

# FARGO®

Card Identity Solutions



## Fargo® CardJet™ Professional Series 410 Card Printer/Encoder and Persona® CardJet™ C7 Printer User Guide (Rev. 6.1)

Part Number: L000286

Fargo CardJet Professional Series 410 Card Printer/Encoder and Persona CardJet C7 Printer User Guide (Rev. 6.1), property of Fargo Electronics, Incorporated

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Revision 5.0	1 January 2004	Same document title

These reference documents were thoroughly reviewed to provide Fargo with professional and international standards, requirements, guidelines and models for our technical, training and user documentation. At all times, the *Copyright Protection Notice* for each document was adhered to within our Fargo documentation process. This reference to other documents does not imply that Fargo is an ISO-certified company at this time.

- ANSI/ISO/ASQ Q9001-2000 American National Standard, (sub-title) Quality Management Systems - Requirements (published by the American Society of Quality, Quality Press, P.O. Box 3005, Milwaukee, Wisconsin 53201-3005)
- The ASQ ISO 9000:2000 Handbook (editors, Charles A. Cianfrani, Joseph J. Tsiakals and John E. West; Second Edition; published by the American Society of Quality, Quality Press, 600 N. Plankinton Avenue, Milwaukee, Wisconsin 53203)
- Juran's Quality Handbook (editors, Joseph M. Juran and A. Blanton Godfrey; Fifth Edition, McGraw-Hill)

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# Section 1: Introduction to CardJet

## Reviewing the Notices and Trademark Restrictions

### Reviewing the Notices

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### Reviewing the Trademark Acknowledgments

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### Reviewing information pertinent to Users in the United States

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Re-orient or relocate the receiving antenna. Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.



Use of a shielded cable is required to comply with the Class B limits of Part 15 of the FCC Rules. You are cautioned that any changes or modifications not expressly approved in this manual could void your authority to operate and/or obtain warranty service for this equipment.

## How to use the manual

The CardJet Card Printer User Guide (Rev. 6.1) is, in fact, the troubleshooting and field service manual for both the Professional Series CardJet 410 Card Printer/Encoder and the Persona® CardJet C7 Card Printer/Encoder. The manual is designed to provide installers and technicians with quick, efficient lookup of related procedures, components and terms. The manual can be used effectively either in soft or hard copy, depending on the preference of the installer or technician.


Manual	Description
Glossary of Terms and Technical/Functional Specifications (hyper-linked)	You can go directly to the Glossary of Terms, Technical Specifications and Functional Specifications to learn how to use the processes, procedures, functions and windows for both Card Printers within concise, correlative tables.
Table of Contents (hyper-linked)	You can use the automated Table of Contents to quickly locate, for example, an error message, a procedure, the index or an appendix.
Troubleshooting, Replacement, Removal and Navigation Procedures (in hyper-linked Sections)	You can go directly to the Technical and Functional Specifications, General Troubleshooting, Printer Adjustments, Parts Replacement, Removal and Replacement procedures. The section titles are always labeled according to their function for consistent usage.
Cross-Referencing (hyper-linked)	You can use the cross-referencing links to quickly locate, for example, an error message or a procedure.
Comprehensive Index (hyper-linked)	You can use the Comprehensive Index to quickly locate information on both 410/C7 Card Printers, relating to a specification, a procedural step, a window or screen, a component, a term, a qualifier or a related feature to the CardJet Card Printers.

## Safety Messages (review carefully)

Symbol	Critical Instructions for Safety purposes
<p><b>Danger:</b></p> 	<p><b>Failure to follow these installation guidelines can result in death or serious injury.</b></p> <p>Information that raises potential safety issues is indicated by a warning symbol (as shown to the below).</p> <ul style="list-style-type: none"> <li>• <b>To prevent personal injury</b>, refer to the following safety messages before performing an operation preceded by this symbol.</li> <li>• <b>To prevent personal injury</b>, always remove the power cord prior to performing repair procedures, unless otherwise specified.</li> <li>• <b>To prevent personal injury</b>, Ensure only qualified personnel perform these procedures.</li> </ul>
<p><b>Caution:</b></p> 	<p><b>This device is electrostatically sensitive. It can be damaged if exposed to static electricity discharges.</b></p> <p>Information that raises potential electrostatic safety issues is indicated by a warning symbol (as shown to the below).</p> <ul style="list-style-type: none"> <li>• <b>To prevent equipment or media damage</b>, refer to the following safety messages before performing an operation preceded by this symbol.</li> <li>• <b>To prevent equipment or media damage</b>, observe all established Electrostatic Discharge (ESD) procedures while handling cables in or near the Circuit Board and Printhead Assemblies.</li> <li>• <b>To prevent equipment or media damage</b>, always wear an appropriate personal grounding device (e.g., a high quality wrist strap grounded to avoid potential damage).</li> <li>• <b>To prevent equipment or media damage</b>, always remove the Ribbon and Cards from the Printer before making any repairs, unless otherwise specified.</li> <li>• <b>To prevent equipment or media damage</b>, take jewelry off of fingers and hands, as well as thoroughly clean hands to remove oil and debris before working on the Printer.</li> </ul>



## Additional Safety Precautions for CardJet Technicians (review carefully)

Symbol	Critical Instructions for Safety purposes
<p data-bbox="289 394 407 426"><b>Danger:</b></p> 	<p data-bbox="480 394 1287 457"><b>Before operating the unit, please read the following safety precautions carefully:</b></p> <ul style="list-style-type: none"> <li data-bbox="480 478 1312 541">• <b>Fire or Shock Hazard:</b> Prevent fire or shock hazard by not exposing the unit to rain or moisture.</li> <li data-bbox="480 562 1369 695">• <b>Electronic Shock:</b> Reduce the risk of electronic shock by not removing the front, top or back Panels. No Operator-serviceable parts inside. (<b>Technician Note:</b> Refer servicing to qualified service personnel.)</li> <li data-bbox="480 716 1398 877">• <b>Correct Voltage Rating:</b> Operate the unit only on 100-240 VAC, 50/60 Hz. (<b>Technician Note:</b> If you have any doubt as to whether you have a unit with the correct voltage rating for the country's power supply, DO NOT attempt to use the unit. Contact the dealer or the factory.)</li> <li data-bbox="480 898 1377 1031">• <b>Liquid or Solid Object:</b> Stop operation immediately if any liquid or solid object should fall into the cabinet. (<b>Technician Note:</b> Unplug the unit and have it checked by qualified service personnel.)</li> <li data-bbox="480 1052 1369 1115">• <b>AC power cord:</b> Use only the AC power cord included with this unit or an equivalent cord.</li> <li data-bbox="480 1136 1344 1234">• <b>ESD procedures:</b> Be sure to observe all established Electro-Static Discharge (ESD) procedures while handling cables in or near the Circuit Board.</li> <li data-bbox="480 1255 1377 1354">• <b>Grounding Device Safeguards:</b> Always wear an appropriate personal grounding device, such as a wrist strap with integral resistor, connected to an ESD ground to avoid potential damage.</li> <li data-bbox="480 1375 1382 1570">• <b>Electrostatic Sensitive Device:</b> At a minimum, make positive contact with the bare metal chassis of the Printer with the hand before proceeding with the procedure. (<b>Technician Note:</b> This device is electrostatic sensitive. It may be damaged if exposed to static electrical discharges. Discharges may be generated by various means, such as walking on a carpeted floor.)</li> </ul>

# Section 2: Technician Overview

Technicians can review this section for a comprehensive troubleshooting strategy for the two CardJet Card Printers. Technicians can use this strategy to gain expert-level knowledge of the Printer in order to efficiently troubleshooting all aspects of it. This method safeguards the need to maintain fully-operational Printers at all times and ensures that on-site Technicians have access to critical, accurate and current CardJet troubleshooting-related procedures.

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## Reviewing the CardJet Printers (410 and C7)

- The CardJet Card Printer is a single-sided inkjet ID Card Printer. The two (2) CardJet models are the Professional Series CardJet 410 Card Printer/Encoder and the Persona CardJet C7 Printer. (**Note:** Each Printer will use inkjet receptive cards that are 30 mil in thickness and CR-80 in size. The cards are stored in an easy loading Card Cartridge.)
- The Printer will require two (2) separate Ink Cartridges: a color printing Cartridge that contains dye color inks (YMC) and a black printing Cartridge that contains pigment-black ink (K).

### Reviewing the Professional Series CardJet 410 Card Printer/Encoder

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The Professional Series CardJet 410 is a single-sided, inkjet ID Card Printer.

#### Standard features:

- Full color and monochrome inkjet card printing capability
- Cartridge load color (YMC) and black (K) inks
- Cartridge load blank cards
- 50 card capacity Output Hopper
- 100-card Card Cartridge

#### Optional features:

- High-coercivity magnetic stripe encoding

## Reviewing the Persona CardJet C7 Card Printer/Encoder

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The Persona CardJet C7 is a single-sided, inkjet ID Card Printer.

### Standard features:

- Full color and monochrome inkjet card printing capability
- Cartridge load color (YMC) and black (K) inks
- Cartridge load blank cards
- 50 card capacity Output Hopper
- 50-card Card Cartridge

### Optional features:

- High-coercivity magnetic stripe encoding

## Reviewing the Professional CardJet 410 and Persona C7 ID Card Printers

These two models will differ as follows:

Professional CardJet 410 Card Printer	Persona CardJet C7 Card Printer
100-card capacity Card Cartridge	50-card capacity Card Cartridge
Optional Hi-Co Magnetic Stripe Encoding	Optional Hi-Co Magnetic Stripe Encoding
Professional Series Look and Color	Persona Series Look and Color (Ice Blue)
Professional Series Driver/Firmware	Persona Series Driver/Firmware
Full Warranty	Limited Warranty
Available with Bundle: <ul style="list-style-type: none"> <li>• Printer</li> <li>• Camera/Tripod</li> <li>• Software</li> </ul>	Available with Bundle: <ul style="list-style-type: none"> <li>• Printer</li> <li>• Camera/Tripod</li> <li>• Software</li> </ul>
Available with Mag Bundle	Not available with Mag Bundle
Ink	Ink

## Technician Review of Printer Features

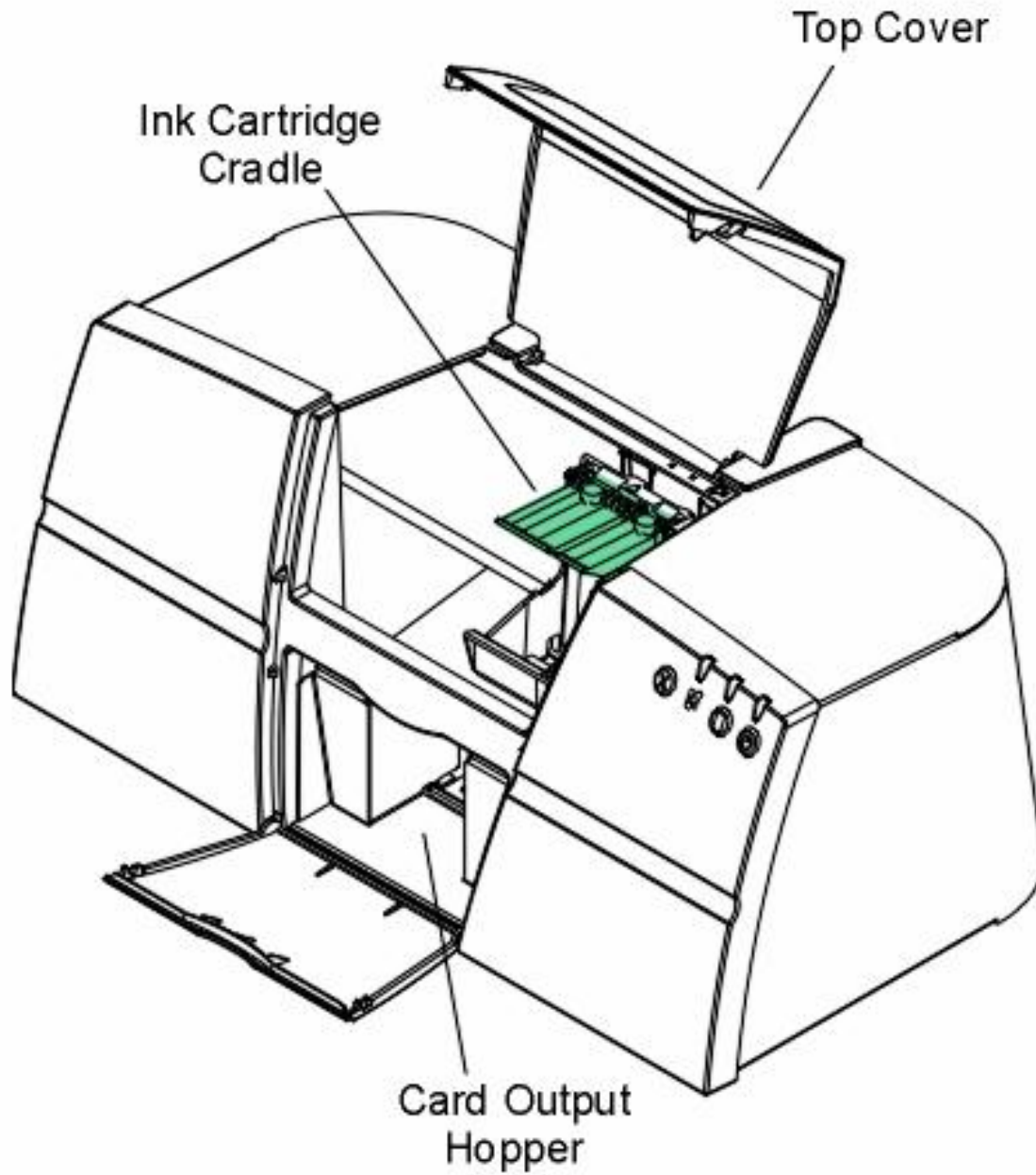
See the next page. Refer to the **Technician Handbook for CardJet Card Printers** in this section.

Function	Description
Top Cover	Opens to allow access to the Ink Cartridges and Card Path. This cover must be closed in order for the Printer to begin printing. See <a href="#">Opening the Top Cover to the Card Printer</a> . See CardJet Engineering Drawing R400019 in the appendix.
Ink Cartridge Cradle	Holds the Ink Cartridges and moves them back and forth across the card during printing. ( <b>Note:</b> Before Ink Cartridges can be loaded into the Printer, the Printer Driver must be installed and the Printer's Power and USB cables must be connected.)  Once this is done, the Printer's Ink Cartridge Cradle will move to the center position whenever the Top Cover is open.
Card Output Hopper	Catches printed cards as they eject from the Printer. This Hopper will hold a maximum of 50 cards. The Card Output Hopper Door can be either opened or closed while printing, but If you would like printed cards to stack neatly, leave the door closed, as shown below. ( <b>Note:</b> An external Card Output Hopper is provided if the Printer model includes the Magnetic Stripe Encoding Module.)

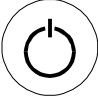


### Technician Review of Printer Features (continued)

See the [Cleaning the Ink Cartridges and Ink Cartridge Cradle](#) procedure.

