

# 6822

## Series 80-Column Printer

Photo of printer not  
available at this  
time

### User's Manual

**6822**

**Series 80-Column Printer**

**User's  
Manual**

# 6 Troubleshooting

This chapter helps you correct printing problems that may occur. If you experience a printing problem, you can perform several tests to find and possibly correct the problem. In this chapter you will find these sections:

- Checking the power source
- Aligning the printer mechanism
- Troubleshooting system components
- Communications pin-out configurations

## Checking the Power Source

Press any button on the printer control panel. If there is power, the power indicator (green LED) turns on and the printhead moves to its starting position. If the printer emits beeps and any of the other indicators light up or flash, observe the number of beeps and indicator flashes and see **“Printer Failure Indicators” on page 102**

If there is no reaction from the printer after you press a key on the control panel, or only the green power light blinks, verify that the power cables are properly connected between the printer mechanism and its power source (internal battery, vehicle cable, or ac). If none of these steps “wake” up the printer with the problem, then you need to return the printer for service.

- **Internal battery**  
Check the battery and its cable by installing into another known-good printer.
- **Vehicle cable**  
Attach the printer in question to another vehicle power cable.
- **AC power**  
Plug the printer into another outlet.

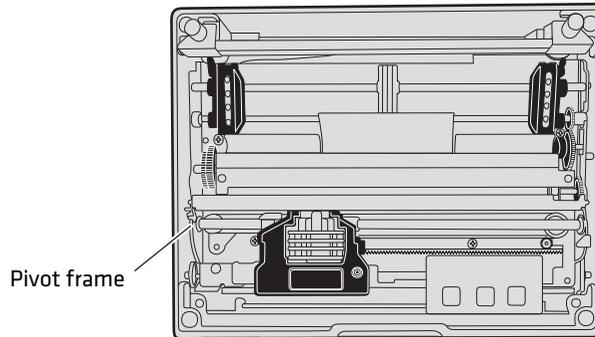
## Aligning the Printer Mechanism

If head jams occur, you may need to align the printer mechanism.

### To align the printer mechanism

- 1 Open the printer top cover, then install a ribbon cartridge (see page 15) and position the printhead to the far left toward the green thumb wheel.

- 2 Check the area between the printhead and the printer cavity. If the ribbon cartridge touches the pivot frame, the printer mechanism needs realignment.



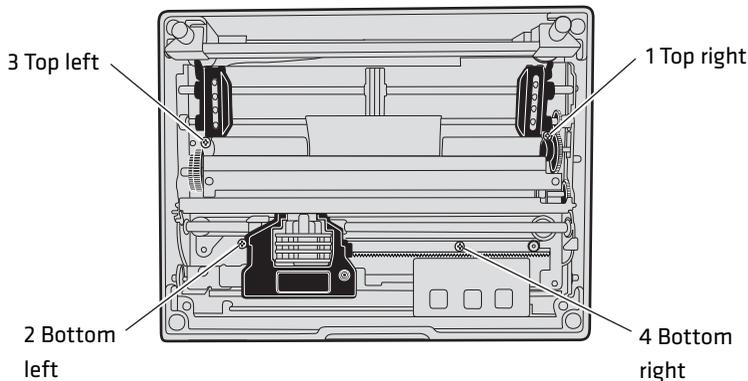
***Printhead at far left in the printer***

- 3 Loosen the four screws that hold the mechanism in place using a Phillips screwdriver (see the following illustration).
- 4 Push the printer mechanism to the right away from the green thumb wheel.
- 5 Press on the right side of the printer mechanism to the back as far as it will go.



**Note:** In this position, the right back edge of the printer mechanism may touch the pivot frame. The left side must not touch the pivot frame.

- 6 Hold the printer mechanism in place and tighten the screws in the sequence shown below.



***Four screws hold down the printer mechanism***

## **Troubleshooting System Components**

The printing system is composed of four basic components: printer, computer, power source, and communications. Any one of these components can prevent the printer from functioning properly.

### **Verifying the Printer Components**

#### **Power Source Verification**

Start by verifying that power is available at the printer. Visually inspect the control panel to verify that the power indicator (green LED) is lit. If it is not, press the Set Page button and note if the power indicator lights up. If it does, the power system is all right. If it does not, press the printer reset button. If the power indicator still does not light, check the power cable, by connecting it to a different printer. If the power indicator works on the new printer, then the cable is all right, and the printer that was originally connected is suspect. If it does not light, then the problem is most likely the cable or the power source. Depending on the results, either replace the cable or return the printer for service.

### **Printer Verification**

If the power indicator works properly and the printer still does not print, then printer errors are noted. If any indicators light when you press the Set Page button, or the printer beeps, refer to the Printer Failure Indicators table on page 102 to determine the problem.

If none of the listed conditions are indicated by the beep codes and LEDs, yet the printer does not perform properly, then perform a printer self-test. Press and hold (for several seconds) both Form Feed and the Set Page buttons at the same time, until the printer beeps and all indicator lights come on. The lights change throughout the test, as it progresses.

At the end of the self-test, the printer generates a report. This report verifies the following: errors detected during self-test, the error history, and the communication configuration. If the printer self-test report does not print, then reset the printer. If the report does print after resetting, then the printer is all right and the reason the printer does not respond to PC print requests is probably communications or PC related. If the report is partially completed, and a printer error occurs during the printing of self-test, refer to the Printer Failure Indicators table on page 102 for the cause of the printer failure.

Perform a power-on-self-test (POST) to test for errors either by resetting the printer or powering it up. If errors occur, audible error codes, along with indicator light status, are produced during POST (see the POST Error Codes table on page 104).

If the POST completes without error, try the printer self-test again. If the self-test prints correctly, but the printer does not respond to the PC, then the problem may be related to communications or PC problems.

### **Communications / PC Verification**

Use the self-test report to verify that the communications protocol options, selected at the printer, match those expected by the host. If they do not match the expected results, reconfigure the printer using the control panel configuration modes described below in the Configuration part of this chapter.

If the protocol options match, then the communications cable may be defective. To determine if the cable is working, substitute a new cable. If the PC is suspect, substitute a different PC. A defective computer dock might be another possibility.

## Understanding Printer Errors

Printer Errors are divided into classes:

- Runtime errors
- POST errors,
- Fatal errors (consisting of flash write errors and EEPROM block errors).

### Runtime Errors

Runtime errors can occur during the course of printing. These errors are displayed on the LEDs, along with beep sequences. This causes the printer to stop printing and enter an error state. Then beep sequences are emitted, LED codes are displayed, the error status may be sent to the host (depending on the protocol), and the printer goes into suspend mode.

