Horizontal Tabs
ESC 3	Set Vertical Tab At Current Print Line
ESC [1g	Clear Vertical Tab At Current Print Line
ESC [nv	Set A Vertical Tab

ESC [n1;n2;nxv	Set Vertical Tabs
ESC [4g	Clear All Vertical Tabs
ESC 4	Clear All Vertical Tabs
ESC [20h	Enable Auto Carriage Return
ESC [20l	Disable Auto Carriage Return
ESC [4z	Set Line Spacing To 2 Lines Per Inch
ESC [5z	Set Line Spacing To 3 Lines Per Inch
ESC [6z	Set Line Spacing To 4 Lines Per Inch
ESC [z or ESC [0z	Set Line Spacing To 6 Lines Per Inch
ESC [1z	Set Line Spacing To 6 Lines Per Inch
ESC [2z	Set Line Spacing To 8 Lines Per Inch
ESC [3z	Set Line Spacing To 12 Lines Per Inch
ESC [n`	Set Print Column
ESC [na	Advance Print Column By ``n'' Columns
ESC [nd	Set Print Line To Line ``n''
ESC [ne	Advance Print Line By ``n'' Lines
ESC E	Execute Carriage Return And Line Feed
ESC D	Perform Line Feed

ESC $ 8 or ESC $ N	Perform Reverse Half Line Feed
ESC $ 7 or ESC $ P	Perform Half Line Feed
ESC $ S n or ESC $ s n	Set DS-180 Discrete (boolean) Feature
ESC $ C n or ESC $ c n	Clear DS-180 Discrete (boolean) Feature
ESC $ F n 1 ; n2 .	Change DS-180 Value (Integer) Feature

H.6 DPCL Command Sequence Summary

ASCII Command	DPCL Emulation Command Description
ESC$$EE1.	DPCL entry mode
X.	DPCL exit mode
I1;P1.	Forms Length
I2;P1.	Vertical Pitch
I3;P1.	Top Margin
I4;P1.	Bottom Margin
I5;P1.	Left Margin
I6;P1.	Right Margin
I7;P1.	Manual Tear Time
I8;P1.	Automatic Tear Time
I10;P1.	Paper Slew Speed
I11;P1.	Buffer Size Control
I13;P1.	DGCL or Bar Code Command Character
I15;P1.	Coax Maximum Print Position
I16;P1.	Number of Data Bits (ASCII)
I17;P1.	Maximum Profile Number
I18;P1.	Change Profile
I19;P1.	Automatic Form Gap Distance
I24;P1.	Window Size Control
I25;P1.	Heavy Forms Carriage Position
I26;P1.	Heavy Forms Activation
I27;P1.	Cut Sheet Timeout
I28;P1.	Cut Sheet Calibration
I29;P1.	Horizontal Gap Position
I30;P1.	Vertical Gap Position
A1;P1;P2;P32.	Set Horizontal Tabs
A2;P1;P2;P32.	Clear Horizontal Tabs
A3;P1;P2;P32.	Set Vertical Tabs
A4;P1;P2;P32.	Clear Vertical Tabs
F2;P1.	Tractor Horizontal Adjust Distance
F5;P1.	Tear Off Distance
R1;P1.	Clear All Horizontal Tabs
R2;P1.	Clear All Vertical Tabs
R3;P1.	Save Profile
R4;P1.	Reset Profile
R5;P1.	Print Profile
R6;P1.	Print Wire Test
R8;P1.	Form Thickness Adjustment
R10;P1.	Reset Quick List
R12;P1.	Execute Mode Test

R13;P1 P2.	Execute Self Test
R14;P1 P2.	Reset NVRAM
R15;P1.	Reset Keypad Lockout
B2;P1.	Automatic Line Feed
B3;P1.	Automatic Carriage Return
B4;P1.	Automatic Line Wrap
B5;P1.	Unidirectional Print
B7;P1.	Power Up On Line
B8;P1.	Quiet Mode (Not available on Quiet Option)
B9;P1.	DGCL/Barcode Recognition
B10;P1.	One Dot Overlap
B11;P1.	Twinax/Coax Command Pass Through
B12;P1.	Twinax Font Lock
B13;P1.	Twinax Margin Lock
B14;P1.	Twinax Vertical Pitch Lock
B15;P1.	Twinax Forms Length Lock
B16;P1.	Twinax/Coax Paper Move On Line
B17;P1.	Twinax/Coax Clear Printer Buffer
B18;P1.	Coax Form Feed After Local Print
B19;P1.	Coax Form Feed Before Local Print
B20;P1.	Coax Prints Nulls as Spaces
B21;P1.	DTR Handshaking Enable (ASCII Only)
B22;P1.	Modem Control Enable (ASCII Only)
B24;P1.	Eighth Bit Enable (ASCII Only)
B25;P1.	Parallel Enable
B26;P1.	Print Suppression
B27;P1.	Paper Out Detection Defeat
B28;P1.	Auto Path Switch (Documax Dual Tractor)
B29;P1.	Vertical Graphics
B30;P1.	Horizontal Graphics
B31;P1.	High Impact
B32;P1.	DIGL Auto Form Feed
B34;P1.	Double Wide
B37;P1.	Ignore FF at TOF (COAX only)
E1;P1.	Manual Tear
E2;P1.	Emulation Mode
E3;P1.	Font/Pitch
E4;P1.	Symbol Set
E5;P1.	Nationality
E6;P1.	Slashed Zeroes
E7;P1.	DGCL/Bar Code Exit Mode
E8;P1.	Twinax Device Address
E9;P1.	Twinax Device ID

E10;P1.	Twinax International Character Set
E11;P1.	Coax Lines Per Inch
E12;P1.	Coax Physical Buffer Size
E13;P1.	Coax Logical Buffer Size
E14;P1.	Coax Mono/Dual Case Printing
E15;P1.	Coax Single/Double Spacing
E16;P1.	Coax International Character Set
E17;P1.	Coax Paper Out Timer
E18;P1.	Baud Rate (ASCII Only)
E19;P1.	Serial Configuration (ASCII Only)
E20;P1.	Parity (ASCII Only)
E21;P1.	Serial Handshake Mode (ASCII Only)
E22;P1.	Parallel Handshake Mode
E23;P1.	Parallel Acknowledge Mode
E24;P1.	Paper Path
E25;P1.	Key Control
E27;P1.	Mechanical Configuration
E28;P1.	Auto Tear Off Mode
E29;P1.	IBM Character Set
E30;P1.	X-on Control
E31;P1.	X-off Control
S1;P1.	Profile Name
C.	Comment

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