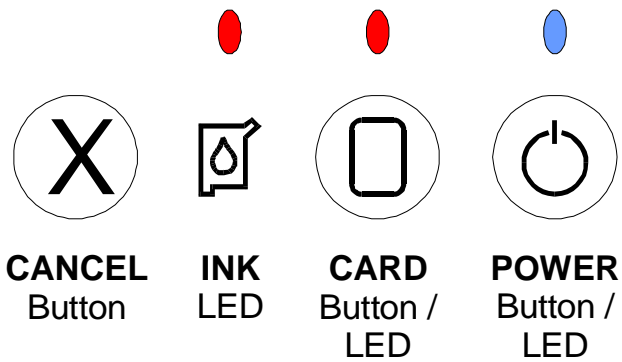
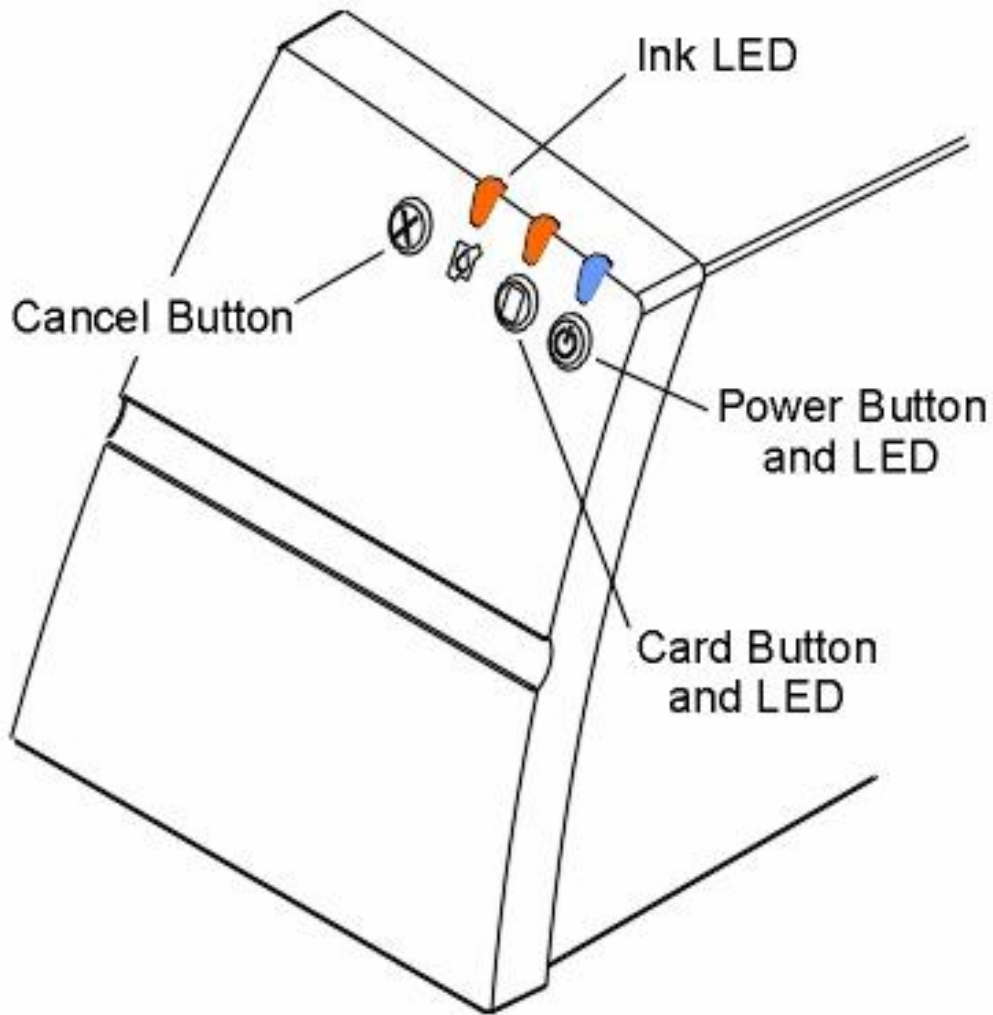


**Technician Review of Printer Features (continued)**

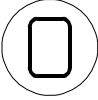
Function	Description
Power button and LED 	<p><b>Printer connected to the PC:</b></p> <ul style="list-style-type: none"> <li>• The <b>Power</b> button turns the Printer ON and OFF. (<b>Note:</b> When lit, the blue LED light indicates when power is ON.)</li> <li>• Press the <b>Power</b> button to turn the Printer ON and OFF.</li> <li>• The <b>blue</b> LED above the button turns OFF or ON to indicate when power is applied. (<b>Note:</b> This LED will flash when the Printer is processing a print job.)</li> <li>• If the <b>Power</b> button is pressed during a print job, the print job will be lost and the Printer will reset (depends on Windows configuration).</li> </ul> <p><b>Printer not connected to the PC:</b></p> <ul style="list-style-type: none"> <li>• Press the <b>Power</b> button to turn the Printer ON and OFF. (<b>Note:</b> The blue LED above the button turns OFF or ON to indicate when power is applied. This is the only active button when the Printer is not connected to the PC.)</li> <li>• All other buttons will not function and a Card Printer self-test will not be possible. (<b>Note:</b> When the Printer is not connected and the Card Cartridge and Ink Cartridge are not installed, only the Ink LED will flash as this is controlled by firmware.)</li> <li>• The Card LED will not flash in this mode when the Card Cartridge is not installed. (<b>Note:</b> The Printer must be connected to the PC for the Card LED to flash.)</li> </ul> <p>(<b>Note:</b> Avoid pressing multiple buttons simultaneously or pressing and holding a button or combination of buttons.)</p> <p>See the <a href="#">Interpreting the LED Lights</a> procedure.</p>




**Technician Review of Printer Features (continued)**




**Technician Review of Printer Features (continued)**

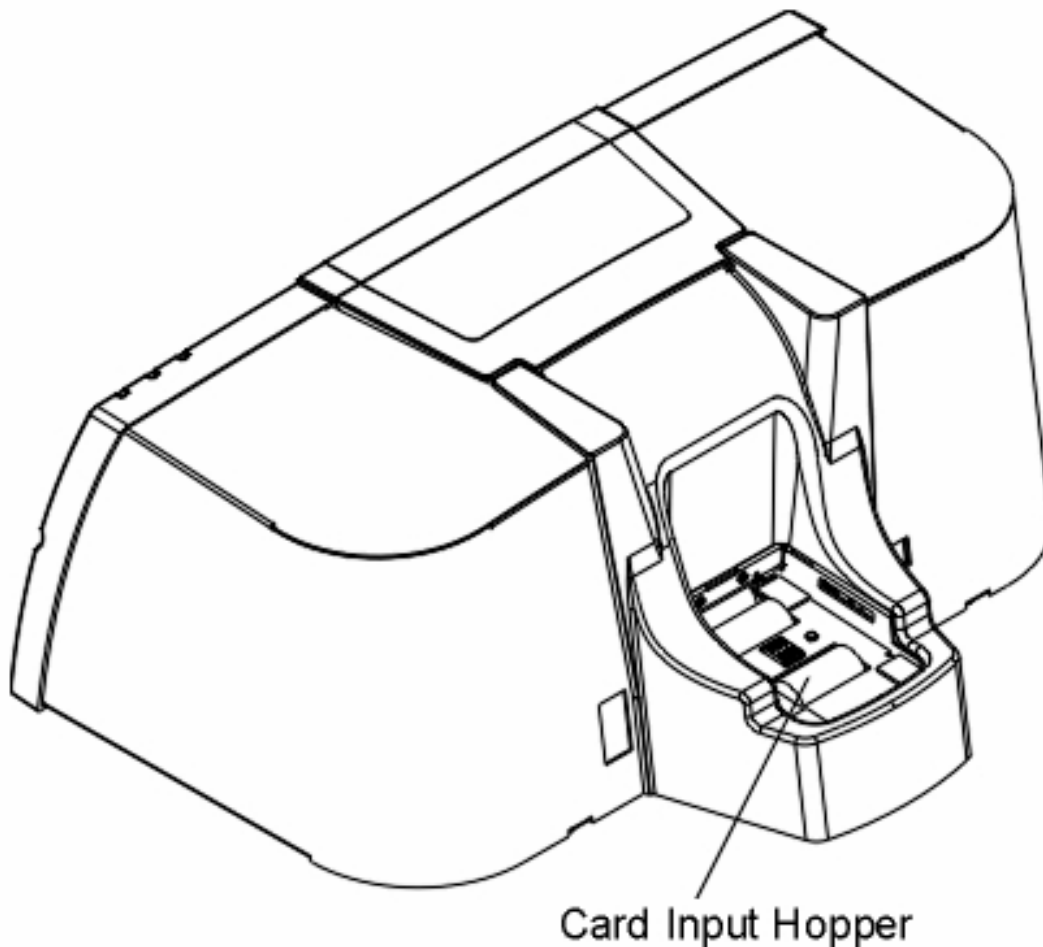
Function	Description
<p><b>Card</b> button and LED</p> 	<p><b>Card Status button / LED:</b></p> <p>The Card button is used to resume operation after an error condition is cleared. In general, as the icon on this button indicates, errors are related to card feeding and printing.</p> <ul style="list-style-type: none"> <li>• If an error occurs, the Card LED light will flash. Correct the error and press the Card button to resume. (<b>Note:</b> The Card LED will also flash if the Card Cartridge is not installed or if it has run out of cards.)</li> <li>• When lit, the <b>amber</b> LED above this symbol will flash to indicate you need to check the status of the Card Cartridge and/or the card being used for the current print job.</li> </ul> <p>This LED will flash when:</p> <ul style="list-style-type: none"> <li>• The Card Cartridge is improperly installed or missing.</li> <li>• The Card Cartridge is out of cards.</li> <li>• A card is unable to feed from the Card Cartridge.</li> <li>• A card is jammed along the Card Path.</li> <li>• A non Fargo-certified Card Cartridge is installed.</li> </ul> <p><b>Troubleshooting Instructions. See Section 2):</b></p> <ol style="list-style-type: none"> <li>1. Correct the condition and press the <b>Card</b> button to continue printing.</li> </ol> <p>(<b>Note:</b> If neither the Ink Cartridge nor the Card Cartridge are installed, only the Card LED will flash at first. When the Card Cartridge is installed, the Ink LED will then flash until the Ink Cartridge is installed. These two lights will not flash simultaneously.)</p> <p>See the <a href="#">Interpreting the LED Lights</a> procedure.</p>

**Technician Review of Printer Features (continued)**

Function	Description
Ink LED  	<p><b>The Ink Cartridge Status LED is described below:</b></p> <p>The Ink LED light indicates when you need to check the status of the color or black Ink Cartridge. (<b>Note:</b> Both Ink Cartridges must be installed in order for the Printer to function.)</p> <ul style="list-style-type: none"> <li>• <b>Light is off.</b> When the light is off, both Cartridges are ready for printing.</li> <li>• <b>Ink LED light is lit.</b> When the Ink LED light is lit, it indicates that ink is not installed, ink is out or that there is a problem with one of the Ink Cartridges. In this case, correct the issue and close the Printer's Top Cover to resume operation. When lit, the <b>amber</b> LED above this symbol will flash to indicate you need to check the status of the Ink Cartridges.</li> </ul> <p>This LED will flash when:</p> <ul style="list-style-type: none"> <li>• <b>The Top Cover is open.</b> When open, the Ink Cartridge will move to the install position. Regardless of the Ink Cartridge condition, the Cartridge will always move to this position. (<b>Note:</b> When the Top Cover is closed, the Cartridge will return to its home position. If a print job has been received, printing will resume when the Top Cover is closed. If the Top Cover is left open, the Cartridge will return to its home position after 5 minutes of the Printer sitting idle.) See CardJet Engineering Drawing R400019 in the appendix.</li> <li>• <b>One or both of the Ink Cartridges is improperly installed or missing and the Top Cover is closed.</b> (<b>Note:</b> When Top Cover is opened, the Cartridge will move to the same standard install position described in condition 1.)</li> <li>• <b>One or both of the Ink Cartridges is out of ink and the Top Cover is closed.</b> (<b>Note:</b> When Top Cover is opened, the Cartridge will move to the same standard install position described in condition 1.)</li> <li>• <b>A non Fargo-certified Cartridge is installed and the Top Cover is closed.</b> (<b>Note:</b> When Top Cover is opened, the Cartridge will move to the same standard install position described in condition 1.)</li> </ul> <p><b>Troubleshooting Instructions. See Section 2):</b></p> <ol style="list-style-type: none"> <li>1. Correct the condition and close the Top Cover to continue printing.</li> </ol> <p>See the <a href="#">Interpreting the LED Lights</a> procedure.</p>

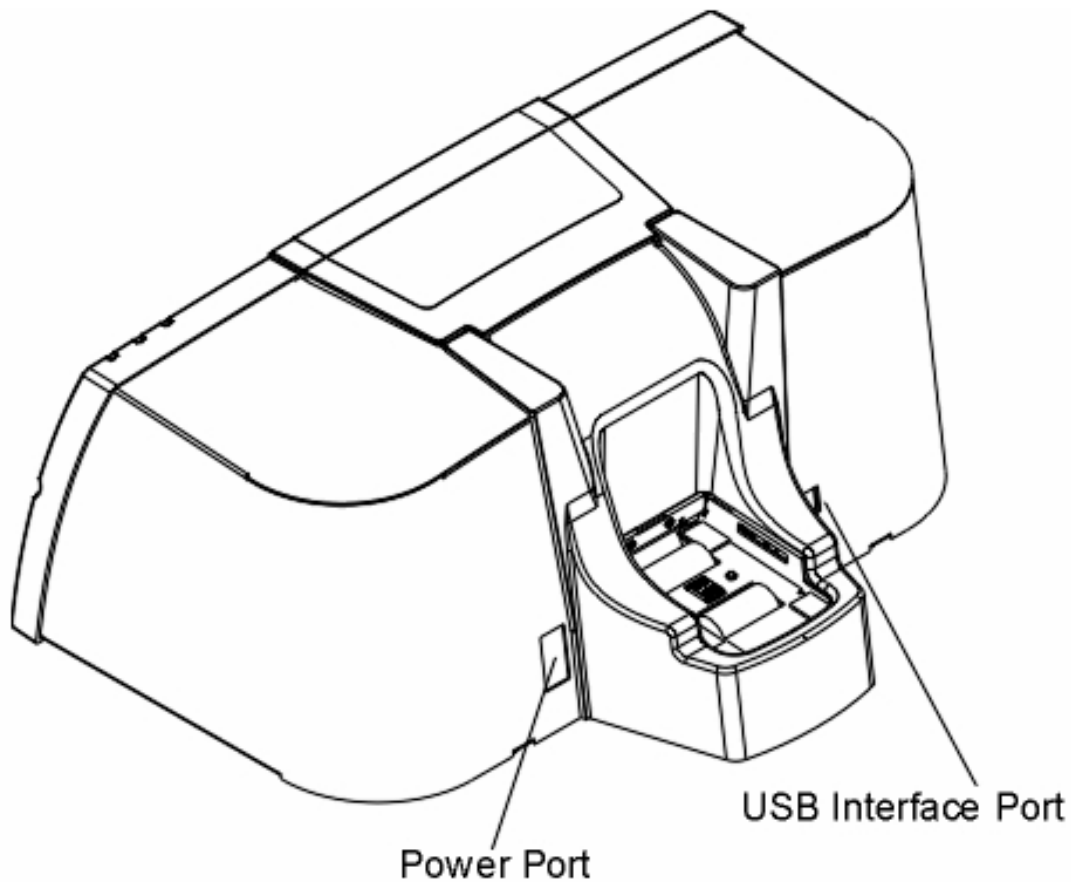
**Technician Review of Printer Features (continued)**

Function	Description
Cancel button 	Press the <b>Cancel</b> button to cancel the current print job and reset the Printer for the next print job. ( <b>Note:</b> This will cancel the job at both the PC and the Printer level. If a card is left within the Printer after a print job is canceled, it will automatically be ejected.)
Card Input Hopper	Load the Card Cartridges into this Hopper. See <a href="#">Loading the Card Cartridge</a> .



**Technician Review of Printer Features (continued)**

Function	Description
Power Port	Connect to the included power cord. See <a href="#">Powering up the Card Printer</a> .
USB Interface Port	Connect to a Windows PC with a USB cable. See <a href="#">Connecting the Card Printer to the Computer</a> .



## Technician Review of CardJet Specifications

The purpose of this section is to provide the Operator with specific information on the Regulatory Compliances, Agency Listings and Technical Specifications for the CardJet Card Printers. Refer to the **Technician Handbook for CardJet Card Printers** in this section.

### Reviewing the Regulatory Compliances

Term	Description
CSA	<p>The Printer manufacturer has been authorized by UL to represent the Card Printer as CSA Certified under CSA Standard 22.2.</p> <p><b>File Number:</b> E145118</p>
FCC	<p>The Card Printer complies with the requirements in Part 15 of the FCC rules for a Class B digital device. (<b>Note:</b> These requirements are designed to provide reasonable protection against harmful interference in a residential installation.)</p> <p>If equipment operation in a residential area causes unacceptable interference to radio and TV reception, the Operator is required to take whatever steps are necessary to correct the interference.</p>
ITS-EMC	<p>The Card Printer has been tested and complies with EN55022 Class B: 1998, EN55024: 1998, EN61000-3-2 and EN61000-3-3 standards for EMC (electro-magnetic compatibility).</p> <p>(<b>Note:</b> Based on the above testing, the Printer manufacturer certifies that the Card Printer complies with all current EMC directives of the European Community and has placed the CE mark on the Card Printer.)</p> <p><b>Certificate Number:</b> 00027</p>
UL-GS	<p>The Card Printer has been tested and complies with EN60950 and bears the UL-GS mark.</p> <p><b>License Number:</b> TBD</p>
UL	<p>The Card Printer is listed under UL 60950 INFORMATION TECHNOLOGY EQUIPMENT.</p> <p><b>File Number:</b> E145118, Volume 1, Section 19</p>

## Reviewing the Agency Listings

Term	Description
Emissions Standards	CE, FCC, CRC c1374, BSMI, ITS (EN 55022 Class B:1998, FCC Class B, EN 55024: 1998)
Safety Standards	UL 60950, CSA C2.2 No. 60950 and UL-GS (EN 60950 A1-A4, A11), CE



**Danger:** You must unplug the power cable to the Card Printer to ensure that all power is disconnected from the unit. Do not attempt any work on the Card Printer's interior unless you have first unplugged the unit.

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## Reviewing the Technical Specifications

The Technical Specifications for the Professional Series CardJet 410 Card Printer/Encoder and Persona CardJet C7 Printer are provided here. (**Note:** The CardJet Card Printers do not provide for oversized card capability, less than 30-mil card capability, Smart card encoding, support of non-Fargo cards and exception feed.)