The printer exits from the suspend mode when the user presses one of the keyboard keys or communications is resumed from the host. The printer also places the printhead in its home position and attempts to recover from the error condition. Until the error condition is corrected, the error procedure does not end, and the error state is not removed.

For paper out errors, load paper and press the Set Page button before printing begins. Press the Form Feed button to load the paper to the top of form. The following table provides a listing of printer failure indicators and describes what they mean.

### Printer Failure Indicators

Sets of Beeps	Paper Out	Head Jam	Low Batt	Meaning
1 beep	Off	Off	On	12 V under voltage fault (Low Battery)
1 set of 2 beeps	Off	Off	2 blinks	12 V over voltage fault (Input Voltage too high)
1 set of 3 beeps	Off	Off	3 blinks	24 V under voltage fault (internal power supply failure)

**Printer Failure Indicators (continued)**

Sets of Beeps	Paper Out	Head Jam	Low Batt	Meaning
1 set of 4 beeps	Off	Off	4 blinks	24 V over voltage fault (internal power supply failure)
1 set of 13 beeps	Off	Off	Off	Configuration error
2 sets of 2 beeps	Off	2 blinks	2 blinks	printhead over temperature
2 sets of 3 beeps	On	Off	Off	Paper Out
2 sets of 4 beeps	Off	On	Off	Head Jam
5 sets of 2 beeps	5 blinks	5 blinks	5 blinks	Paper feed current fault (Possible paper jam or feed motor failure)
3 sets of 2 beeps	3 blinks	Off	3 blinks	printhead over current (printhead failure)
3 sets of 4 beeps	Off	3 blinks	Off	Home switch failure
4 sets of 2 beeps	4 blinks	4 blinks	Off	printhead short (printhead failure)
12 sets of 12 beeps	Off	Off	Off	Operating System software failure



**Note:** The most common errors are Paper Out, Low Battery, and Head Jam. Status indicators on the front panel alert you to these errors. For a description see [“Understanding the Status Indicators” on page 3](#)

**Power-On-Self-Test (POST) Errors**

When you reset the printer, a POST runs to determine why the printer might be failing. Audible error codes, along with indicator light status, are produced during POST if an error occurs. See on POST Error Codes on page 104.

**To perform a POST**

- 1 Open the printer case.
- 2 Insert the printer diagnostic cable into the phone jack on the printer and then connect the 9-pin D-Sub plug to your PC. The cable is used during POST to configure the printer, access printer diagnostics, update software, and install new fonts.

- 3** Press the Reset button to start the POST. When the POST starts, green Power LED will come on followed by a single beep indicating that the printer is active.



**Note:** After the test is completed, all LEDs turn off and the printhead moves to the home position. Only runtime errors or fatal errors are reported until the next time the printer is reset and POST is performed.

The printer emits beeps and flashes the LEDs to indicate the cause of any POST errors. POST error codes are described in the following table.

**POST Error Codes**

Long Beep	Short Beep	Paper Out	Head Jam	Low Batt	Power	Meaning
0	1	Off	Off	Off	On	Operational
0	0	Off	Off	Off	Off	No Power
0	0	Off	Off	Off	On	Control program Initial Program Load (IPL) successful
1	1	Off	On	Off	On	Invalid CRC on boot block
1	2	Off	On	On	On	Invalid CRC on control program or program not found
1	4	Off	Off	Off	On	Upper 192K RAM failure
1	4	Off	Off	On	On	Upper 64K RAM failure
0	0	On	Off	Off	On	Diagnostic mode command check
1	5	On	Off	On	On	Diagnostic flash memory check failed or is not initialized
1	5	On	On	Off	On	Diagnostic memory write failure
0	0	On	On	On	On	Control program IPL

**Fatal Errors**

There are two types of fatal errors, flash write errors and EEPROM configuration block errors. These errors are extremely rare, but measures are built into the printer diagnostics to track possible occurrences.

**Flash Write Errors**

Errors related to writing or erasing flash are critical errors. These errors cause the printer to stop all processing and produce an LED code and a sequence of beeps. The LED code indicates the address of the segment where the error occurred in octal notation.

The octal digit changes every four beeps until four octal digits are output. Only four octal digits are output since blocks are 256 bytes in size and flash can be addressed with a total of 0x7ff blocks. The segment address output is the runtime address of the flash block and not the offset of the block within flash.

**To obtain the block offset within the flash**

- Subtract 0x800 from the address output to determine the block offset.

The printer suspends after the processing the error code. When the printer resumes, an error again and the printer suspends again. Reset the printer to correct the error. If a reset does not correct the error, have the printer checked by a qualified service technician.



**Note:** Flash write errors may be unrecoverable.

**EEPROM Configuration Block Errors**

Errors related to an invalid configuration block (diagnostic block) produce 13 beeps, and then the printer suspends. It continues to produce this symptom until the configuration block error is corrected.

Configuration block errors may be caused by a flash write error or an incorrect printer configuration. Reset the printer to correct the error. If a reset does not correct the error, have the printer checked by a qualified service technician.

**Self-Test Function Descriptions**

The self-test performs the following functions.

**Boot Block Program Verification**

A CRC (Cyclic Redundancy Check) is performed on the boot block program. The calculated CRC is compared to the CRC embedded in the program module.

**Control Program Verification**

A CRC is performed on the control program, which is loaded into writable flash program memory. The calculated CRC is compared to the CRC embedded in the program module. The results of this test are printed on the self-test report.

### **Font Module Verification**

A CRC is performed on the font modules, which are loaded into writable flash font memory. The calculated CRC is compared to the CRC embedded in the program module. Results are printed on the self-test report.

### **A2D Check**

Current reading of the A2D sources are performed, and the results are printed on the self-test report.

### **Nonvolatile Diagnostic Memory Verification**

A CRC is performed on the area of the nonvolatile diagnostic memory that has a CRC over it. Results are printed on the self-test report.

### **Nonvolatile Diagnostic Memory Update**

The nonvolatile diagnostic memory is updated from the nonvolatile diagnostic memory data shadowed in memory.

## **Detailed Printer Self-Test**

Perform a self-test to verify printer functions, and provide reporting of printer diagnostics. The self-test performs a series of internal diagnostics and prints the results. When the self-test begins, the beeper sounds for half a second and all LEDs turn on for half a second.

### **Initiating Self-Test**

- While the printer is idle or in Suspend mode, press the Line Feed and Set Page buttons simultaneously to initiate a self-test.

### **Terminating Self-Test**

- Press the Line Feed and Set Page buttons simultaneously to manually terminate a self-test.

### **Self-Test Report**



**Note:** This method is recommended to determine printer functionality.

A self-test is equivalent to a warm start. Both are performed when you simultaneously press Form Feed and Set Page buttons on the control panel for a few seconds. Release the buttons when the printer beeps and all indicators are lit. If you press the buttons for too long, the self-test will not happen and the printer will form-feed one page.

As the self-test progresses, the indicator lights change. Internal tests are performed and the two page report is printed. This report provides helpful information in diagnosing and troubleshooting printer problems. When you perform a self-test, the following actions occur:

- All LEDs are turned on to verify the lights work
- A 600 ms beep is emitted to verify the beeper works
- LEDs flash individually to show progress during internal tests
- Current voltage and ambient temperature are obtained
- Validity of diagnostic block program is checked
- Validity of boot block program is checked
- Validity of control program is checked
- Validity of loaded fonts is checked
- LEDs turn off
- Self-test report is printed

Printer capability is diagnosed by printing the report. Device errors are displayed on the LEDs and emitted by the beeper. The printer then does a warm reset (soft reboot) when an error is encountered or when the self-test report prints.

### **Understanding the Self-Test Report**

The self-test report is divided into sections. Refer to page 110 and page 111 for a sample printout. All other values are informational only. Remember that these values are cleared after the self-test.

- The printer model number is given on line 1 (first line). This identifies the printer type used, in this case the 6822.
- The 8-digit serial number of the printer is listed on line 4 under the “Serial#” heading on line 3. The serial number is also on the inside of the printer. In portable printers, raise the printer mechanism to look for the number on the inside back wall.

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- **Battery Voltage, (line 13)**  
Indicates the input voltage sampled at the beginning of the self-test. The input range must be between 7.5 and 15 V. The input voltage must be greater than 10.5 V to charge the internal battery. At 7.5 V or less, the Low Batt LED comes on and the printer enters Sleep mode. At 10.5 V or less, the Low Batt comes on but the printer still prints.
- **Auto Feed (line 16)**  
Auto feed is a configurable item. Carriage Return (CR) means no auto linefeed. This is the most common setting for applications using NPCP. CR+LF means a line feed will be added to each CR. This setting can produce double-spacing of reports. See “Setting the Autofeed” on page 29
- **Interface Mode (line 17)**  
Interface mode lists the interface protocol for the printer. The typical setting is NPCP. Others include DTR with no, odd, or even parity, and IrDA. See “Protocol Selection Mode” on page 29
- **Bit Rate (line 18)**  
Bit rate is commonly set to 19200 (19.2K) or 9600 bps. See **“Selecting the Bit Rate” on page 29**
- **A2D History (lines 21 through 25)**  
Shows the recorded history for voltage measurements and temperature measurements.
- **Head Jam History (lines 26 through 29)**  
Provides information on head jams. If the printer is having frequent head jams, these lines can assist in determining the problem.

### Head Jam History Information

Heading	Description
Home	Err indicates the home position LED sensor has failed.
Command	Indicates which printer command was executed when the head jammed.
Direction	Indicates which way the head was moving, left is toward the home position and right is away from the home position. Home position is at the extreme left, toward the green thumb wheel.
Speed	Indicates the acceleration speed of the printhead when the jam occurred.

**Head Jam History Information (continued)**

Heading	Description
Step	The acceleration step at the jam. 0 means no steps were taken, 15 means all steps were taken. 1-14 indicates the printer jammed during acceleration or deceleration.
Temp	The ambient temperature at the last head jam. The temperature is listed in Celsius.
Position	Position of carriage at the time of the jam in 1/720 in = 12 * step position. Divide the number by 12 to get the step position. There are 512 steps across the page. If it is jammed at position 0, check the printer mechanism alignment. If it is jamming in the middle, it is more likely a dirty ribbon or obstruction in the printhead's path.

- Head Dot Pattern (line 37)  
Is used to verify the individual dot wires. There should be nine dots. If some dots are missing, it could be a printhead failure or a circuit board failure.
- Error Log information appears on lines 38-43. This information is cleared after every self-test.

**Error Log Information**

Heading	Description
PE	Number of paper jams while feeding paper
HJ	Number of head jams while printhead is moving
12Vu	Number of 12 V under-voltage
12Vo	Number of 12 V over-voltage
24Vu	Number of 24 V under-voltage (head/motor voltage)
24Vo	Number of 24 V over-voltage
Home	Number of home detect errors (typically caused by paper scraps or circuit failures)
Temp	Unused
OverC	Number of head over-current errors (typically caused by a bad printhead)
HeadS	Number of head driver short errors (typically caused by circuit failures)
Fault	Number of paper feed motor over current errors (excess current in paper feed motor could indicate circuit failure)

Error Log Information (continued)

Heading	Description
ADErr	Number of A2D conversion failures
EEErr	Number of EEPROM write failures to diagnostic block
Dlink	Number of software memory errors (corruption in internal memory)
Llink	Number of software memory errors

Sample First Page of the Self-Test



**Note:** Lines 15-18 are factory default printer settings. Take note of these lines when reading the self-test report.

```

-----
                                INP6822
2 Copyright 1997, 1998, Intermec Technologies Corporation. All Rights Reserved.
3Serial#   MFG Date   Hardware   Check   Repairs   Svc Date
412345678 yy/mm/dd   ddd-ddd-ddd/ddd (TOP)   GO/NG   00   yy/mm/dd
5         ddd-ddd-ddd/ddd (MLB)
6         ddd-ddd-ddd/ddd (PS)
7         ddd-ddd-ddd/ddd (IOB)
8Revisions:.....0000000000303100
9Bootblock:  NPBB6822.MOD - Version XX.XX XXXX XXXX GO/NG
10Control Program:  npf16822.mod - Version XX.XX XXXX XXXX GO/NG
11Font Module:     nftxxxxx.mod - Version XX.XX XXXX XXXX GO/NG
12Font Module:     nftxxxxx.mod - Version XX.XX XXXX XXXX GO/NG
13Battery Voltage: 012.34 Low...../....High
14Total Pages:    123456
15Zero Font Style: O
16Auto Feed:      CR
17Interface mode: NPCP
18Bit Rate:       19200
19Cold Starts:    00024
20Warm Starts:    00050
21A2D History
22   Curr   Low   High   Min   Max   Error   Page   Count
2324v:  024.00  023.21  023.91  023.21  024.51  027.21  00401  00021
2412v:  012.55  010.91  013.51  010.90  014.50   8.71  00401  00021
25Temp:   023   -020   055   -021   060   000   00401  00021
26Head Jam History
27Total Head Jams: 00186
28Home Command Direction Speed Step Temp Position Page
29 Print Left Const 010 -010 01440 12345
30NPCP History
31Disc Addr Parity IFTS Seq CRC Frame Bind IPLDU
3212345 12345 12345 12345 12345 12345 12345 12345 12345
33IRDA History
34 FramesOk BroadCasts CRC/TMO DISCARD
35rx 1234567890 1234567890 0123456789 0000000000
36tx 1234567890 1234567890 0123456789 0000000000
37HEAD DOT PATTERN

38 Error Log
39PE HJ 12Vu 12Vo 24Vu 24Vo Home Temp OverC HeadS Fault ADErr EEErr
40Dlink Llink
4112345 12345 12345 12345 12345 12345 12345 12345 12345 12345 12345 12345
4212345 12345 12345 12345 12345 12345 12345 12345 12345 12345 12345 12345
4312345 12345 12345 12345 12345 12345 12345 12345 12345 12345