Type	Description
Accepted Standard Card Sizes	CR-80 CardJet cards (3.375"L x 2.125"W / 85.6mmL x 54mmW)
Accepted Card Thickness	.030-inch (30 mil) / .762mm
Accepted Card Types	Fargo CardJet Cards
Card Cartridge Capacity (non refillable)	<ul style="list-style-type: none"> <li>Professional Series CardJet 410 Printer/Encoder: 100 cards</li> <li>Persona CardJet C7 Printer/Encoder: 50 cards</li> </ul>
Card Output Hopper Capacity	50 cards
Colors	Up to 16.7 million
Dimensions	8.0" (H) x 18.0" (W) x 14.0" (D) / 203mmh x 457mmW x 356mmD
Encoding Options	The High-Coercivity Magnetic Stripe Encoding Module can be ordered factory-installed or as a field upgradeable module.
Ink Cartridge Capacity	<p>SmartLoad Ink Cartridges contain an exclusive Ink Level Gauge that reports remaining prints and alerts when the ink is low or out.</p> <p>SmartLoad Ink Cartridge:</p> <ul style="list-style-type: none"> <li>Full Color: 300 prints (250 for Persona C7)</li> <li>Black: 900 prints (750 for Persona C7)</li> </ul> <p>See the <a href="#">Selecting the Print Quality (Best, Normal or Fast print modes)</a> procedure.</p>

Continued on the next page



**Reviewing the Technical Specifications (continued)**

<b>Type</b>	<b>Description</b>
Interface	USB 1.1
Memory	2MB RAM
Operating Temperature	59° to 95° F / 15° to 35° C
Operating Humidity	<p>The Operating Humidity is at 20% to 80% (non-condensing).</p> <ul style="list-style-type: none"> <li>• <b>Exception (70% upper humidity range):</b> When printing the glossy card in the IR bar code mode, the upper humidity range is reduced to 70% due to the use of the black ink cartridge (P/N 041032 for CardJet 410 and P/N 041732 for Persona C7).</li> <li>• <b>Standard (80% upper humidity range):</b> The PPG (matte) card's upper humidity range is at 80% in all print modes (including the Infrared Bar Codes option/radio box under the Image Color tab). The glossy card card's upper humidity range is at 80% in all other print modes (Best, Normal and Fast).</li> </ul>
Print Method	Thermal Inkjet
Print Speed	<p>Print speed will vary depending on the amount of color coverage within a card design. (<b>Note:</b> The above print speeds represent a color, full-bleed design; designs with less color coverage will print faster.)</p> <p>Print speed indicates an approximate batch print speed. (<b>Note:</b> It is measured from the time a card feeds into the Printer to the time it ejects from the Printer. Print speeds do not include the time needed for the PC to process the image.)</p> <p>Process time is dependent on the size of the file, the CPU, amount of RAM and the amount of available resources at the time of the print.</p> <ul style="list-style-type: none"> <li>• <b>Fast print quality:</b> 26 seconds per card / 138 cards per hour</li> <li>• <b>Normal print quality:</b> 42 seconds per card / 86 cards per hour</li> <li>• <b>Best print quality:</b> 76 seconds per card / 47 cards per hour</li> </ul> <p>See the <a href="#">Selecting the Print Quality (Best, Normal or Fast print modes)</a> procedure.</p>

Continued on the next page

**Reviewing the Technical Specifications (continued)**

<b>Type</b>	<b>Description</b>
Printer Drivers	Windows 98 / Me / 2000 / XP
Resolution	600 dpi (Fast mode)  This is the number of individual pixels in a graphic, taken over a given length, used to indicate the sharpness of the picture and the level of detail. The number of elements in the Printhead determines Fargo Printer resolution. See CardJet Engineering Drawing No. D400147 in the appendix.
Software Drivers	Windows 98, Windows Millennium, Windows 2000, Windows XP
Storage Temperature / Humidity	TBD
Supply Voltage	100 to 240 VAC, 1.0A
Supply Frequency	50 Hz / 60 Hz
System Requirements	IBM-PC or compatible, Windows 98Se/Me/2000/XP, Pentium™ class 233 MHz computer with 64 MB of RAM or higher, 200 MB free hard disk space or higher, USB 1.1
Warranty	Printer – Two Year <ul style="list-style-type: none"> <li>• 2 year – Professional</li> <li>• 1 year – Persona</li> </ul> <b>OR</b> Indicate to refer to price list.
Weight	19.4 lbs. / 8.8 kg

Continued on the next page


## Technician Review of CardJet Card Printer Setup

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**IMPORTANT!** Fargo Card Printers require highly specialized print supplies to function properly. To maximize Printer life, reliability, printed card quality and durability, you must use only Fargo Certified Supplies. For this reason, the Fargo warranty is void, where not prohibited by law, if you use non-Fargo Certified Supplies. To order additional materials, please contact the Fargo authorized reseller.

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### Selecting an area for the Card Printer

Step	Procedure
1	Place the unit in a location with adequate air circulation to prevent internal heat build up.
2	Use the Printer's dimensions as a guideline for the minimum clearances to the unit. ( <b>Note:</b> Allow for adequate clearance above the unit to accommodate the height of the unit with its Top Cover open.)
3	Do not install unit (a) near heat sources such as radiators or air ducts or (b) in a place subject to direct sun-light, excessive dust, mechanical vibration or shock.
4	<p>Read carefully the caution about moisture condensation.</p>  <p><b>Caution:</b> If the unit is brought directly from a cold to a warm location or is placed in a very damp room, moisture may condense inside the unit. (<b>Note:</b> Should this occur, print quality may not be optimum. Leave the unit turned OFF in a warm, dry room for several hours before using. This will allow the moisture to evaporate.)</p>

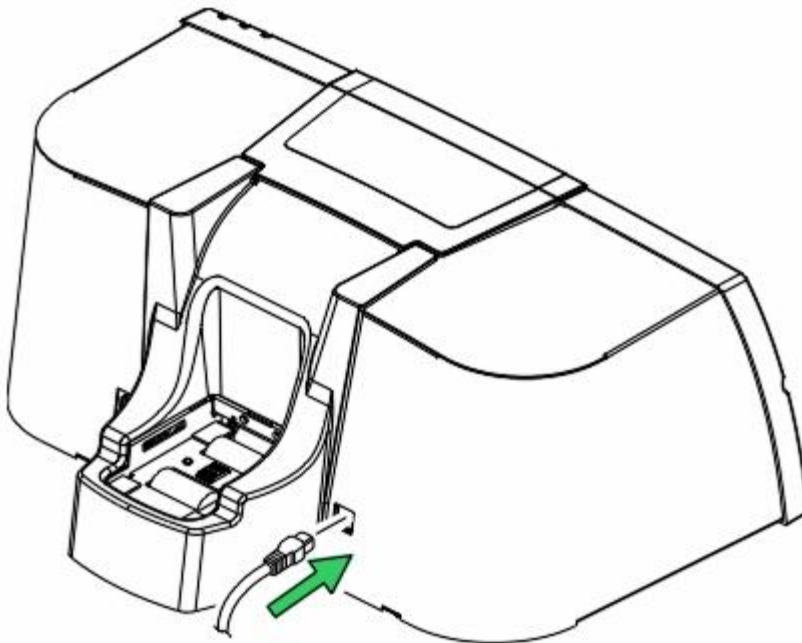
## Connecting the Card Printer to the Computer

The Card Printer is designed to be used with any IBM-PC or compatible running Windows 98Se/Me/2000/XP. For best results, a Pentium™ class 233 MHz computer with 64 MB of RAM or higher and 200 MB free hard disk space is required. The Printer is equipped with a USB 1.1 high-speed interface port. This port is the means through which the Printer receives data from the computer.

**IMPORTANT!** You must install the Printer Driver software prior to connecting the Printer to the computer. The Printer Driver installation program will prompt you when to connect the Printer. If you have not already done so, please install the Printer Driver software at this time. See the [Installing the Windows Printer Driver](#) procedure.

To connect the Printer to the computer, obtain a USB interface cable and refer to the following steps:

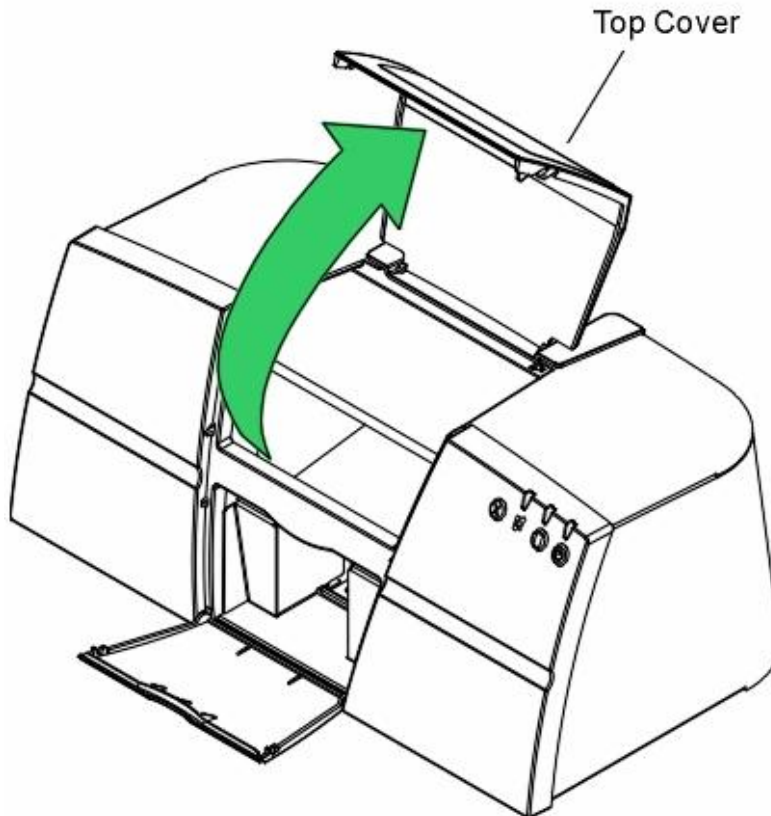
Step	Procedure
1	Connect the smaller end of the USB cable to the Printer's USB port.
2	Connect the other end of the cable to the back of the PC at an available USB port.



## Opening the Top Cover to the Card Printer


Step	Procedure
1	Open the Top Cover of the Printer by lifting up on its front edge and tilting the cover back into its fully open position. See CardJet Engineering Drawing R400019 in the appendix.
2	To close the Top Cover, gently lower the Top Cover until it clicks into place.

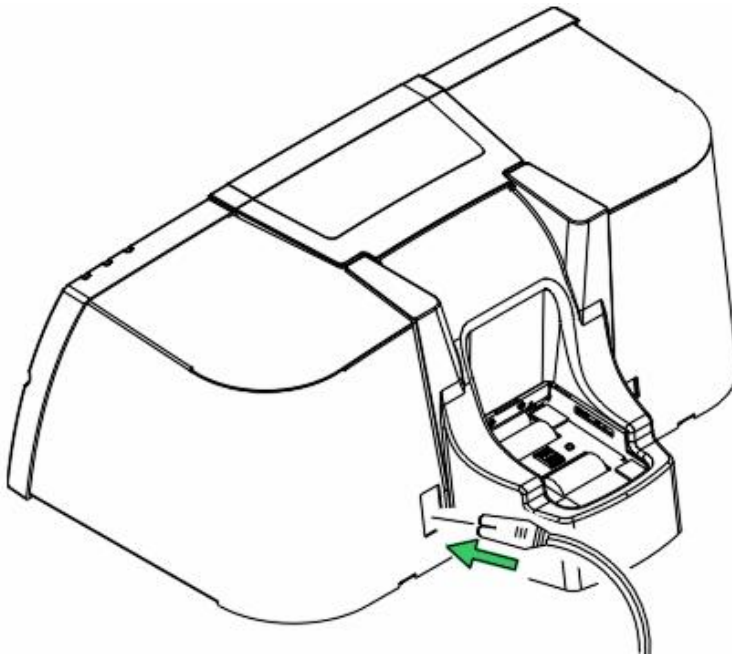
**IMPORTANT!** Before the Ink Cartridges can be loaded into the Printer, the Printer Driver must be installed and the Printer's power and USB cables must be connected. Once this is done, the Printer's Ink Cartridge Cradle will move to the center position whenever the Top Cover is open. The Top Cover must be closed securely in order for the Printer to operate.



## Powering up the Card Printer

The power supply within the Printer is a universal power supply properly configured for the power used in the (respective) country. To connect power to the Printer, locate the appropriate power cord for the country and refer to the following steps:

Step	Procedure
1	 <p><b>CAUTION!</b> The (included) two (2) power cords are designed for use only with the Card Printer. (<b>Note:</b> If you have any doubts about the plug configuration or the voltage, do not attempt to use the Printer. Contact the Fargo authorized reseller for information on the correct power configuration.)</p> <p>Locate the power cord included with the Card Printer.</p>
2	Place the power cord into the power cord port of the Card Printer.
3	Place the AC power plug end of the power supply cord into an available wall outlet.
4	Press the <b>Power</b> button if you wish to turn the Printer ON or OFF. ( <b>Note:</b> If the Printer will not be used for a long period of time, unplug the power cable to the Card Printer to ensure that all power is disconnected from the unit.)



## Reviewing the Printer Driver Operator Interface

Technicians can access the Printer Driver window by selecting **Start** button > Settings > Printers > CardJet Professional 410 Card Printer (right click) or CardJet Persona C7 Card Printer (right click) > Printing Preferences to bring up the CardJet 410 Card Printer Printing Preferences window.

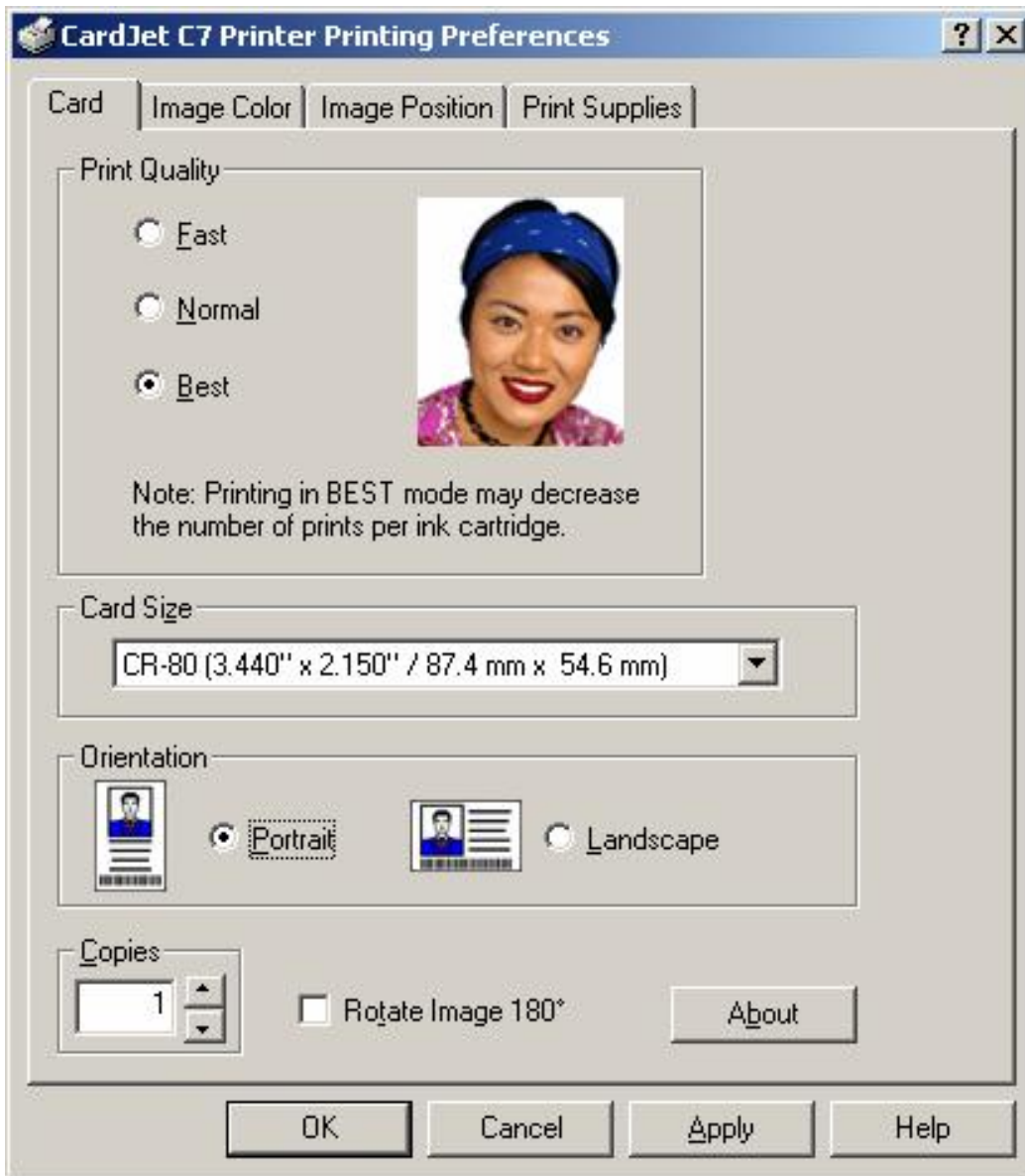
Technicians can use the Card, Image Color, Image Position, Magnetic Encoding and Print Supplies tabs to make appropriate selections, as described below and (in more detail) in **Section 3: Printer Adjustments**.