```

## Sample Second Page of the Self-Test

Page 2 of the self-test contains the print pattern used to diagnose printer mechanical behavior. The pattern continuously prints the ASCII characters between 33 and 126 decimal inclusive for the entire page, or until you cancel the print by pressing a button on the printer. An example of that rotating pattern is shown below.

```
!"#$%'()*+,-./
0123456789:;<=>?@ABCDEFGHIJKLMNopqrstuvwxyz[\]^_`abcdefghijklmnopqrstuvwxyz{|}~!"#$%'
()*+,-./
0123456789:;<=>?@ABCDEFGHIJKLMNopqrstuvwxyz[\]^_`abcdefghijklmnopqrstuvwxyz{|}~!"#$%'
()*+,-./
0123456789:;<=>?@ABCDEFGHIJKLMNopqrstuvwxyz[\]^_`abcdefghijklmnopqrstuvwxyz{|}~!"#$%'
()*+,-./
0123456789:;<=>?@ABCDEFGHIJKL
```

### Self-Test Failure

- For help, see “Miscellaneous Troubleshooting Tips” on page 111.
- Check the power source (internal battery, charge cable, or ac adaptor) for a possible power failure.

## Miscellaneous Troubleshooting Tips

The following table lists actual printing problems, possible causes, and actions you should take to correct a problem.

### Possible Printer Problems

Symptom	Test or Cause	Solution
Printer does not communicate with the mobile computer. Bluetooth unable to connect.	Incorrect protocol selection.	Check lines 17 and 18 on the self-test report for correct bit rate and protocol selection. Change protocol settings through configuration process.
Make sure you are in range (10 cm to 10 m)	Make sure your device is configured to be discoverable and/or connectable. For help, see “Bluetooth Configuration Commands and Specifications” on page 133.	Make sure the Bluetooth shutdown timer has not expired
Double-spacing on application reports but single-spacing on self-test.	Check line 16 on the self-test report. CR+LF indicates an incorrect configuration for NPCP.	For help, see “Cleaning the Mask Spring” on page 22.
Zero prints incorrectly (with or without slash).	Check line 15 on the self-test report for the Zero Font Style setting.	If incorrect, adjust the zero print option, see <a href="#">“Cleaning the Mask Spring” on page 22</a>

**Possible Printer Problems (continued)**

Symptom	Test or Cause	Solution
Does not print extended character set — missing font.	Check line 11 or 12 on the self-test report to see if the NFT0000.MOD file is listed after Font Module.	Use the 6820 Printer Tool Kit to reload the font file or send the printer in for hardware repair.
Printer emits 1 or 2 beeps or blinking green light is the only indicator.	Printer mechanism does not have adequate power for printing. The 12 V may be under or over voltage fault. (Note: Error lights do not flash if voltage is too high)	Check battery or power supply.
If battery, recharge or replace (see <b>“Installing the Internal Battery”</b> on page 10)	If power supply, adjust supply voltage to 7.5 to 15 V.	Check the printer’s internal battery, if installed. Check the vehicle charge cable (see <i>6822 Printer Installation Instructions</i> P/N 931-052-001).
Printer emits 2 sets of 3 beeps	Printer out of paper	Reload paper into printer mechanism. For help, see “Loading the Paper Tray” on page 13.
Printer works but some or all LEDs do not work.	Gray ribbon cable connecting control panel board to pivot frame assembly is loose.	Call Customer Support (800-755-5505) or send printer for hardware repair.
Printer does not print	No voltage	Voltage too high or low. Check line 13 on the self-test report, under the Battery Voltage heading
No data input	Adjust supply voltage to 7.5-15 V  Tighten computer connections.	No paper feed (paper jam or head jam)
<b>Test:</b> Pull paper toward roller. <b>Cause:</b> If paper is resistant:	Paper tray too full	Torn paper perforation
Paper wrinkled, creased, moist, or perforations missing	White ribbon cables obstructing paper	Head Jams due to carriage alignment. Check line 29 on self-test report, under Position heading, for value.
	Ensure fewer than 200 3-ply sheets in the deep paper tray and fewer than 50 3-ply sheets in the shallow paper tray.	Remove torn paper, load and center new paper, readjust pinfeed holders.

**Possible Printer Problems (continued)**

Symptom	Test or Cause	Solution
Replace the paper.	Straighten the white ribbon cables.	If “0,” realign mechanism in pivot tray. See <b>“Aligning the Printer Mechanism” on page 98</b>
No paper feed (paper jam or head jam)	Move the printhead manually from side to side.	Remove ribbon cartridge, move printhead. If smooth, ribbon is jammed. Remove ribbon cartridge, move printhead. If still resistant, mask spring is bent or damaged.
<b>Cause:</b> printhead gap adjuster too tight.	Remove ribbon cartridge and turn knob. If ribbon resists, replace ribbon cartridge (see <b>“Installing the Ribbon Cartridge” on page 11</b> )	
<b>Cause:</b> Paper scraps found in printer mechanism or around platen.	Replace the mask spring see <b>“Cleaning the Mask Spring” on page 22</b>	
Printer mechanism unlatched (unlocked). (portable, fixed mount printers)	Set the head gap adjuster to the fifth notch away from the paper see <b>“Adjusting the Printhead Gap” on page 12</b> If ribbon cartridge bumps against inside of printer, check white ribbon cable, home position sensor, and four screws.	
	Remove any paper scraps, do a cleaning.	
	Latch (lock) the printer mechanism into place.	
	Perform a self-test.	



**Note:** In paper jams or head jams, press the Set Page button to clear the printer before printing can resume.

## Compatibility Issues

Use the following information to determine some compatibility issues that come up relative to the 6822:I

### Compatibility Issues and Conclusions

Issue	Conclusion
Does a 6820 ribbon work on the 6822?	Yes.
Do 6820 applications work on the 6822?	Yes. Applications that work on the 6820 also work on the 6822.
Does the 6822 work with an application that downloads some custom characters to the printer?	Yes. The downloadable character set feature is the same for both the 6820 and 6822.
Can 6820 printers be replaced with 6822s?	Yes. 6822s can be installed on existing 6820 mounting brackets.