Step	Description
1	<p><b>Interfacing with the Card tab:</b></p> <p>Access the Card tab via the CardJet 410 or Persona C7 Card Printer Printing Preferences windows.</p> <p>Use the Card tab to select Print Quality (<b>Fast</b>, <b>Normal</b> and <b>Best</b>), the Card Size (up/down arrows), the Orientation: <b>Portrait</b> and <b>Landscape</b> (radio buttons), the Rotate Image 180° (checkbox) and Copies (checkbox). See the <a href="#">Selecting the Print Quality (Best, Normal or Fast print modes)</a> procedure.</p> <p>Also provides the <b>About</b> button. See <a href="#">Selecting the Card tab window</a>.</p>
2	<p><b>Interfacing with the Image Color tab:</b></p> <p>Access the Image Color tab via the CardJet 410 or Persona C7 Card Printer Printing Preferences windows. See the <a href="#">Selecting the Image Color tab</a>.</p> <p>Use the Image Color tab to select <b>Print Quality</b> (radio buttons), Color Quality (adjustment slides), Automatic Image Enhancement (checkbox), Print in Grayscale (checkbox) and Infrared Bar Codes (checkbox).</p> <p>Also provides the <b>Default</b> button.</p>
3	<p><b>Interfacing with the Image Position tab:</b></p> <p>Access the Image Position tab via the CardJet 410 or Persona C7 Card Printer Printing Preferences windows. See the <a href="#">Image Position tab</a>.</p> <p>Use the Image Position tab to select Horizontal and Vertical positioning (right and left arrows) of the cards.</p>

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### Reviewing the Printer Driver Operator Interface (continued)

See **Section 3: Printer Adjustments** for more detailed procedures.





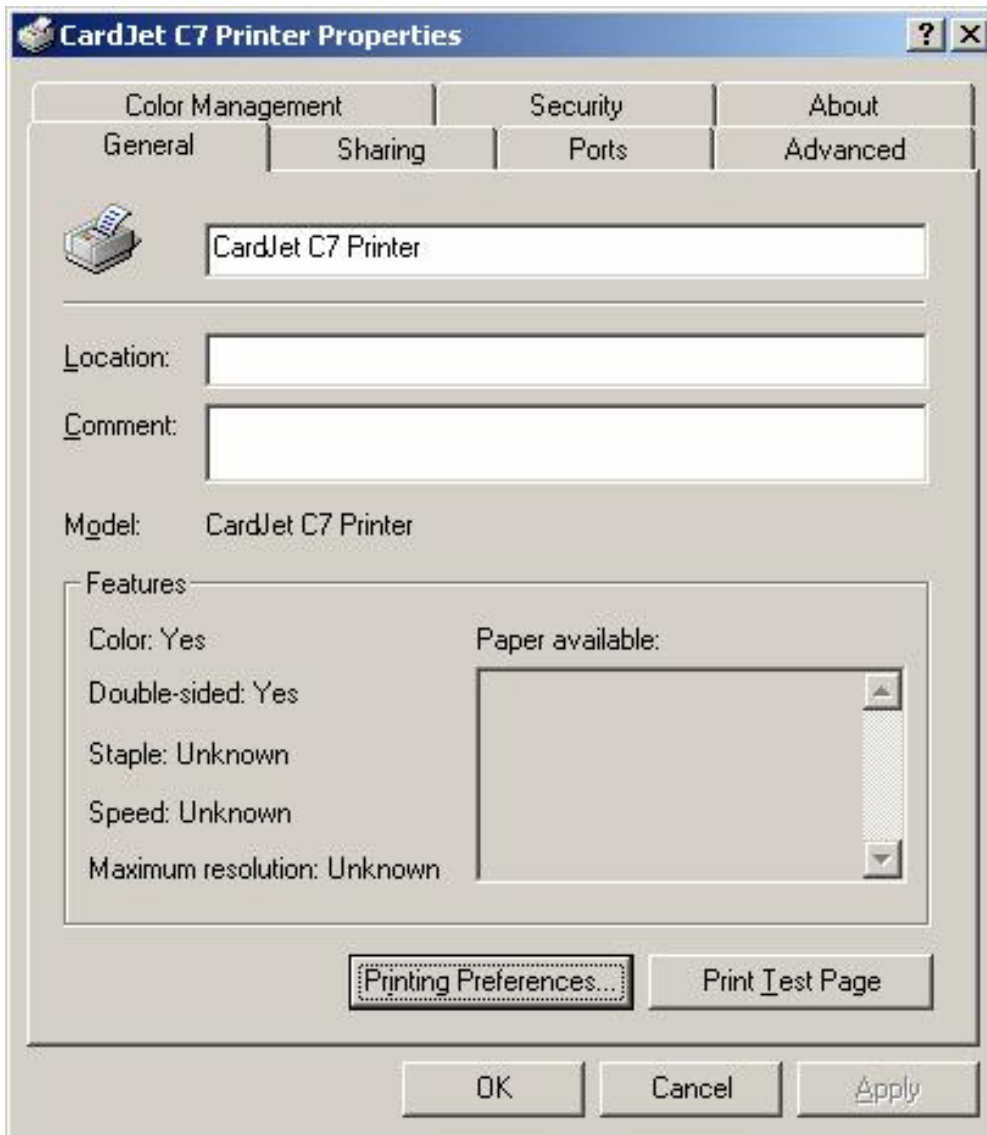
## Reviewing the Printer Driver Operator Interface (continued)

Step	Description
4	<p><b>Interfacing with the Magnetic tab (option with the CardJet 410 and Persona C7 Card Printers):</b></p> <p>Access the Magnetic Encoding tab via the CardJet 410 or Persona C7 Card Printer Printing Preferences windows. See the <a href="#">Selecting the Magnetic Encoding tab (both 410/C7 models)</a> procedure.</p> <p>Use the Magnetic Encoding tab to select the <b>Verification</b> (radio buttons) and Retries (up/down arrows), <b>Magnetic Track Selection</b> (radio buttons), Magnetic Track Options: <b>Bit Density</b> (radio buttons), <b>Character Size</b> (radio buttons), <b>ASCII Offset</b> (radio buttons), <b>LRC Generation</b> (radio buttons), <b>Character Parity</b> (radio buttons) and Shift Data Left (checkbox).</p> <p>Also provides a <b>Default</b> button.</p>
5	<p><b>Interfacing with the Print Supplies tab:</b></p> <p>Access the Print Supplies tab via the CardJet 410 or Persona C7 Card Printer Printing Preferences windows. See the <a href="#">Selecting the Print Supplies tab</a>.</p> <p>Use the Print Supplies tab to view Prints Remaining under Color Ink Cartridge and Black Ink Cartridge.</p> <p>Also provides the <b>Clean Ink Cartridge Nozzles</b> button. The Technician can view the Color Ink Cartridge Reorder Number, Black Ink Cartridge Reorder Number and the Card Cartridge Reorder Number.</p>

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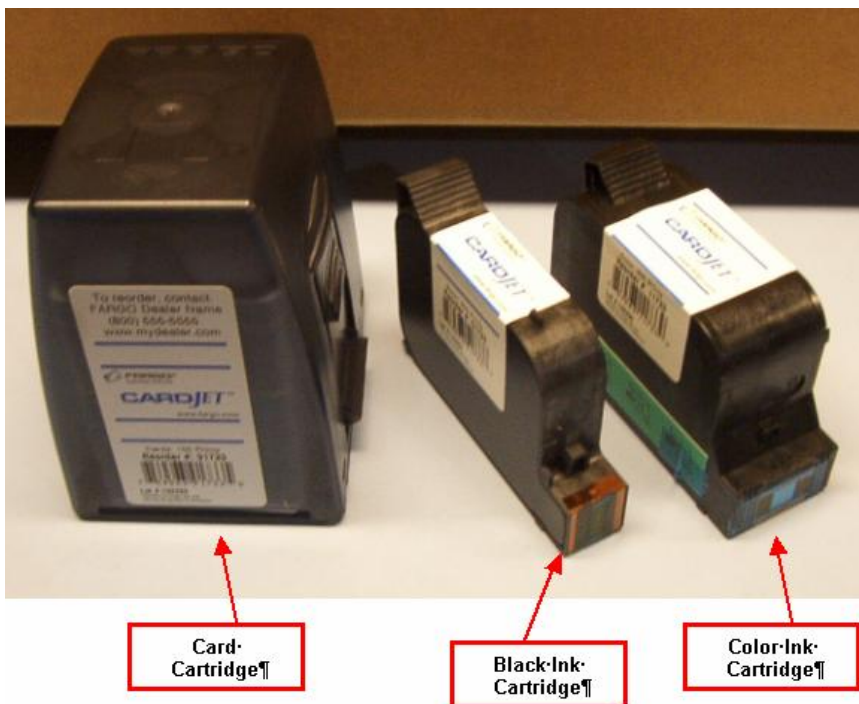
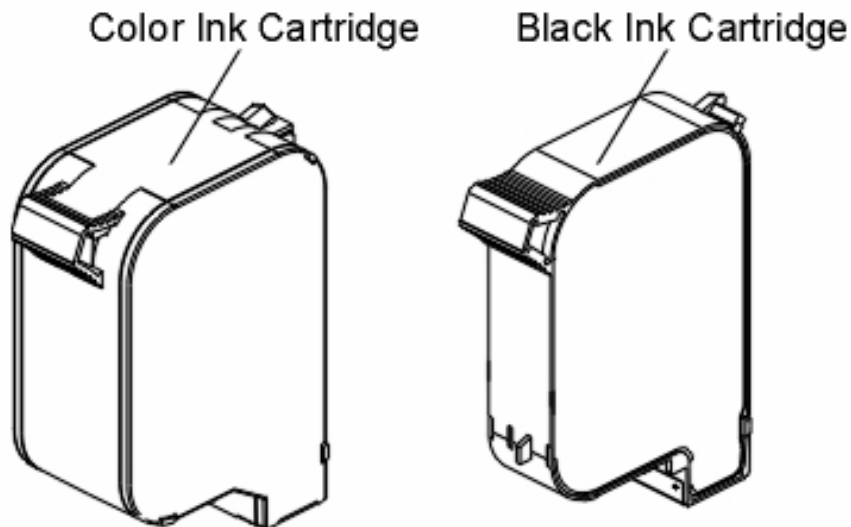
## Reviewing the Printer Properties window

Access the Professional Series CardJet 410 or Persona CardJet C7 Card Printer Properties window via Start > Settings > Printers > Properties in order to input appropriate Printer Property information.



## Technician Review of Ink and Card Cartridges

The CardJet Card Printer requires specialized Ink and Card Cartridges to produce high-quality, durable cards. This section explains these materials in detail and also explains how each is loaded into the Printer. Refer to the **Technician Handbook for CardJet Card Printers** in this section.



## Reviewing the Ink Cartridges

The CardJet printing process requires that two highly specialized Ink Cartridges are installed: (1) a color Ink Cartridge and (2) a black Ink Cartridge. Both Cartridges must be installed for the Printer to function. Together, these Ink Cartridges produce all of the rich, colorful graphics, text, bar codes and photographs necessary for producing high-quality cards.


Unlike most other Ink Cartridges, the CardJet Cartridges provide built-in technology which allows the Printer Driver to report:

- how many prints remain in each Cartridge,
- when ink is running low and
- when ink has run out.

This allows you to carefully monitor the ink usage and alerts you when you need to order additional supplies. It also prevents you from printing with an empty Ink Cartridge and wasting partially printed cards.


**IMPORTANT!** Fargo Card Printers require highly specialized Ink Cartridges to function properly. To maximize Printer life, reliability, printed card quality and durability, you must use only Fargo Certified Supplies. For this reason, the Fargo warranty is void, where not prohibited by law, if you use non-Fargo Certified Supplies. To order additional materials, please contact the Fargo authorized reseller. The part numbers for the currently installed Cartridges can be found in the Print Supplies tab of the Printer Driver.

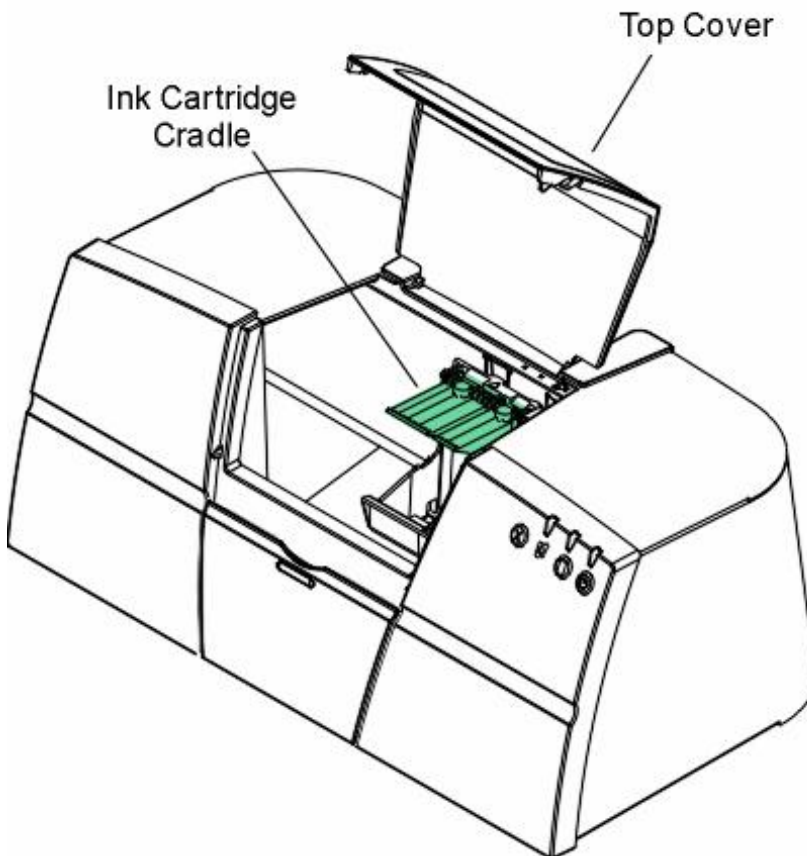
## Storing the Ink Cartridges (review carefully)

Step	Procedure
1	<p>To maintain excellent print quality from the Ink Cartridges:</p> <ul style="list-style-type: none"> <li>• Keep all Ink Cartridges in their sealed packages, at room temperature (60-78° F or 15.6-26.6° C), until you are ready to use them.</li> <li>• Once installed, leave the Ink Cartridges in their cradle at all times to keep them from drying out or becoming clogged.</li> <li>• If you store an unsealed Ink Cartridge, do so in an airtight plastic container.</li> </ul> <p> <b>Caution:</b> Do not unplug the Printer until printing is complete and the Ink Cartridge Cradle has returned to its home position on the right side of the Printer. (<b>Note:</b> The Ink Cartridges will dry out if not stored in their home position.)</p>


## Loading the Ink Cartridges

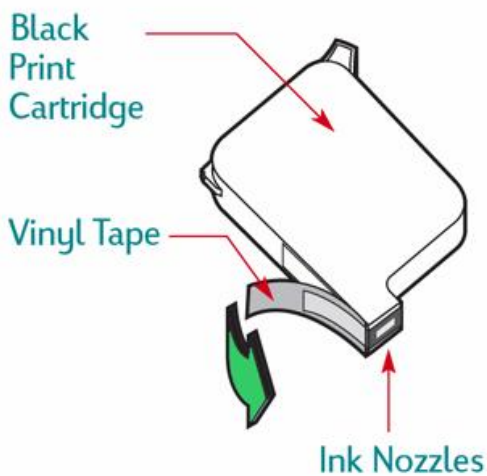
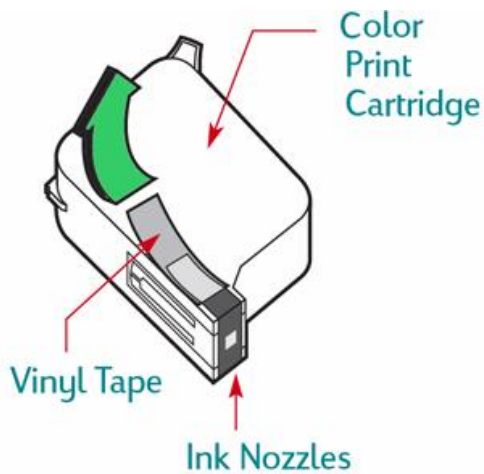
Prior to loading Ink Cartridges, the Ink LED light will flash to signal that Ink Cartridges must be installed. Follow these steps to load both the color and black Ink Cartridges into the Printer. See the [Interpreting the LED Lights](#) procedure.

Step	Procedure
1	 <b>Caution:</b> Before Ink Cartridges can be loaded into the Printer, the Printer Driver must be installed and the Printer's power and USB cables must be connected. Once this is done, the Printer's Ink Cartridge Cradle will move to the center position whenever the Top Cover is open.  Open the Top Cover by lifting up on the cover and tilting the cover back into its fully open position. The Ink Cartridge Cradle will move to the center position.