## Understanding Diagnostic Information

Diagnostic information is stored in flash to support the hardware configuration, both at time of manufacture and in the field. This includes recording the initial configuration changes to hardware and software, and various environmental statistics helpful in determining why failures are occurring in the field. The flash is provided for storage of critical data that must remain in the unit after power to the unit is lost. The data in the flash is used for diagnostic information for a catastrophic failure, or over the phone with a customer.

Diagnostic information is updated and maintained by the printer. All diagnostic information is shadowed in RAM. At the end of every 50 forms, the flash information is updated from the RAM. The printer also updates the diagnostic information for nonrecoverable error, printer resets, printer self-test, and remote polling of diagnostic information.

Fields are stored with ID first, then length, then data. The details of the data and the length of the entire field, including ID and Length bytes, are shown in the “Diagnostic Information” table on page 115.

The amount of flash memory reserved for nonvolatile diagnostic memory is 16 K bytes. Printer self-test prints most of the information contained in the diagnostic memory for remote and end-user diagnostic access.

**Diagnostic Information**

Field Id	Length	Description	Stored as	Total Length		
01	4	Serial Number	7 digit BCD set at MFG	39 bytes		
	3	Date of Manufacture, yy/mm/dd	6 digit BCD set at MFG			
	7	Hardware Configuration	52 digit BCD set at MFG			
	7	ddd-ddd-ddd/ddd (top level P/N)				
	7	ddd-ddd-ddd/ddd (control board)				
	7	ddd-ddd-ddd/ddd (power supply)				
	2	CRC of preceding fields	2 byte binary set at MFG			
08	8	Hardware Revisions: ECNs. applied. 64 ECNs can record separately by number 1-64.	8 byte bit field	11 bytes		
	1	Service Repairs: a two-digit field indicating number of times serviced	2 BCD digits			
	3	Date of last repair, yy/mm/dd	6 BCD digits			
09	2	Cold starts since MFG or last repair	binary digits	8 bytes		
	2	Warm starts since last cold start	binary digits			
	2	Pages printed over life	binary digits			
10	2	Last high and low voltage extremes on 24 V input over last 50 reports. Extremes stored as 8-bit A2D conversions	2 bytes	11 bytes		
	2	Voltage extreme history stores min/max 24 V A2D conversions over printer life	2 bytes			
	1	24 V voltage error. Voltages greater than 10% considered errors. A2D error count	1 byte			
	2	Form number at last voltage error	2 bytes			
	2	24 V error count	2 bytes			
	20	2	Last high and low voltage extremes on 12 V input over last 50 reports. Extremes stored as 8-bit A2D conversions		2 bytes	11 bytes
		2	Voltage extreme stores min/max 12 V A2D conversions over printer life		2 bytes	
1		12 V error. Voltages less than 10.5 V and greater than 14.5 V are considered errors. A2D value is recorded	1 byte			
2		Page number at last 12 V error	2 bytes			
2		12 V error count	2 bytes			
30	2	Temperature, maximum and minimum over last 50 reports. Set A2D value	2 bytes	11 bytes		

## Chapter 6 – Troubleshooting

### Diagnostic Information (continued)

Field Id	Length	Description	Stored as	Total Length
	2	Temperature, min/max over printer life. Set A2D value	2 bytes	
	1	Temperature error. Last A2D conversion below -10 or above 60°C recorded	1 byte	
	2	Page number at last temperature error	2 bytes	
	2	Total number of temperature errors	2 bytes	
40	2	Total number of head jams	2 bytes binary	11 bytes
	1	Command 0 = Stop 2 = Print 4 = Print/LF 6 = Seek 8 = Slow Seek 10 = Change Speed 12 = Feed 14 = Wait	bits 0-3	
		Speed 00 = Init 01 = Low 10 = High	bits 4-5	
		Direction 1 = Left 0 = Right	bit 6	
		Home Switch 0 = No Error 1 = High Error	bit 7	
	1	Acceleration or deceleration stop motor value when jam occurred	1 byte binary	
	1	Ambient temperature when had jam occurred. Set A2D value	1 byte	
	2	Form number where head jam occurred	2 bytes binary	
	2	Carriage position where head jam occurred	2 bytes binary in 1/720 in	
60	4	IrDA rxFramesOK – total frames received OK	4 bytes	46 bytes

**Diagnostic Information (continued)**

Field Id	Length	Description	Stored as	Total Length
	4	IrDA rxFrameCrcErr – total frames received with CRC error	4 bytes	
	4	IrDA rxTotalBytes – total bytes received OK	4 bytes	
	4	IrDA rxFramesDiscardBuf – total frames discarded due to no buffer space	4 bytes	
	4	IrDA rxBroadcastFrames – total broadcast frames received OK	4 bytes	
	4	IrDA rxFramesDiscardHwErr – total received frames discarded due to hardware error	4 bytes	
	4	IrDA txFramesOK – total frames transmitted OK	4 bytes	
	4	IrDA txTotalBytes – total bytes transmitted OK	4 bytes	
	4	IrDA txBroadcastFrames – total broadcast frames transmitted OK	4 bytes	
	4	IrDA txFramesNotTxTimeout – total frames not transmitted due to time out	4 bytes	
	4	IrDA txFramesNotTxHwErr – total frames not transmitted due to a hardware error	4 bytes	
70	2	Paper out count	2 bytes	74 bytes
	2	Head jam count	2 bytes	
	2	12 V low count	2 bytes	
	2	12 V high count	2 bytes	
	2	24 V low count	2 bytes	
	2	24 V high count	2 bytes	
	2	Home switch error count	2 bytes	
	2	Unused	2 bytes	
	2	Over current error count	2 bytes	
	2	Head short error count	2 bytes	
	2	Paper fault error count	2 bytes	
	2	A2D conv. error count	2 bytes	
	2	EEPROM write error count	2 bytes	
	2	Double link error count	2 bytes	
	2	Lost link error count	2 bytes	

## Chapter 6 – Troubleshooting

### Diagnostic Information (continued)

Field Id	Length	Description	Stored as	Total Length
	2	Out of buffers error count	2 bytes	
	2	Unused	20 * 2 bytes	

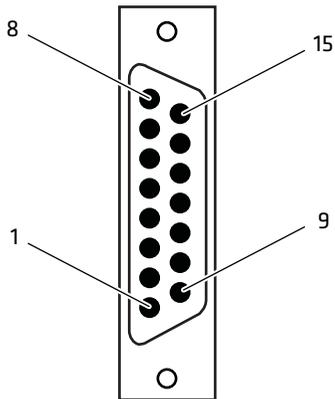
# Communications Pin-Out Configurations

This section shows common cable configurations between a mobile computer or a dock and the printer.

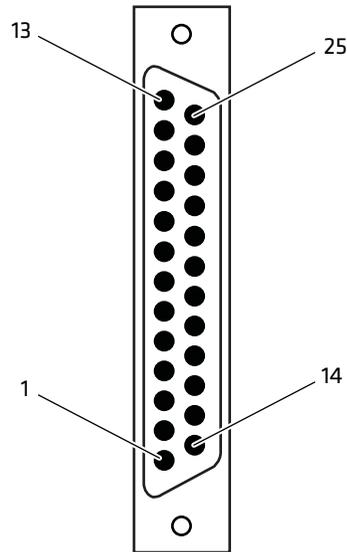
Mobile Computer

Wall Mount Printer or  
Remote Mount Terminal Holder

<u>Signal Name</u>	<u>Pin #</u>	<u>Pin #</u>	<u>Signal Name</u>
	shield		
Chassis Ground	shell	1	NC (No Connection)
Charge Input	8	9	HHC_CHARGE
SG (Signal Ground)	9	7	GND
DSR (Data Set Ready)	7	6	DTR
DTR (Data Terminal Ready)	2	20	NC
CTS (Clear To Send)	6	5	RTS
RTS (Ready To Send)	3	4	CTS
RXD (Receive Data)	5	3	TXD
TXD (Transmit Data)	4	2	RXD
Dock_A/B_SW	NC	12	Term A/B



15-Pin DSUB Male  
15-Pin to 25-Pin Cable (P/N 216-605-1XX)



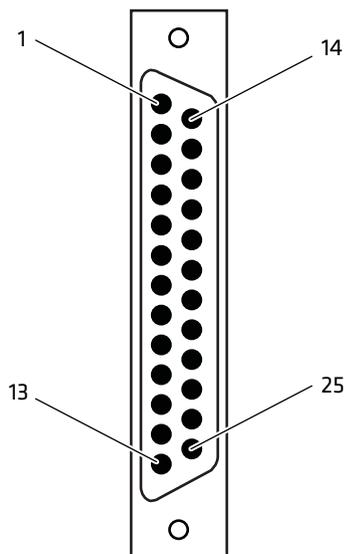
25-Pin DSUB Male

## 15-Pin to 25-Pin Cable (P/N 216-605-1XX)

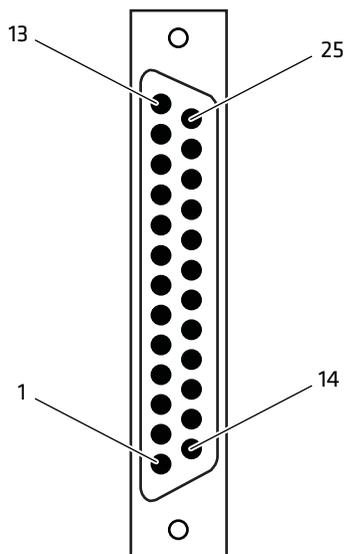
## Chapter 6 – Troubleshooting

PC	Pin #	Pin #	Wall Mount Printer
<u>Signal Name</u>	<u>Pin #</u>	<u>Pin #</u>	<u>Signal Name</u>
DTR (Data Terminal Ready)*	20 ————— 20		NC (No Connection)
RC (Receive Carrier)	17 ————— 17		NC
TC (Transmit Carrier)	15 ————— 15		NC
DCD (Data Carrier Detect)	8 ————— 8		NC
SG (Signal Ground)	7 ————— 7		GND
DSR (Data Set Ready)*	6 ————— 6		DTR
CTS (Clear to Send)	5 ————— 5		RTS
RTS (Ready to Send)	4 ————— 4		CTS
RXD (Receive Data)	3 ————— 3		TXD
TXD (Transmit Data)	2 ————— 2		RXD

\* Signals are not available on the 6100 Dock



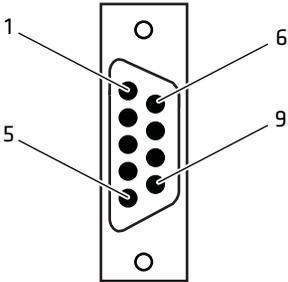
25-Pin DSUB Female  
25-Pin to 25-Pin Cable (P/N 216-771-XXX)



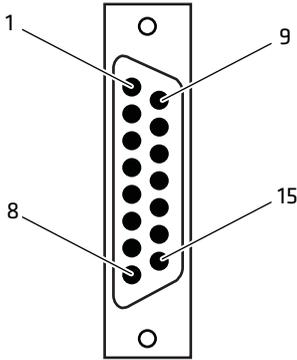
25-Pin DSUB Male

### **25-Pin to 25-Pin Cable (P/N 216-771-XXX)**

PC			Printer
<u>Signal Name</u>	<u>Pin #</u>	<u>Pin #</u>	<u>Signal Name</u>
TXD (Transmit Data)	3	4	RCT
RXD (Receive Data)	2	5	TXD
RTS (Ready to Send)	7	3	CTS
CTS (Clear to Send)	8	6	RTS
DSR (Data Set Ready)	6	7	DTR (Data Terminal Ready)
SG (Signal Ground)	5	9	GND
Chassis Ground	shell	shield	Chassis Ground
	.....	8	Terminal Charge out to computer



9-Pin DSUB Female  
9-Pin to 15-Pin Cable (P/N 226-016-XXX)



15-Pin DSUB Female

**9-Pin to 15-Pin Cable (P/N 226-016-XXX)**

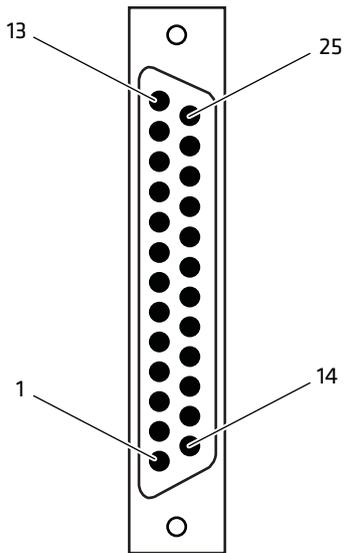
## Chapter 6 – Troubleshooting

Dock

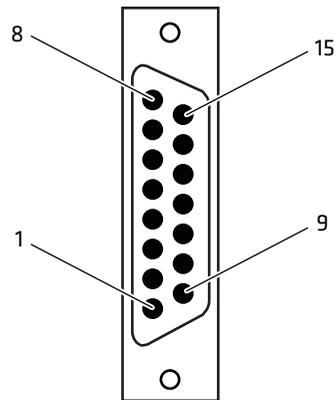
Printer w/6210 Terminal Holder

<u>Signal Name</u>	<u>Pin #</u>	<u>Pin #</u>	<u>Signal Name</u>
TXD (Transmit Data)	2 —————	4	RXD
DTR (Data Terminal Ready)	20 —————	2	NC (No Connection)
RTS (Ready to Send)	4 —————	3	CTS
RXD (Receive Data)	3 —————	5	TXD
CTS (Clear to Send)	5 —————	6	RTS
DSR (Data Set Ready)*	6 —————	7	DTR
SG (Signal Ground)	7 —————	9	GND
	open ——— shield ———	shell	