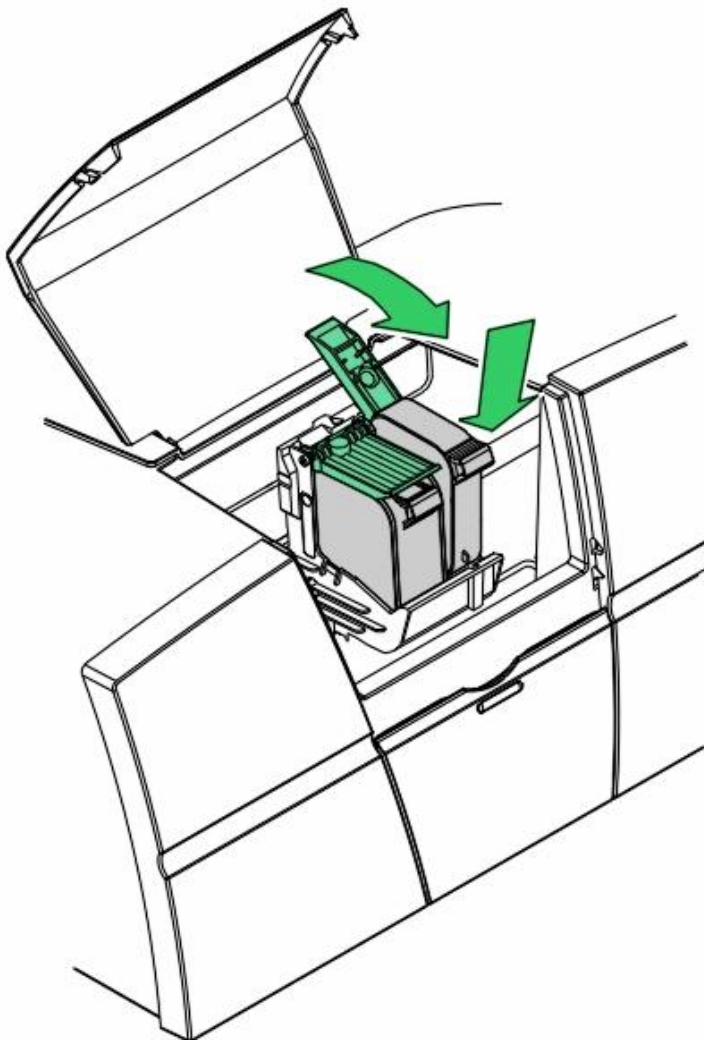
**Loading the Ink Cartridges (continued)**

Step	Procedure
2	<p>Remove the Ink Cartridge from its packaging and carefully remove the protective vinyl tape.</p> <p> <b>Caution:</b> Do NOT touch the Ink Cartridge nozzles or copper contacts. Touching these parts will result in clogs, ink failure and bad electrical connection. Also, do NOT remove the copper strips, which are required electrical contacts.</p>



**Loading the Ink Cartridges (continued)**

Step	Procedure
3	Push the Ink Cartridge firmly, straight down into the Ink Cartridge Cradle.
4	Close the cradle latch. When the latch is fully closed, you will hear a click. Once both Cartridges are loaded, close the Top Cover. <b>(Note:</b> When loaded properly, the Ink Cartridge Cradle will return to the home position on the right-hand side of the Printer and the Ink LED light will turn off indicating that the Ink Cartridges are installed and ready for printing.) See the <a href="#">Interpreting the LED Lights</a> procedure.



## Reviewing the Card Cartridges

The Card Printer accepts on CardJet cards with a thickness of 30 mil (.030"/.762mm).

- **Thermal Inkjet Printing:** CardJet cards are specially designed for use with thermal inkjet printing. (**Note:** Their unique surface coating is what allows you to produce inkjet cards that have the color clarity, durability and moisture resistance required for the rigors of most ID card applications.)
- **Preloaded Card Cartridges:** For the convenience, these special cards are preloaded into an easy-to-install Card Cartridge. (**Note:** In addition to making card loading simple, the Card Cartridge also protects blank cards from dust, fingerprints and other contaminants that can degraded the quality of printed cards.)
- **Clear Cartridge:** The Cartridge is clear so you can tell at a glance about how many cards remain.
- **Magnetic Stripe Encoding Module (both 410/C7 models):** Blank cards are available with or without a magnetic stripe on the back side. (**Note:** Magnetic stripes are generally used only in conjunction with Printers which include the optional Magnetic Stripe Encoding Module (both 410/C7 models).

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**IMPORTANT!** Fargo Card Printers require highly specialized Card Cartridges to function properly. To maximize Printer life, reliability, printed card quality and durability, you must use only Fargo Certified Supplies. For this reason, the Fargo warranty is void, where not prohibited by law, if you use non-Fargo Certified Supplies. To order additional materials, please contact the Fargo authorized reseller. The part numbers for the currently installed Cartridges can be found in the Print Supplies tab of the Printer Driver.

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## Storing the Card Cartridges (review carefully)

To maintain excellent print quality from the Card Cartridges, follow these guidelines:

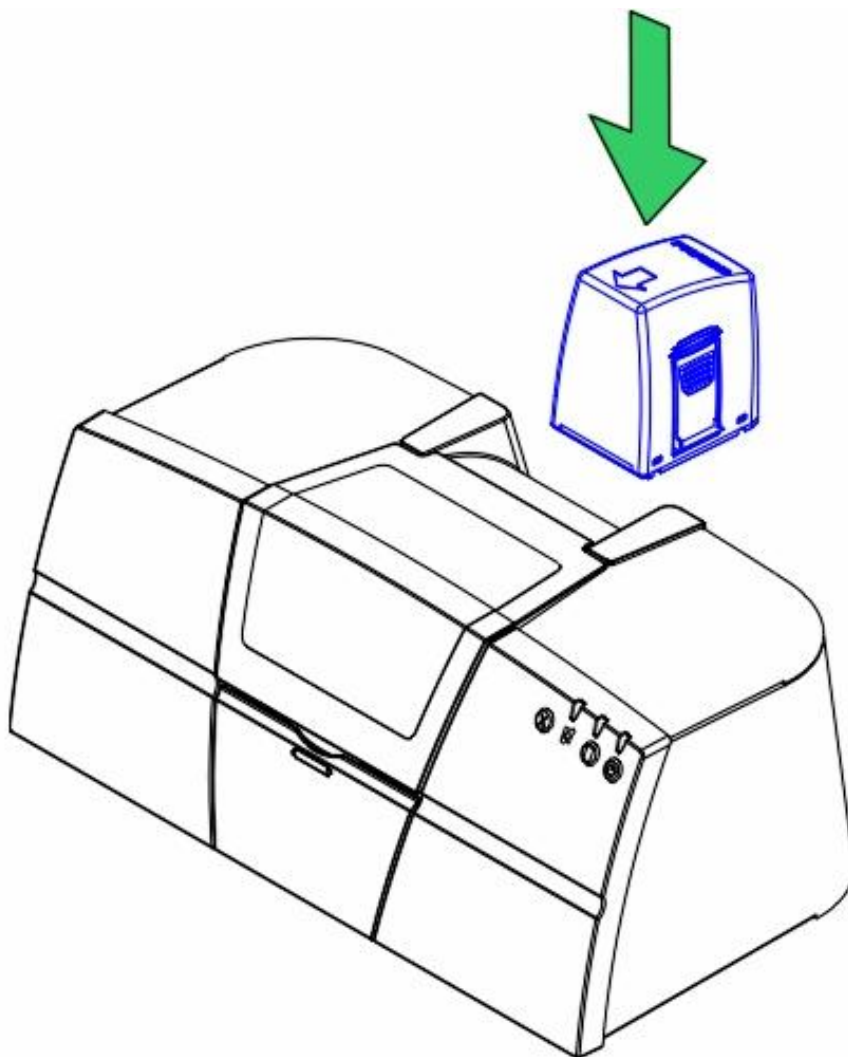
- Keep all Card Cartridges in their original packaging, at room temperature (60-78° F or 15.6-26.6° C), until you need to use them.
- Do NOT drop Card Cartridges and cause them to break and become unusable.




## Loading the Card Cartridge

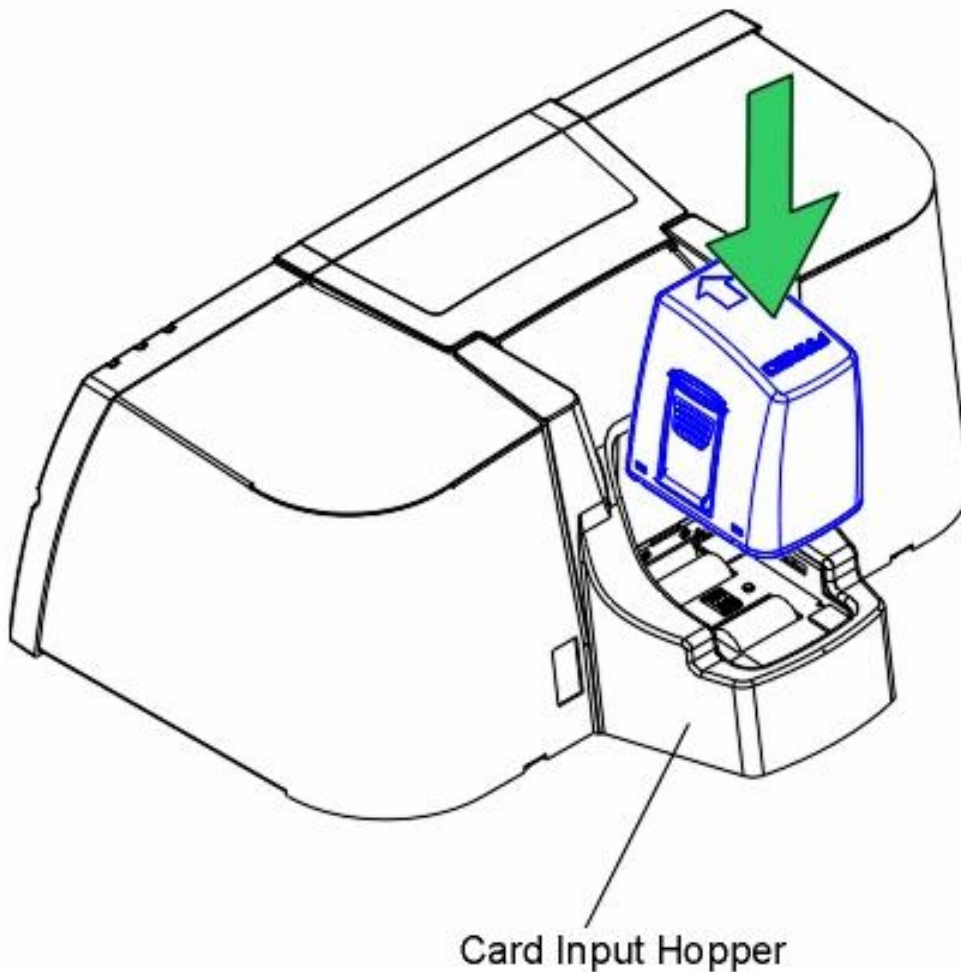
Before printing, load blank cards into the Printer's Card Input Hopper, as follows:

Step	Procedure
1	Close the Printer's Top Cover. ( <b>Note:</b> The Printer will indicate that a Card Cartridge needs to be installed by flashing the Card LED light.) See the <a href="#">Interpreting the LED Lights</a> procedure.
2	Remove the Card Cartridge from its packaging.



**Loading the Card Cartridge (continued)**

Step	Procedure
3	<p>Set the Card Cartridge onto the Card Input Hopper with the arrow on the top of the Cartridge pointing toward the front of the Printer as shown below. Push the Card Cartridge down until it clicks into place. See the next two pages. (<b>Note:</b> When installed properly, the Card LED light will turn off to signal that the Card Cartridge is ready for printing.)</p> <p> <b>Caution:</b> When not in use, keep the Card Cartridge in place to prevent dust from accumulating on the Drive Rollers.</p>



## Printing the Test Print (after installing Ink and Card Cartridges)

Once the Ink and Card Cartridges are installed, a self-test should be performed to check for proper operation of the Printer. (**Note:** The self-test function also requires that the Print Driver is installed and the Printer's power and USB cables connected.)

Refer to the following to print a test print:

Step	Procedure
1	Open the Printer Driver's Printer Properties Window.
2	Click on the Print Supplies tab. See <a href="#">Using the Print Supplies tab.</a>
3	Click on the <b>Test Printer</b> button. See <a href="#">Selecting the Test Printer button.</a>
4	From the Send Test window, click on the <b>Send</b> button to send a color test print to the Printer. See <a href="#">Selecting the Test Printer button.</a> ( <b>Note:</b> After a few seconds, the following test image will begin printing.)



## Technician Handbook for CardJet Card Printers

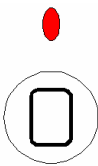
This section is provided for Technicians at the Intermediate and Expert levels, who want to become thoroughly familiar with the Printer functions as soon as it is installed.

- From a Technician's perspective, the CardJet Professional 410 and Persona C7 printing systems consists of an HP Print Engine and Fargo additions that allows printing on CardJet cards (CR-80, 30 mil). For this purpose, the Printer has a special Card Path, an Input Hopper for a Card Cartridge, extra Card Sensor(s) and a Fargo Controller (2 Boards). (**Note:** The Two models are the Professional Series CardJet 410 Card Printer/Encoder and the Persona CardJet C7 Printer/Encoder.)
- The purpose of this section is to provide Technicians with a checklist of service requirements built into the CardJet Card Printer. The Technician can review these service requirements and refer to their corresponding service procedure (as needed). The entire printing system is designed for very efficient service and maintenance by the Technician.

Topic	Description
Bad Card Cartridge Tag Detection (See Card LED)	<p>The Printer correctly validates a replacement Cartridge and reports a Bad Card Cartridge tag via the Card LED—before running out of cards.</p> <p>The printing will continue when the Card Cartridge is replaced with a good Cartridge.</p>
Black Ink Cartridge	<p>The Black Ink Cartridge provides enough ink for a minimum of 900 cards.</p> <ul style="list-style-type: none"> <li>• CardJet 410: 900 card minimum</li> <li>• Persona C7: 750 card minimum</li> </ul>


Continued on the next page

## Technician Handbook for CardJet Card Printers (continued)

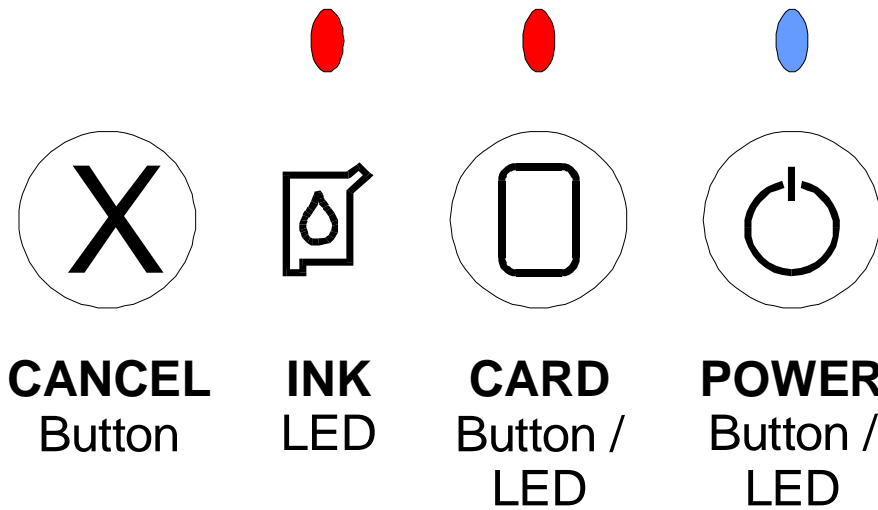
Function	Description
<p><b>Card</b> button and LED</p> 	<p><b>Card Status button / LED:</b></p> <p>The <b>Card</b> button is used to resume operation after an error condition is cleared. In general, as the icon on this button indicates, errors are related to card feeding and printing.</p> <ul style="list-style-type: none"> <li>• If an error occurs, the Card LED light will flash. Correct the error and press the <b>Card</b> button to resume. (<b>Note:</b> The Card LED will also flash if the Card Cartridge is not installed or if it has run out of cards.)</li> <li>• When lit, the <b>amber</b> LED above this symbol will flash to indicate you need to check the status of the Card Cartridge and/or the card being used for the current print job.</li> </ul> <p>This LED will flash when:</p> <ul style="list-style-type: none"> <li>• The Card Cartridge is improperly installed or missing.</li> <li>• The Card Cartridge is out of cards.</li> <li>• A card is unable to feed from the Card Cartridge.</li> <li>• A card is jammed along the Card Path.</li> <li>• A non Fargo-certified Card Cartridge is installed.</li> </ul> <p><b>Troubleshooting Instructions. See Section 2):</b></p> <ul style="list-style-type: none"> <li>• Physically fix the card feed error conditions and press the <b>Card</b> button to correctly initiate an attempt to resume the print job starting with a fresh card.</li> <li>• To replace the Card Cartridge, press the <b>Card</b> button on the front of the Printer to continue printing.</li> <li>• To install the Card Cartridge, press the <b>Card</b> button on the front of the Printer to print or cancel printing.</li> </ul> <p>(<b>Note:</b> If neither the Ink Cartridge nor the Card Cartridge are installed, only the Card LED will flash at first. When the Card Cartridge is installed, the Ink LED will then flash until the Ink Cartridge is installed. These two lights will not flash simultaneously.)</p> <p>See the <a href="#">Interpreting the LED Lights</a> procedure.</p>

Continued on the next page

**Technician Handbook for CardJet Card Printers (continued)**

Topic	Description
<p><b>Cancel / Retry</b> button (Error recovery)</p>  <p>Relates to Printer Error Reporting and Recovery (both 410/C7 models)</p>	<p>The Operator can push on the <b>Cancel / Retry</b> button after removing a misfed or stuck card in the Card Path.</p> <p>The <b>Cancel / Retry</b> button activates when a card is hung up in the Feed Station/Card Path or it is misfed.</p> <p><b>Troubleshooting Instructions. See Section 2):</b></p> <ul style="list-style-type: none"> <li>Use the <b>Cancel / Retry</b> button to cancel print jobs and reset the Printer for the next print job. (<b>Note:</b> This <b>Cancel</b> function will cancel all print jobs at both the PC and the Printer level and will completely reset the Printer. If a card is left within the Printer after a print job is canceled, it will automatically be ejected.)</li> </ul>

See the description (above) for the **Cancel** button.