\* Signal is not available on the 6100 Dock



25-Pin DSUB Male  
25-Pin to 15-Pin Cable (P/N 226-162-XXX)

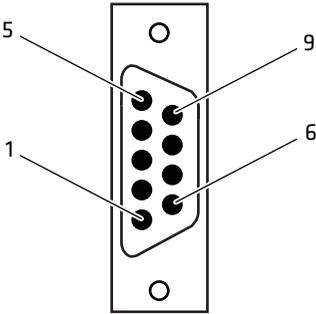
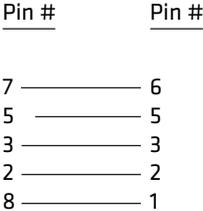


15-Pin DSUB Female

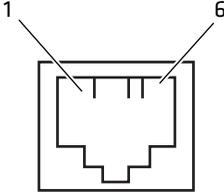
**25-Pin to 15-Pin Cable (P/N 226-162-XXX)**

PC

Printer



9-Pin DSUB Male  
Data Communications Cable (P/N 226-270-XXX)



RJ-11 Jack

**Data Communications Cable (P/N 226-270-XXX)**

The printer has a 25-pin connector with the following pinout designations and signal mnemonics:

**Printer Communications Connector**

15-Pin D-Sub	25-Pin D-Sub	Signal Name	Type	I/O	Description
1	NC	NC	---	---	NC (No Connection)
2	20	DSR (Data Set Ready)	RS-232	IN	Printer's DSR
3	4	CTS (Clear To Send)	RS-232	IN	Wake up
4	2	RXD (Receive Data)	RS-232	IN	Printer's RxD
5	3	TXD (Transmit Data)	RS-232	OUT	Printer's TxD
6	5	RTS (Ready To Send)	RS-232	OUT	Printer's RTS

**Printer Communications Connector (continued)**

<b>15-Pin D-Sub</b>	<b>25-Pin D-Sub</b>	<b>Signal Name</b>	<b>Type</b>	<b>I/O</b>	<b>Description</b>
7	6	DTR (Data Terminal Ready)	RS-232	OUT	Printer's DTR
8	9	HHC_CHARGE	POWER	OUT	11-13 V, 2 A maximum
9	7	GND	POWER		SG (Signal Ground)

# A

## Specifications

This appendix provides physical specifications for the 6822 printer models as well as specifications for the media used with the printers.

# Specifications

## Print Speed

230 cps



**Note:** Various print fonts do affect the print speed.

## Weight

Fixed Mount Printers 6.55 kg (14.41 lbs)

Portable Printers

w/ 4000 or 61XX terminal holder 5.80 kg (12.75 lbs)

w/ 62XX, 600 series, 700 series, or CK60 holder 5.67 kg (12.25 lbs)

Mounting plate 1.93 kg (4.25 lbs)

Flat paper tray 2.45 kg (5.40 lbs)

Compact paper tray 2.05 kg (4.50 lbs)

## Temperature

DC Operating -20°C to 60°C (-4°F to 140°F)

AC Operating -20°C to 45°C (-4°F to 113°F)

Storage -30°C to 70°C (-22°F to 158°F)

## Humidity

Operating 10 to 85% noncondensing

Storage 5 to 95% noncondensing

## Altitude

Operating -100 to 5000 m

Storage 15,000 m

## Electrical

Voltage 13.8 VDC (nominal)

Current 10 mA (idle, sleep mode not charging batteries);

3.5 A (average while printing);

450 mA (charging internal battery);

Up to 1.5 A (charging computer battery)

## Vibration

12 g RMS for 4 hours

**ESD**

15 kV noncontact and 8 kV contact

**Battery Shelf Life**

1 year at 25°C (77° F)

2.3 Ah

12 V sealed lead-acid)



**Note:** The battery goes dead within two weeks when connected to the printer and with no external charge source.



**Note:** A printer and a computer, using the supplied serial cable, can operate up to 9 m (30 ft) apart.

## Printer Dimensions

Listed below are the dimensions of the fixed mount and portable printers.

### Fixed Mount Printer

The base of the fixed mount printer is 32.5 cm (12.75 in) wide by 35.5 cm (14.0 in) front to back. The upper portion varies according to the configurations shown in the following table.

#### **Fixed Mount Printer Dimensions**

<b>Configuration</b> (with deep paper tray)	<b>Width</b>	<b>Length</b>	<b>Depth</b>
with 61XX Holder Side Mount	51.4 cm (20.25 in)	36.8 cm (14.5 in)	19.1 cm (7.5 in)
with 4000 Series, 62XX, 600 Series, 700 Series, or CK60 Holder Side Mount	47.0 cm (18.5 in)	36.8 cm (14.5 in)	20.3 cm (8.0 in)
with 61XX Holder Top Mount	42.5 cm (16.75 in)	42.6 cm (16.75 in)	19.1 cm (7.5 in)
with 4000 Series, 62XX, 600 Series, 700 Series, or CK60 Holder Top Mount	38.1 cm (15.0 in)	42.6 cm (16.75 in)	20.3 cm (8.0 in)

## Portable Printer

The portable printer may come with a handle, an AC foot, or with a terminal holder top mount.

### Portable Printer Dimensions

Configuration	Width	Length	Depth
with handle, 61XX Holder Top Mount, and Deep Paper Tray	41.9 cm (16.5 in)	42.6 cm (16.8 in)	20.3 cm (8.0 in)
with handle, 61XX Holder Top Mount, Shallow Paper Tray	42.5 cm (16.8 in)	42.6 cm (16.8 in)	19.1 cm (7.5 in)
with handle, 4000 Series, 62XX, 600 Series, 700 Series, or CK60 Holder Top Mount, and Deep Paper Tray	38.1 cm (15.0 in)	42.6 cm (16.8 in)	20.3 cm (8.0 in)
with handle, 4000 Series, 62XX, 600 Series, or 700 Series, or CK60 Holder Top Mount or Fill Plate, and Shallow Paper Tray	41.9 cm (16.5 in)	38.1 cm (15.0 in)	13.0 cm (5.1 in)



**Note:** The AC foot adds 6.35 cm (2.5 in) to the length of the printer.

## Media Specifications



**Using paper that matches the following specifications ensures optimum 6822 performance. Variation from these specifications, use of aged paper, or use of paper exposed to elements such as dirt or humidity may cause printing problems.**

The printer works with 1-3 ply carbonless paper that is single-edge glued and designed for sprocket feed. Standard paper size is 8.5 x 11 in or 241 x 305 mm international (8.5 x 12 in). Use 3-ply forms up to a maximum of 0.23 mm (0.009 in) thick.

A soft, flexible, rubber type cement applied to one perforation strip only is preferred. The paper should wrap around a 1 1/4 in diameter roll without curl or wrinkle.

## Material Breakdown

The following tables show the material broken down per ply:

### 14# CBF (Carbonless Back and Front)

	Target	Under	Over
Basis Weight	14 lb	13.3 lb	14.7 lb
Caliper	2.9	2.6	3.2
Moisture	5.0	4.0	6.0
Smoothness (RS)	165	110	230
Smoothness (CB)	270	220	320
Brightness (Wht)	88	86	90
Colors available: White, Canary, Pink, Goldenrod, Blue, Green			

### 15# CF (Carbonless Front)

	Target	Under	Over
Basis Weight	15 lb	14.43 lb	15.8 lb
Caliper	3.0	2.5	3.2
Moisture	5.0	4.0	6.0
Smoothness (RS)	140	100	180
Smoothness (CB)	140	100	180
Brightness (Wht)	85	84	86
Colors available: White, Canary, Pink, Goldenrod, Blue, Green			

### 16# CB (Carbonless Back)

	Target	Under	Over
Basis Weight	16 lb	15.2 lb	16.8 lb
Caliper	3.3	2.8	3.8
Moisture	5.7	4.2	6.7
Smoothness (RS)	180	120	270
Smoothness (CB)	270	220	320
Brightness (Wht)	86	84	88
Opacity (Wht)	81	78.5	82
Colors available: White, Canary, Pink, Goldenrod, Blue, Green			

## **Appendix A – Specifications**

### **20# OCR Laser Bond**

	<b>Target</b>	<b>Under</b>	<b>Over</b>
Basis Weight	20 lb	15.2 lb	16.8 lb
Caliper	4.0	3.8	4.2
Moisture	3.8	4.7	5.0
Smoothness	140	100	170
Brightness (Wht)	94	82	N/A
Opacity (Wht)	85	84	N/A

## **Caliper Breakdown**

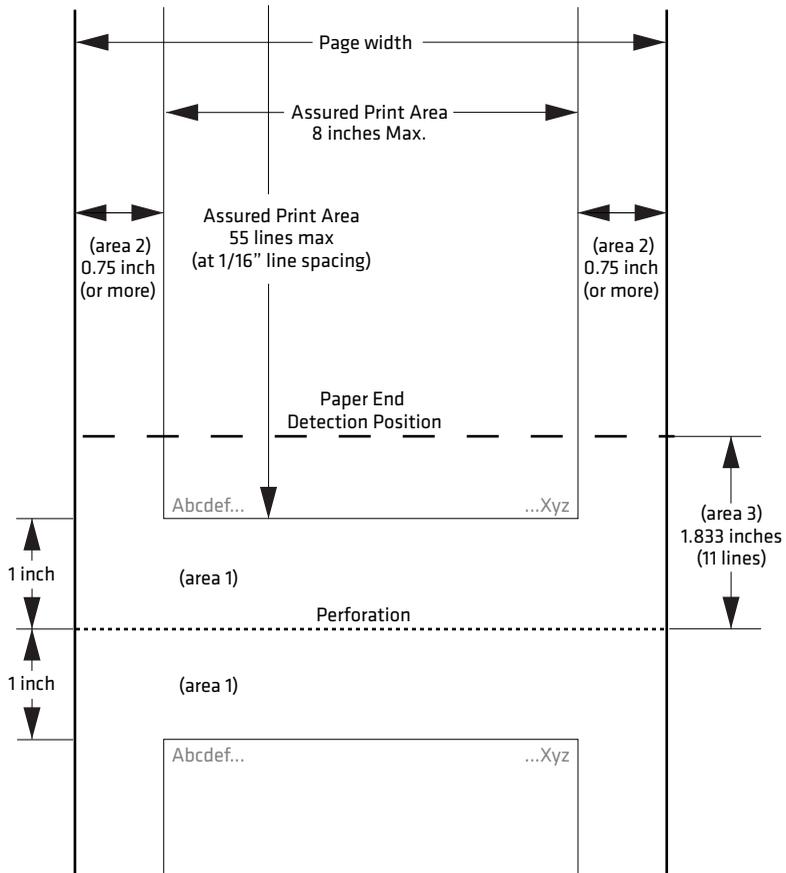
The following table shows the caliper of forms broken down by ply:

### **Caliper Breakdown**

	<b>Target</b>	<b>Maximum</b>
1-Ply (20 lb)	4.0	4.2
2-Ply (15 lb and 16 lb)	6.3	7.0
3-Ply (14 lb, 15 lb, and 16 lb)	9.2	10.2

# Understanding the Fanfold Paper Page Layout

The following illustration shows the printable area of the lower section of a page of fanfold paper and the upper section of the next page. The Assured Print Area is the best area to use for printing.



## Printable Area of Fanfold Page

You should leave a 1 in margin at both the top and the bottom of the page. This provides for a margin of six lines at 1/6 in line spacing. Even though printing in Area 1 (before or after the perforation) may be possible, you should keep in mind that paper feed precision is reliable only within the Assured Print Area.

## **Appendix A – Specifications**

- The top and bottom margins are represented by Area 1, as shown in the previous illustration. The top margin is defined as the distance between the top edge of the paper and the first row of printed characters. The bottom margin is defined as the distance between the last row of printed characters and the bottom edge of the paper.
- There is a possibility that printing can start within one line below the perforation and printing could continue beyond the Assured Print Area, however paper feed precision is only reliable with top and bottom margins of approximately one inch. Basically, you should consider there are only 55 lines available for reliable printing.
- The left and right margins are represented by Area 2. For reliable printing, use a margin of at least 0.75 in for the left and right margins.

The Paper End Detection line indicates the point where the Paper Out sensor detects the bottom edge of the paper.

Area 3 represents the distance between the Paper End Detection position and the bottom edge of the page.

Once the last page of the fanfold paper stack is in the printer, and the printhead has advanced past this Paper End Detection line, printing is no longer reliable.

When the bottom end of the last page has advanced through the printer, past the spring plate along the front of the platen, the paper should not reverse back through the printer, because the printer could jam and cause paper feed problems.