Continued on the next page

**Technician Handbook for CardJet Card Printers (continued)**

<b>Topic</b>	<b>Description</b>
Card Cartridge (both 410/C7 models)	<p>The Card Cartridge displays the quantity levels of cards remaining.</p> <p>The Card Cartridge is a self-contained, transparent Cartridge, which is positioned in the Card Printer to be easily seen (for card monitoring purposes) and is easily installed (for one-way, top loading installation).</p> <p><b>Operating Instructions. See Section 1:</b></p> <ul style="list-style-type: none"> <li>You can hear a click when the Card Cartridge is correctly installed in the Card Printer. Also, the light will go out.</li> </ul>
Card Cartridge is moved during the Smart tag read cycle	<p>The Printer correctly detects and reports an improperly loaded Card Cartridge via Card LED and on-screen message—when the Cartridge is moved during the Smart electronic tag read cycle.</p> <p>The Card LED begins to blink indicating an error. A PC screen pop-up is displayed, stating: <b>The card Cartridge is not installed.</b></p> <p><b>Troubleshooting Instructions. See Section 2):</b></p> <ul style="list-style-type: none"> <li>Install the Cartridge, then press the <b>Card</b> button on the front of the Printer to print or cancel printing.</li> </ul>
Card Cartridge is correctly installed	<p>The Printer detects a correctly loaded Card Cartridge, cancels the Card LED warning and successfully prints the requested card.</p> <p>The Card LED ceases to blink indicating an error. No PC screen pop-up is displayed. A card is successfully printed.</p>
Card Cartridge Error Messages: <b>Cards Out</b>	<p>The errors message that appear as a dialog to warn the following:</p> <p><b>Cards Out</b> (includes LED flash).</p> <p>See the <a href="#">Interpreting the LED Lights</a> procedure.</p>
Card Cartridge (incorrectly installed; LED error light)	<p>The LED error light indicates an incorrect Card Cartridge installation. See the <a href="#">Interpreting the LED Lights</a> procedure.</p>

Continued on the next page

**Technician Handbook for CardJet Card Printers (continued)**

<b>Topic</b>	<b>Description</b>
Card Encoding	<p>The Encoding module is self-contained and easily field-upgradeable by an Operator (or a Service Technician).</p> <ul style="list-style-type: none"> <li>• <b>Encode Only option (not provided):</b> The Printer will not provide an <b>Encode Only</b> option that allows for encoding without printing.</li> <li>• <b>Strictly used with Fargo CardJet products:</b> The Encoder is designed so it can only be used with Fargo CardJet products.</li> </ul>
Card Error Recovery (See Card LED)	<p>The Firmware traps and reports the error condition via the Card LED and a corresponding message at the Driver Operator Interface—after which the print operation is halted.</p> <p>The Printer will restart the operation and will continue printing cards after the Operator opens the Printer Top Cover, fixes and removes the jammed card, closes the Printer Top Cover and presses the <b>Card</b> button.</p> <p><b>Troubleshooting Instructions. See Section 2):</b></p> <ul style="list-style-type: none"> <li>• Open the Printer Top Cover, fix it and remove the jammed card.</li> <li>• Close the Printer Top Cover to restart the Printer operation and continue printing cards.</li> </ul>
Color Ink Cartridge out of ink	<p>Prior to the first card printing, the Ink LED begins to blink, indicating an error. The Printer correctly detects and reports improperly loaded Card Cartridges. See the <a href="#">Interpreting the LED Lights</a> procedure.</p> <p>The PC screen pop-ups displays this message: <b>The color Ink Cartridge in the Printer is out of ink.</b></p> <p><b>Troubleshooting Instructions. See Section 2):</b></p> <ul style="list-style-type: none"> <li>• Replace the Cartridge and close the cover to print.</li> </ul>

Continued on the next page



**Technician Handbook for CardJet Card Printers (continued)**

<b>Topic</b>	<b>Description</b>
Card LED	<p>The Firmware correctly detects the card feed error condition and indicates a fatal error condition (via the Card LED) and a PC on-screen error message indicating a card feeding error (via the Driver Operator interface).</p> <ul style="list-style-type: none"> <li>• The Printer has LED, Sensor and Error Message malfunction indicators to inform the Operator that the equipment is malfunctioning and to indicate which component is malfunctioning.</li> <li>• The Printer has LED indicators on the front that provide Error reporting. In addition, Error reporting appears on the PC screens to indicate error, status and corrective action.</li> <li>• The errors message that appear as a dialog to warn the Operator are for <b>Cards Out</b> (includes LED flash).</li> <li>• The LED error light indicates an incorrect Card Cartridge installation.</li> </ul>
Card LED	The Printer via the Card LED correctly detects and reports empty, illegal or improperly load Card Cartridges.
Card LED (bad Smart tag)	Before running out of cards, the Printer correctly validates a replacement Cartridge and reports that it has a bad Smart tag (via the Card LED) and that printing will continue when the Card Cartridge is replaced with a good Cartridge.
Card LED (illegal Card Cartridge)	Before running out of cards, the Printer correctly validates a replacement Cartridge and reports that it is illegal via the Card LED and that printing will continue when the Card Cartridge is replaced with a legal Cartridge.
Card Level Monitoring (via Card Cartridge)	The Card Cartridge can be used to monitor card levels because it is transparent and the Operator can see directly into the Cartridge.

Continued on the next page

**Technician Handbook for CardJet Card Printers (continued)**

<b>Topic</b>	<b>Description</b>
Card Quantities (50-card for Persona C7 and 100-card for Professional 410)	<p>The Card Cartridge is used to provide 100-card (Professional 410) and 50-card (Persona C7) quantities through the same Cartridge in both the Professional Series model and the Persona Series model.</p> <ul style="list-style-type: none"> <li>• <b>Smart Tag Technology (differentiates):</b> The Smart Tag technology on the bottom of the Card Cartridge is used to differentiate between the 50-card and 100-card capacity in these two models.</li> <li>• <b>Persona Series (50-card Card Cartridge only):</b> The Persona series Printer model does not support the 100-card Card Cartridge.</li> <li>• <b>Professional Series (100-card Card Cartridge only):</b> The Persona series Printer model does not support the 50-card Card Cartridge.</li> </ul>
Card Path	<p>This allows Operators to fine tune the position of the print area on the card. (<b>Note:</b> The orientation of the card icon is portrait due to the front-to-back orientation of the Printer's Card Path.) See the <a href="#">Selecting the Image Position tab</a>.</p> <p>The Professional 410 and Persona CardJet C7 printing systems consist of an HP Print Engine and Fargo additions that allows printing on CardJet cards (CR-80, 30 mil).</p> <p>For this purpose, the Printer has a special Card Path, an Input Hopper for a Card Cartridge, extra Card Sensor and a Fargo Controller (2 Boards).</p> <p><b>Troubleshooting Instructions. See Section 2):</b></p> <ul style="list-style-type: none"> <li>• Push on the <b>Cancel / Retry</b> button after removing a misfed or stuck card in the Card Path.) (<b>Note:</b> The slotted Optical Sensor on the Card Path is located between the Card Cartridge and the print area.)</li> <li>• The Print Cartridge does not center over the Card Path when the cover is opened.</li> <li>• The <b>Cancel / Retry</b> button activates when a card is hung up in the Feed Station/Card Path or it is misfed.</li> </ul>
Card Sensor	<p>An electro-mechanical/electro-optical device used to indicate a change in state in the Printer such as when a card reaches a certain location.</p>

Continued on the next page

**Technician Handbook for CardJet Card Printers (continued)**

<b>Topic</b>	<b>Description</b>
Card Size	The Card Printer accepts only CardJet cards.
Card Surface	Use only CardJet cards.
Color Matching	<p>The process of adjusting color hue, saturation and brightness, to duplicate a desired color.</p> <p>An algorithm within the Driver, which adjusts the color balance and provides output with the desired color, automates this process.</p>
Connectors to Internal Circuitry	The system has one USB upstream, type B connector to a PC.
Cover	<p>The access covers are not removable and they are self-supporting when open. See CardJet Engineering Drawing R400019 in the appendix.</p> <ul style="list-style-type: none"> <li>• When the print job and the Printer is initiated with normal conditions and the Printer Top Cover is opened during the print process, the Firmware will trap the condition and will put the Printer into a safe pause mode.</li> <li>• The Lid Sensor is a reflective Sensor used to detect if the cover is open. It can be affected by direct sunlight.</li> </ul>

Continued on the next page

**Technician Handbook for CardJet Card Printers (continued)**

<b>Topic</b>	<b>Description</b>
Card Printing Jam	<p>The Firmware correctly detects the condition and indicates a fatal error condition via Card LED and a PC on-screen error message via the Driver Operator Interface—when a print job and the Printer are configured with anomalous conditions intended to induce a card printing jam.</p> <p><b>Troubleshooting Instructions. See Section 2):</b></p> <ul style="list-style-type: none"> <li>• After an error has been detected and reported, you can open the cover, remove the jammed card and then close the cover and press the <b>Card</b> button to continue the print job starting with a fresh card.</li> </ul>
Card Sensor condition (turns LED on/off; both 410/C7 models)	<p>The Fargo Controller turns the LED on/off depending on the Card Sensor condition. See the <a href="#">Interpreting the LED Lights</a> procedure. (<b>Note:</b> When no card is present, the LED is on—and nothing interrupts the IR emission.)</p> <p>This Sensor is described as follows:</p> <ul style="list-style-type: none"> <li>• <b>Detect card jam:</b> The Card Sensor is used to determine the card position in case of a jam, as well as for service purposes.</li> <li>• <b>Detect card edge:</b> The Fargo Controller detects if there was a leading or trailing edge of a card detected.</li> </ul>

Continued on the next page

**Technician Handbook for CardJet Card Printers (continued)**

<b>Topic</b>	<b>Description</b>
Color Ink Cartridge	Here is the breakdown: <ul style="list-style-type: none"> <li>• <b>CardJet 410:</b> 300 color ink cards</li> <li>• <b>Persona C7:</b> 250 color ink cards</li> </ul>
Driver Installation	<p><b>Installation and Startup Procedures. See Section 3):</b></p> <ol style="list-style-type: none"> <li>1. Load the Driver CDROM into the PC. (<b>Note:</b> The host Driver download software automatically opens and prompts the Operator through the Driver installation process.)           <ul style="list-style-type: none"> <li>• The device initialization and Firmware downloading occurs—when the Printer start-up is initiated.</li> <li>• The cards are printed with acceptable color reproduction and image placement—when the Operator initiates a print job following Driver installation.</li> </ul> </li> </ol>
Driver Operator interface	<p>Firmware traps and reports encoding error responses via required LED illumination and messages at the Driver Operator interface.</p> <ul style="list-style-type: none"> <li>• Firmware correctly detects the card feed error condition and indicates a fatal error condition (via the Card LED) and a PC on-screen error message indicating a card feeding error (via the Driver Operator interface).</li> <li>• Firmware correctly detects the card printing jam condition and indicates a fatal error condition (via the Card LED) and a PC on-screen error message (via the Driver Operator interface).</li> </ul>
Empty Ink Cartridge (1) (See Ink LED and Error Messages)	<p>The Printer correctly notifies the Operator of the empty Ink Cartridge via the Ink LED and on screen message—before running out of ink.</p> <p>The remainder of the print job is restarted when a new Cartridge is correctly installed.</p>

Continued on the next page

**Technician Handbook for CardJet Card Printers (continued)**

<b>Topic</b>	<b>Description</b>
Empty Ink Cartridges (2) (See Ink LED and Error Messages)	The Printer correctly detects and reports an empty Ink Cartridge via LED and on-screen message—when the empty Cartridges are in the Printer where both Cartridges are empty.
Non-empty Ink Cartridges  <b>OR</b> Non-empty color Ink Cartridges	The Printer correctly detects non-empty Ink Cartridges—when the empty Cartridges are replaced in the Printer.  The printing continues on the print job that was halted by the detection of the empty Ink Cartridges.
Empty black Ink Cartridge (See Ink LED and Error Messages)	The Printer correctly detects and reports an empty black Ink Cartridge via LED and on-screen message—when the empty Cartridges are in the Printer where the black Cartridge is empty.
Empty black Ink Cartridge (replaced)	The Printer correctly detects non-empty Ink Cartridges—when the empty black Ink Cartridge is replaced in the Printer.  The printing continues on the print job that was halted by the detection of the empty black Ink Cartridge.
Encoder Error Handling (See LED and Error Messages)	The Firmware traps and reports encoding error responses via required LED illumination and messages at the Driver Operator interface—when a print job and the Printer are configured with anomalous conditions intended to trigger specific encoding errors.  The batch jobs are correctly resumed. After an error has been detected and reported, an <b>Encoding Retry</b> option is provided for the Operator—via an on-screen button that correctly initiates an attempt to re-encode the card when selected.

Continued on the next page

**Technician Handbook for CardJet Card Printers (continued)**

<b>Topic</b>	<b>Description</b>
Encoding Retry option	<b>Encoding Retry</b> option is provided the Operator via an on-screen button that correctly initiates an attempt to re-encode the card when selected.
Error Recovery Printer Error Reporting and Recovery (both 410/C7 models)	Push on the <b>Card</b> button to clear a jam.  Push on the <b>Cancel / Retry</b> button after removing a misfed or stuck card in the Card Path. ( <b>Note:</b> The <b>Cancel / Retry</b> button activates when a card is hung up in the Feed Station/Card Path or it is misfed.)
HiCo Magnetic Encoding Card Printing	The Printer is correctly printing an image—when the Operator provides Magnetic Encoding as part of the requested card image data via the Driver software.
High-coercivity Stripe Encoding	The Printer supports optional high-coercivity magnetic stripe encoding. It does not support low-coercivity and JIS II encoding. <ul style="list-style-type: none"> <li>• <b>Process:</b> The Printer will not be capable of printing and encoding sequentially.</li> <li>• <b>Print &gt; Encode &gt; Feed:</b> It will print, then encode and then feed in the next card for printing.</li> <li>• <b>Encoding Error:</b> If there is an encoding error, the Printer must pause operation and report an error so the improperly encoded card does not end up in the stack of good cards.</li> </ul>
Host Driver Download Software	The host Driver download software automatically opens and prompts the Operator through the Driver installation process when the Driver CDROM is loaded into the PC.
HP Print Engine	The stand-alone Core HP Print Driver supports all required functionality of the HP Print Engine subsystem.  Windows recognizes three (3) USB devices: the Print Engine, the Fargo Controller and an on-Board USB hub (needed to split USB upstream into three USB downstream channels).

Continued on the next page

**Technician Handbook for CardJet Card Printers (continued)**

<b>Topic</b>	<b>Description</b>
Fargo Controller to HP Sensor Assembly	There are two (2) cables which connect the Fargo Controller with the Sensor in the HP Print Engine. These cables must be properly attached for the Printer to operate properly.
Illegal Ink Cartridge Detection (via Ink LED)	The Printer correctly validates the replacement Cartridge and reports that it is an illegal Cartridge via the Ink LED—before running out of ink and having a new Ink Cartridge installed.  The printing is restarted when the Ink Cartridge is replaced with a good Cartridge.
Image Positioning	Use the <b>Image Position</b> controls to adjust the position of the overall print area to be precisely centered on a card.
Improperly installed color Ink Cartridges	The Printer correctly detects an improperly installed color Ink Cartridges—when the empty color Cartridge is replaced in the Printer (but it is installed incorrectly).
Improperly seated Card Cartridge (See Card LED and Error Messages)	The Printer correctly detects and reports improperly loaded Card Cartridges via the Card LED and on-screen message—when the Card Cartridge is improperly seated. ( <b>Note:</b> The Card LED begins to blink indicating an error.)  A PC screen pop-up is displayed: <b>The card Cartridge is not installed.</b>  <b>Troubleshooting Instructions. See Section 2):</b>  1. Correctly load the Card Cartridge to cancel the error conditions. 2. Install the Cartridge, then press the <b>Card</b> button on the front of the Printer to print or cancel printing.
Incorrect Card Cartridge Detection (See Card LED)	The Printer correctly validates a replacement Cartridge and reports that it is an illegal Cartridge via the Card LED—before running out of cards.  The printing will continue when the Card Cartridge is replaced with a legal Cartridge.

Continued on the next page




**Technician Handbook for CardJet Card Printers (continued)**

<b>Topic</b>	<b>Description</b>
Initial Card Feed Error	<p>The Firmware correctly detects the condition and indicates a fatal error condition (via the Card LED and a PC on-screen error message), indicating a card feeding error via the Driver Operator Interface—when a print job and the Printer are configured with anomalous conditions intended to induce a card feed error.</p> <p>After an error has been detected and reported, physically fixing the card feed error conditions and pressing the Card button correctly initiates an attempt to resume the print job starting with a fresh card.</p> <p>Physically fix the card feed error conditions and press the <b>Card</b> button to resume the print job.</p>
Ink Cartridges	<p>The Ink Cartridge is described below:</p> <ul style="list-style-type: none"> <li>• <b>Incorrect Ink Cartridge Installation:</b> The Ink LED error light reports incorrect Ink Cartridge installation.</li> <li>• <b>Ink Cartridges:</b> The Ink Cartridges is a protected supplies item to the Fargo Printer.</li> <li>• <b>Smart technology:</b> The Ink Cartridge uses Smart supplies technology for keeping Fargo Cartridges proprietary, providing capability to decrement the tag. A Cartridge is spent. It cannot be reused.</li> <li>• <b>Printing bar codes:</b> The Printer is capable of printing bar codes that are readable by both infrared and visible-light bar code scanners. Infrared bar codes require the infrared bar code print mode.</li> <li>• <b>Cartridge Requirements:</b> The Printer will require both the color, dye Ink Cartridge and the black pigment Ink Cartridge to function.</li> </ul>

Continued on the next page

## Technician Handbook for CardJet Card Printers (continued)

Function	Description
Ink LED  	<p><b>The Ink Cartridge Status LED is described below. See next page):</b></p> <p>The Ink LED light indicates when you need to check the status of the color or black Ink Cartridge. (<b>Note:</b> Both Ink Cartridges must be installed in order for the Printer to function.)</p> <ul style="list-style-type: none"> <li>• <b>Light is off.</b> When the light is off, both Cartridges are ready for printing.</li> <li>• <b>Ink LED light is lit.</b> When the Ink LED light is lit, it indicates that ink is not installed, ink is out or that there is a problem with one of the Ink Cartridges. In this case, correct the issue and close the Printer's Top Cover to resume operation. When lit, the <b>amber</b> LED above this symbol will flash to indicate you need to check the status of the Ink Cartridges.</li> </ul> <p>This LED will flash when:</p> <ul style="list-style-type: none"> <li>• <b>The Top Cover is open.</b> When open, the Ink Cartridge will move to the install position. Regardless of the Ink Cartridge condition, the Cartridge will always move to this position. (<b>Note:</b> When the Top Cover is closed, the Cartridge will return to its home position. If a print job has been received, printing will resume when the Top Cover is closed. If the Top Cover is left open, the Cartridge will return to its home position after 5 minutes of the Printer sitting idle.)</li> <li>• <b>One or both of the Ink Cartridges is improperly installed or missing and the Top Cover is closed.</b> (<b>Note:</b> When Top Cover is opened, the Cartridge will move to the same standard install position described in condition 1.)</li> <li>• <b>One or both of the Ink Cartridges is out of ink and the Top Cover is closed.</b> (<b>Note:</b> When Top Cover is opened, the Cartridge will move to the same standard install position described in condition 1.)</li> <li>• <b>A non Fargo-certified Cartridge is installed and the Top Cover is closed.</b> (<b>Note:</b> When Top Cover is opened, the Cartridge will move to the same standard install position described in condition 1.)</li> </ul> <p><b>Troubleshooting Instructions. See Section 2):</b></p> <ol style="list-style-type: none"> <li>1. Correct the condition and close the Top Cover to continue printing.</li> </ol>

Continued on the next page

**Technician Handbook for CardJet Card Printers (continued)**

<b>Term</b>	<b>Description</b>
Ink Cartridge	<p>The Printer requires both the color, dye-based Ink Cartridge and the black pigment Ink Cartridge to function properly.</p> <ul style="list-style-type: none"> <li>• The Printer can print bar codes that are readable by both infrared bar code mode and visible-light bar code scanners. The Cartridge installation follow the way HP currently does it.</li> <li>• The Ink Cartridge uses Smart supplies technology, providing capability to decrement the tag and the supplies security. A Cartridge is spent. It cannot be reused.</li> </ul>
Ink Cartridge Tag Detection (via Ink LED) – Bad data tag	<p>The Printer correctly validates the replacement Cartridge and reports that it has a bad tag via the Ink LED—before running out of ink and having a new Ink Cartridge installed.</p> <p>The printing is restarted when the Ink Cartridge is replaced with a legal Cartridge.</p>
Ink Error Recovery (See Ink LED)	<p>The Firmware traps and reports the error condition via the Ink LED and a corresponding message at the Driver Operator Interface—after which the print operation is halted.</p> <p>The Printer will restart the operation and will continue printing cards after the Operator opens the Printer Top Cover, fixes the Ink Cartridge condition and closes the Printer Top Cover.</p> <p><b>Troubleshooting Instructions. See Section 2):</b></p> <ol style="list-style-type: none"> <li>1. Open the Printer Top Cover, fix the Ink Cartridge condition and close the Printer Top Cover to restart the Printer operation and continue printing cards.</li> </ol>
Ink LED (empty Ink Cartridge)	<p>Before running out of a ink, the Printer correctly notifies the Operator of the empty Ink Cartridge via the ink LED and that the remainder of the print job is restarted when a new Cartridge is correctly installed.</p>
Ink LED (illegal Ink Cartridge)	<p>Before running out of ink and having a new Ink Cartridge installed, the Printer correctly validates the replacement Cartridge and reports if it is illegal via the ink LED and that printing are restarted when the Ink Cartridge is replaced with a good Cartridge.</p>

Continued on the next page

**Technician Handbook for CardJet Card Printers (continued)**

<b>Topic</b>	<b>Description</b>
Ink LED (bad tag)	Before running out of ink and having a new Ink Cartridge installed, the Printer correctly validates the replacement Cartridge and reports that it has a bad tag via the ink LED and that printing are restarted when the Ink Cartridge is replaced with a legal Cartridge.
Ink LED error light (reports incorrect Ink Cartridge install; both 410/C7 models)	The Ink LED error light reports incorrect Ink Cartridge installation. The Ink Cartridges are a protected supplies item to the Fargo Printer.
Ink Level Monitoring (See Printer Driver Fuel Gauge)	The Printer Driver Fuel Gauge feature correctly provides the Operator with a display of the estimated amount of ink remaining in the Cartridge—when the Operator requests it. The Printer is set up to ensure the appropriate ink levels exist before starting each print job.
Ink Level Gauge	SmartLoad Ink Cartridges contain an exclusive Ink Level Gauge that reports remaining prints and alerts when the ink is low or out.
InkJet Bad Card Cartridge Tag Detection	The Printer correctly validates a replacement Cartridge and reports that it is illegal via the Card LED—before running out of cards. <ul style="list-style-type: none"> <li>• The Printer correctly detects and reports card Cartridge with a bad tag via LED and on-screen message.</li> <li>• The printing will continue when the Card Cartridge is replaced with a good Cartridge.</li> </ul>

Continued on the next page

**Technician Handbook for CardJet Card Printers (continued)**

<b>Topic</b>	<b>Description</b>
InkJet Illegal Ink Cartridge Detection (See Ink LED)	The Printer correctly validates the replacement Cartridge and reports that it is illegal via the Ink LED—before running out of ink and having a new Ink Cartridge installed. The printing is restarted when the Ink Cartridge is replaced with a good Cartridge.
Input Hopper	The Printer has a special Card Path, an Input Hopper for a Card Cartridge, extra Card Sensor and a Fargo Controller (2 Boards). This Printer area stores the blank cards, ready to print.
Installing Ink Cartridge Detection (See Ink LED)	The Printer correctly notifies the Operator of the empty Ink Cartridge via the Ink LED—before running out of ink. The remainder of the print job is restarted when a new Cartridge is correctly installed.
Interchangeable Commercial parts	Both Printers primarily uses customized CardJet parts to ensure interchangeability and to simplify the problem of field stocking of replacement parts.
Interface to the PC	<p>The Printer is equipped with USB interface.</p> <ul style="list-style-type: none"> <li>• Technicians can access the Printer Driver Operator Interface window by selecting Start button &gt; Settings &gt; Printers &gt; CardJet 410 Card Printer (right click) &gt; Printing Preferences to bring up the CardJet 410 or Persona C7 Card Printer Printing Preferences window.</li> <li>• Technicians can use the Card, Image Quality, Image Position, Magnetic Encoding and Print Supplies tabs to make appropriate selections, as described below and (in more detail) in Section 3: Printer Adjustments.</li> </ul>

Continued on the next page

**Technician Handbook for CardJet Card Printers (continued)**

<b>Term</b>	<b>Description</b>
Interface (using the Card tab)	<p><b>Interfacing with the Card tab:</b></p> <p>Access the Card tab via CardJet 410 or Persona C7 Card Printer Printing Preferences window.</p> <p>Use the Card tab to select Print Quality (<b>Fast</b>, <b>Normal</b> and <b>Best</b>), the Card Size (up/down arrows), the Orientation: <b>Portrait</b> and <b>Landscape</b> (radio buttons), the Rotate Image 180° (checkbox) and Copies (checkbox). See the <a href="#">Selecting the Print Quality (Best, Normal or Fast print modes)</a> procedure.</p> <p>Also provides the <b>About</b> button. See <a href="#">Selecting the Card tab window</a>.</p>
Interface (using the Image Color tab)	<p><b>Interfacing with the Image Color tab:</b></p> <p>Access the Image Color tab via CardJet 410 or Persona C7 Card Printer Printing Preferences window. See the <a href="#">Selecting the Image Color tab</a>.</p> <p>Use the Image Color tab to select <b>Print Quality</b> (radio buttons), Color Quality (adjustment slides), Automatic Image Enhancement (checkbox), Ink Volume (adjustment slide), Print in Grayscale (checkbox) and Infrared Bar Codes (checkbox).</p> <p>Also provides the <b>Default</b> button.</p>
Interface (using the Image Position tab)	<p><b>Interfacing with the Image Position tab:</b></p> <p>Access the Image Position tab via CardJet 410 or Persona C7 Card Printer Printing Preferences window. See the <a href="#">Image Position tab</a>.</p> <p>Use the Image Position tab to select Horizontal and Vertical positioning (right and left arrows) of the cards.</p>

Continued on the next page

**Technician Handbook for CardJet Card Printers (continued)**

<b>Topic</b>	<b>Description</b>
Interface (using the Magnetic Encoding tab)	<p><b>Interfacing with the Magnetic tab (both 410/C7 models):</b></p> <p>Access the Magnetic Encoding tab via CardJet 410 or Persona C7 Card Printer Printing Preferences window. See the <a href="#">Selecting the Magnetic Encoding tab (both 410/C7 models)</a> procedure.</p> <p>Use the Magnetic Encoding tab to select the <b>Verification</b> (radio buttons) and Retries (up/down arrows), <b>Magnetic Track Selection</b> (radio buttons), Magnetic Track Options: <b>Bit Density</b> (radio buttons), <b>Character Size</b> (radio buttons), <b>ASCII Offset</b> (radio buttons), <b>LRC Generation</b> (radio buttons), <b>Character Parity</b> (radio buttons) and Shift Data Left (checkbox).</p> <p>Also provides a <b>Default</b> button.</p>
Interface (using the Print Supplies tab)	<p><b>Interfacing with the Print Supplies tab:</b></p> <p>Access the Print Supplies tab via CardJet 410 or Persona C7 Card Printer Printing Preferences window. See the <a href="#">Selecting the Print Supplies tab</a>.</p> <p>Use the Print Supplies tab to view Prints Remaining under Color Ink Cartridge and Black Ink Cartridge.</p> <p>Also provides the <b>Clean Ink Cartridge Nozzles</b> button. The Technician can view the Color Ink Cartridge Reorder Number, Black Ink Cartridge Reorder Number and the Card Cartridge Reorder Number.</p>

Continued on the next page

**Technician Handbook for CardJet Card Printers (continued)**

<b>Term</b>	<b>Description</b>
Malfunction indicators	The Printer has LED, Sensor and Error Message malfunction indicators to inform the Operator that the equipment is malfunctioning and to indicate which component is malfunctioning.
LED Indicators Printer Error Reporting and Recovery (both 410/C7 models)	<ul style="list-style-type: none"> <li>• <b>LED (Paper Sensor):</b> The Paper Sensor LED is on right away when the power is provided.</li> <li>• <b>Card LED (bad tag):</b> Before running out of cards, the Printer correctly validates a replacement Cartridge and reports that it has a bad tag via the Card LED and that printing will continue when the Card Cartridge is replaced with a good Cartridge.</li> <li>• <b>Card LED (illegal Card Cartridge):</b> Before running out of cards, the Printer correctly validates a replacement Cartridge and reports that it is illegal via the Card LED and that printing will continue when the Card Cartridge is replaced with a legal Cartridge.</li> <li>• <b>Ink LED (empty Ink Cartridge):</b> Before running out of ink, the Printer correctly notifies the Operator of the empty Ink Cartridge via the Ink LED and that the remainder of the print job is restarted when a new Cartridge is correctly installed.</li> <li>• <b>Ink LED (illegal Ink Cartridge):</b> Before running out of ink and having a new Ink Cartridge installed, the Printer correctly validates the replacement Cartridge and reports that it is illegal via the Ink LED and that printing are restarted when the Ink Cartridge is replaced with a good Cartridge.</li> </ul>

Continued on the next page



**Technician Handbook for CardJet Card Printers (continued)**

Term	Description
LED Indicators Relates to Printer Error Reporting and Recovery (both 410/C7 models)	<p>The Printer has LED, Sensor and Error Message malfunction indicators to inform the Operator that the equipment is malfunctioning and to indicate which component is malfunctioning.</p> <ul style="list-style-type: none"> <li>• The Printer has LED indicators on the front that provide Error reporting. In addition, Error reporting appears on the PC screens to indicate error, status and corrective action.</li> <li>• The errors message that appears as a dialog to warn the Operator are for <b>Cards Out</b> (includes LED flash).</li> <li>• The LED error light indicates an incorrect Card Cartridge installation.</li> </ul>
LED Panel	<ul style="list-style-type: none"> <li>• <b>Ink LED (bad tag):</b> Before running out of ink and having a new Ink Cartridge installed, the Printer correctly validates the replacement Cartridge and reports that it has a bad tag via the Ink LED and that printing are restarted when the Ink Cartridge is replaced with a legal Cartridge.</li> <li>• <b>Encoding Errors (LED / Driver UI):</b> Firmware traps and reports encoding error responses via required LED illumination and messages at the Driver Operator interface.</li> <li>• <b>Card LED (card feeding errors):</b> Firmware correctly detect the card feed error condition and indicates a fatal error condition (via the Card LED) and a PC on-screen error message indicating a card feeding error (via the Driver Operator interface).</li> </ul>

Continued on the next page

**Technician Handbook for CardJet Card Printers (continued)**

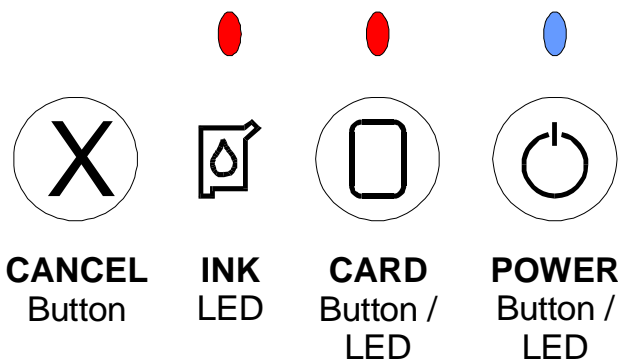
<b>Term</b>	<b>Description</b>
Monitoring Card Levels	<p>The Card Cartridge is transparent for visual card monitoring from side or top view. The LED error light indicates the following:</p> <ul style="list-style-type: none"> <li>• <b>Cards Out message:</b> This provides a definitive <b>Cards Out</b> message on the PC screen and a LED flash on the Printer.</li> <li>• <b>Card Cartridge Replacement:</b> This resumes without an error after a Card Cartridge is replaced if the cards run out in the middle of a batch print.</li> </ul>
Normal Card Printing (See Printer Driver preference options)	<p>Select the normal Printer Driver preference options to print cards with color reproduction matching the required color characteristics of a sample image to within acceptable limits.</p>
Optical Sensors	<p>The slotted Optical Sensor on the Card Path is located between the Card Cartridge and the print area.</p>
Output Hopper	<p>The portion of the Printer that accepts the completed cards. Close the door if you want the card to stick neatly.</p>
Pause, Slow Print	<p>When the Printer data from the PC slows down or pauses for short intervals, there is not adverse effect on the printed output. <b>(Note:</b> When the print job and the Printer is initiated with normal conditions and the Printer Top Cover is opened during the print process, the Firmware will trap the condition and will put the Printer into a safe pause mode.)</p>

Continued on the next page

**Technician Handbook for CardJet Card Printers (continued)**

Topic	Description
<p><b>Power</b> button / LED</p>	<p><b>Printer connected to the PC:</b></p> <ul style="list-style-type: none"> <li>• The Power button turns the Printer ON and OFF. (<b>Note:</b> When lit, the blue LED light indicates when power is ON.)</li> <li>• Press the <b>Power</b> button to turn the Printer ON and OFF.</li> <li>• The <b>blue</b> LED above the button turns OFF or ON to indicate when power is applied. (<b>Note:</b> This LED will flash when the Printer is processing a print job.)</li> <li>• If the <b>Power</b> button is pressed during a print job, the print job will be lost and the Printer will reset (depends on Windows configuration).</li> </ul> <p><b>Printer not connected to the PC:</b></p> <ul style="list-style-type: none"> <li>• Press the <b>Power</b> button to turn the Printer ON and OFF. (<b>Note:</b> The blue LED above the button turns OFF or ON to indicate when power is applied. This is the only active button when the Printer is not connected to the PC.)</li> <li>• All other buttons will not function and a Card Printer self-test will not be possible. (<b>Note:</b> When the Printer is not connected and the Card Cartridge and Ink Cartridge are not installed, only the Ink LED will flash as this is controlled by firmware.)</li> <li>• The Card LED will not flash in this mode when the Card Cartridge is not installed. (<b>Note:</b> The Printer must be connected to the PC for the Card LED to flash.)</li> </ul> <p>(<b>Note:</b> Avoid pressing multiple buttons simultaneously or pressing and holding a button or combination of buttons.)</p>

See the description (above) for the **Power** button / LED.



Continued on the next page

**Technician Handbook for CardJet Card Printers (continued)**

<b>Term</b>	<b>Description</b>
Power Supply	Fargo supplies both cord sets for Internal power supply. ( <b>Note:</b> This provides a dual power supply (110v/220v).)
Printer connected to a domestic US power source	<ol style="list-style-type: none"> <li>1. Connect the Printer to a domestic US power source via appropriate power cord, to start-up the Printer. (<b>Note:</b> Normal device initialization and Firmware downloading. Printer start-up is initiated. The cards are printed with acceptable color reproduction and image placement when the Operator selects normal Printer Driver preference options and initiates a print job.)</li> <li>2. Select the normal Printer Driver preference options and start a print job. Ensure that the cards are printed with acceptable color reproduction and image placement.</li> </ol>
Printer Drive Fuel Gauge (used for monitoring ink levels)	<p>The Printer Driver Fuel Gauge correctly provides the Operator with a display of the estimated amount of ink remaining in the Cartridge when the Operator requests it.</p> <ul style="list-style-type: none"> <li>• <b>Ink Levels:</b> The Printer is set up to ensure the appropriate ink levels exist before starting each print job.</li> <li>• <b>Monochrome/Color Cartridge:</b> The Printer provides a fuel gauge in Printer Driver to monitor both monochrome and color Cartridge. Each Cartridge is monitored individually.</li> <li>• <b>Ink Low message:</b> The Fuel Gauge provides an onscreen Operator warning for Ink Low.</li> <li>• <b>Ink Out message:</b> The Fuel Gauge provides a definitive Ink Out message on screen and LED flash. (<b>Note:</b> It resumes without error after an Ink Cartridge is replaced if ink runs out in the middle of a batch print.)</li> </ul>

Continued on the next page

**Technician Handbook for CardJet Card Printers (continued)**

<b>Topic</b>	<b>Description</b>
Printer Driver (USB plug & play capabilities)	<p>A software utility that serves as an interface between the Printer and the Windows GDI (Graphical Device Interface), making the Printer's functions available through the software application.</p> <p>When the Operator selects normal Printer Driver preference options, cards are printed with color reproduction matching the required color characteristics of a sample image to within acceptable limits.</p> <ul style="list-style-type: none"> <li>• Professional series type Online Operator's Guide</li> <li>• Driver Provides What's This... and context sensitive help capability</li> <li>• Driver Provides tab style format consistent with Professional Series Drivers.</li> <li>• Driver supports on-screen error/status messaging for conditions such as Out of Cards, Out of Ink, etc.</li> <li>• Driver is compatible with Windows 98, Windows Millennium, Windows 2000 and Windows XP.</li> </ul>
Printer Error Reporting and Recovery (both 410/C7 models)	<p>The Printer has LED indicators on the front that provide Error reporting. In addition, Error reporting appears on the PC screens to indicate error, status and corrective action.</p> <p>The Operator can push on the <b>Card</b> button after removing a misfed or stuck card in the Card Path.</p>
Printer Interface and Connection (Printer Driver preference options)	<ol style="list-style-type: none"> <li>1. Connect the Printer to a host PC via a USB cable to start-up the Printer. There is device initialization and Firmware downloading occur—when Printer start-up is initiated. (<b>Note:</b> The cards are printed with acceptable color reproduction and image placement when the Operator selects normal Printer Driver preference options and initiates a print job.)</li> <li>2. Select the normal Printer Driver preference options and start a print job. Ensure that the cards are printed with acceptable color reproduction and image placement.</li> </ol>

Continued on the next page

**Technician Handbook for CardJet Card Printers (continued)**

Type	Description
Printer Connections	<p>Printer connections are described as follows for Technician review:</p> <ul style="list-style-type: none"> <li>• <b>PC via a USB cable connection:</b> When a Printer is connected to a host PC via a USB cable, device initialization and Firmware downloading occur when Printer start-up is initiated. <b>Technician Note:</b> Ensure that cards are printed with acceptable color reproduction and image placement when the Operator selects normal Printer Driver preference options and initiates a print job.</li> <li>• <b>US power source connection:</b> When a Printer is connected to a domestic US power source via appropriate power cord, device initialization and Firmware downloading occur when Printer start-up is initiated. <b>Technician Note:</b> Ensure that cards are printed with acceptable color reproduction and image placement when the Operator selects normal Printer Driver preference options and initiates a print job.</li> <li>• <b>Non-domestic power source connection:</b> When a Printer is connected to a specific non-domestic power source via the appropriate supplied power cord, device initialization and Firmware downloading occur when Printer start-up is initiated. <b>Technician Note:</b> Ensure that cards are printed with acceptable color reproduction and image placement when the Operator selects normal Printer Driver preference options and initiates a print job.</li> </ul>
Printer connected to a specific non-domestic power source	<ol style="list-style-type: none"> <li>1. Connect the Printer to a specific non-domestic power source via the appropriate supplied power cord to start-up the Printer. <ul style="list-style-type: none"> <li>• <b>Start-up:</b> Normal device initialization and Firmware downloading occur. Printer start-up is initiated.</li> <li>• <b>Desired Result:</b> The cards are printed with acceptable color reproduction and image placement when the Operator selects normal Printer Driver preference options and initiates a print job.</li> </ul> </li> <li>2. Select the normal Printer Driver preference options and start a print job. Ensure that the cards are printed with acceptable color reproduction and image placement.</li> </ol>

Continued on the next page

**Technician Handbook for CardJet Card Printers (continued)**

<b>Topic</b>	<b>Description</b>
Print Mode Speeds (Best, Normal, Fast) (both 410/C7 models)	<p>The print speeds are <b>Best</b> Print Mode (76 seconds), <b>Normal</b> Print Mode (42 seconds) and <b>FAST</b> Print Mode (26 seconds). See the <a href="#">Selecting the Print Quality (Best, Normal or Fast print modes)</a> procedure.</p> <ul style="list-style-type: none"> <li>• <b>Best, Normal and Fast Modes:</b> The three (3) modes of print quality are <b>Best</b>, <b>Normal</b> and <b>Fast</b>. When <b>Best</b> is selected, an additional check box will activate; this allows Operators to select (use) the pigmented pen. Initially, most Operators will only need to select this if they need bar code readability by an infrared bar code scanner.</li> <li>• <b>Print Speed Modes:</b> Speed is under seventy-six (76) seconds per full coverage single-sided card in <b>Best</b> print mode, under forty-two (42) seconds per card in <b>Normal</b> mode and under twenty-six (26) seconds per card in <b>Fast</b> mode.</li> <li>• <b>Default Print Mode (set to Normal):</b> The Default Print Mode is set to the <b>Normal</b> Print Mode. Over the edge printing is supported.</li> <li>• <b>Print Modes:</b> Full-color and monochrome-only print modes is supported through selectable option in Printer Driver.</li> <li>• <b>Output Hopper:</b> The portion of the Printer that accepts the completed cards.</li> <li>• <b>Card Capacity:</b> The card capacity are a maximum of 50 cards.</li> </ul>
Printed Label (P/N and Lot Number)	<p>The Card Cartridge provides a printed label on it (not just on the Cartridge packaging) that shows the part number and the lot number. The smart chip does not report this information.</p>
Printer Service and Maintenance (both 410/C7 models)	<p>Technicians can efficiently work with a professional Printer Cleaning Kit that includes specific instructions.</p> <p>The Operator should not need to service or maintain this Printer.</p>

Continued on the next page

**Technician Handbook for CardJet Card Printers (continued)**

<b>Topic</b>	<b>Description</b>
Printer Start-up	The device initialization and Firmware downloading occur—when the Printer start-up is initiated.
Ink Carriage mechanism	The device on a Printer that produces the image on the media.
Programmed color Ink Cartridge with a Professional product	The Printer correctly detects and reports a color Ink Cartridge programmed with a Professional product ID via Ink LED and on-screen message. See Ink LED and Error Messages in Section 2.
Programmed black Ink Cartridge with a Professional product	The Printer correctly detects and reports a black Ink Cartridge programmed with a Professional product ID via Ink LED and on-screen message. See Ink LED and Error Messages in Section 2.
Raising Cover while printing	You can raise the cover during the printing process and it will have no effect on the printing process and the card print quality.
Replace empty Ink Cartridges	<p>The Printer correctly detects and reports an empty color Ink Cartridge via LED and on-screen message—when the empty Cartridges are in the Printer where the color Cartridge is empty.</p> <p><b>Troubleshooting Instructions:</b></p> <ul style="list-style-type: none"> <li>• Correctly install the non-empty black and color Ink Cartridges in the CardJet Printer.</li> <li>• Observe and record the Printer and PC screen responses when the card is printed. The Ink LED should return to normal. The Printer should resume printing the print job.</li> </ul>

Continued on the next page



**Technician Handbook for CardJet Card Printers (continued)**

<b>Topic</b>	<b>Description</b>
Self-supporting access covers	The access covers are removable and they are self-supporting when open.
Service documents	Refers to the thorough and complete service documents provided with each Fargo Card Printer.
Spare parts available	There are anticipated spare parts available with the product, in order to ensure a continuous Printer performance.
Standard tools	The required tools are standard, commonly available types.
Top Cover Open During Print Recovery	<p>The Printer is initiated with normal conditions and the Printer Top Cover is opened during the print process.</p> <ul style="list-style-type: none"> <li>• The Firmware will trap the condition and will put the Printer into a safe pause mode.</li> <li>• The Printer will restart the operation and will continue printing cards after the Operator closes the Printer Top Cover.</li> </ul> <p><b>Operating Instruction. See Sections 2 and 3):</b></p> <ol style="list-style-type: none"> <li>1. Close the Printer Top Cover to restart the Printer operation and continue printing cards.</li> </ol>

Continued on the next page

**Technician Handbook for CardJet Card Printers (continued)**

<b>Topic</b>	<b>Description</b>
Un-programmed color Ink Cartridge	The Printer correctly detects and reports an un-programmed color Ink Cartridge via the Ink LED and on-screen message. See Ink LED and Error Messages in Section 2.
Un-programmed black Ink Cartridge	The Printer correctly detects and reports an un-programmed black Ink Cartridge via ink LED and on-screen message. See Ink LED and Error Messages in Section 2.
USB Interface (Universal Serial Bus; electrical structure)	<p>A 1.5MB/sec (12MB/sec) serial communication interface that can support 127 separate devices consisting of 4 wires: power, ground, data in and data out.</p> <ul style="list-style-type: none"> <li>• <b>Interface to PC and Power Supply:</b> The system uses USB interface to communicate to a PC and internal power supply. Firmware initializes Fargo Controller Board.</li> <li>• <b>Controller:</b> The Fargo Controller supports USB 1.1 support.</li> <li>• <b>Firmware:</b> The Firmware is downloaded if the Printer has been unpowered and then you power it up and connect the USB cable. The Firmware is a part of Fargo PC Driver. To upgrade the Firmware, the Operator has to update the Driver.</li> <li>• <b>System connections:</b> The system has one USB upstream, type B connector to a PC and 3 downstream channels, with internal connections going to Fargo Controller, HP Print Engine and optional encoding Board.</li> </ul>
USB Hub	Windows recognizes three (3) USB devices: the Print Engine, the Fargo Controller and an on-Board USB hub (needed to split USB upstream into three USB downstream channels).



# Section 3: Troubleshooting Guidelines

The purpose of this section is to provide Technicians with a breakdown of the CardJet Card Printers Troubleshooting and Printer Maintenance requirements.


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## Safety Messages (review carefully)

Symbol	Critical Instructions for Safety purposes
<p><b>Danger:</b></p> 	<p><b>Failure to follow these installation guidelines can result in death or serious injury.</b></p> <p>Information that raises potential safety issues is indicated by a warning symbol (as shown to the below).</p> <ul style="list-style-type: none"> <li>• <b>To prevent personal injury</b>, refer to the following safety messages before performing an operation preceded by this symbol.</li> <li>• <b>To prevent personal injury</b>, always remove the power cord prior to performing repair procedures, unless otherwise specified.</li> <li>• <b>To prevent personal injury</b>, Ensure only qualified personnel perform these procedures.</li> </ul>
<p><b>Caution:</b></p> 	<p><b>This device is electrostatically sensitive. It can be damaged if exposed to static electricity discharges.</b></p> <p>Information that raises potential electrostatic safety issues is indicated by a warning symbol (as shown to the below).</p> <ul style="list-style-type: none"> <li>• <b>To prevent equipment or media damage</b>, refer to the following safety messages before performing an operation preceded by this symbol.</li> <li>• <b>To prevent equipment or media damage</b>, observe all established Electrostatic Discharge (ESD) procedures while handling cables in or near the Circuit Board and Printhead Assemblies.</li> <li>• <b>To prevent equipment or media damage</b>, always wear an appropriate personal grounding device (e.g., a high quality wrist strap grounded to avoid potential damage).</li> <li>• <b>To prevent equipment or media damage</b>, always remove the Ribbon and Cards from the Printer before making any repairs, unless otherwise specified.</li> <li>• <b>To prevent equipment or media damage</b>, take jewelry off of fingers and hands, as well as thoroughly clean hands to remove oil and debris before working on the Printer.</li> </ul>

## Additional Safety Precautions for CardJet Technicians (review carefully)

Symbol	Critical Instructions for Safety purposes
<p data-bbox="289 394 406 426"><b>Danger:</b></p> 	<p data-bbox="480 394 1287 459"><b>Before operating the unit, please read the following safety precautions carefully:</b></p> <ul style="list-style-type: none"> <li data-bbox="480 480 1312 543">• <b>Fire or Shock Hazard:</b> Prevent fire or shock hazard by not exposing the unit to rain or moisture.</li> <li data-bbox="480 564 1369 695">• <b>Electronic Shock:</b> Reduce the risk of electronic shock by not removing the front, top or back Panels. No Operator-serviceable parts inside. (<b>Technician Note:</b> Refer servicing to qualified service personnel.)</li> <li data-bbox="480 716 1398 879">• <b>Correct Voltage Rating:</b> Operate the unit only on 100-240 VAC, 50/60 Hz. (<b>Technician Note:</b> If you have any doubt as to whether you have a unit with the correct voltage rating for the country's power supply, DO NOT attempt to use the unit. Contact the dealer or the factory.)</li> <li data-bbox="480 900 1378 1031">• <b>Liquid or Solid Object:</b> Stop operation immediately if any liquid or solid object should fall into the cabinet. (<b>Technician Note:</b> Unplug the unit and have it checked by qualified service personnel.)</li> <li data-bbox="480 1052 1369 1115">• <b>AC power cord:</b> Use only the AC power cord included with this unit or an equivalent cord.</li> <li data-bbox="480 1136 1344 1230">• <b>ESD procedures:</b> Be sure to observe all established Electro-Static Discharge (ESD) procedures while handling cables in or near the Circuit Board.</li> <li data-bbox="480 1251 1378 1346">• <b>Grounding Device Safeguards:</b> Always wear an appropriate personal grounding device, such as a wrist strap with integral resistor, connected to an ESD ground to avoid potential damage.</li> <li data-bbox="480 1367 1382 1566">• <b>Electrostatic Sensitive Device:</b> At a minimum, make positive contact with the bare metal chassis of the Printer with the hand before proceeding with the procedure. (<b>Technician Note:</b> This device is electrostatic sensitive. It may be damaged if exposed to static electrical discharges. Discharges may be generated by various means, such as walking on a carpeted floor.)</li> </ul>



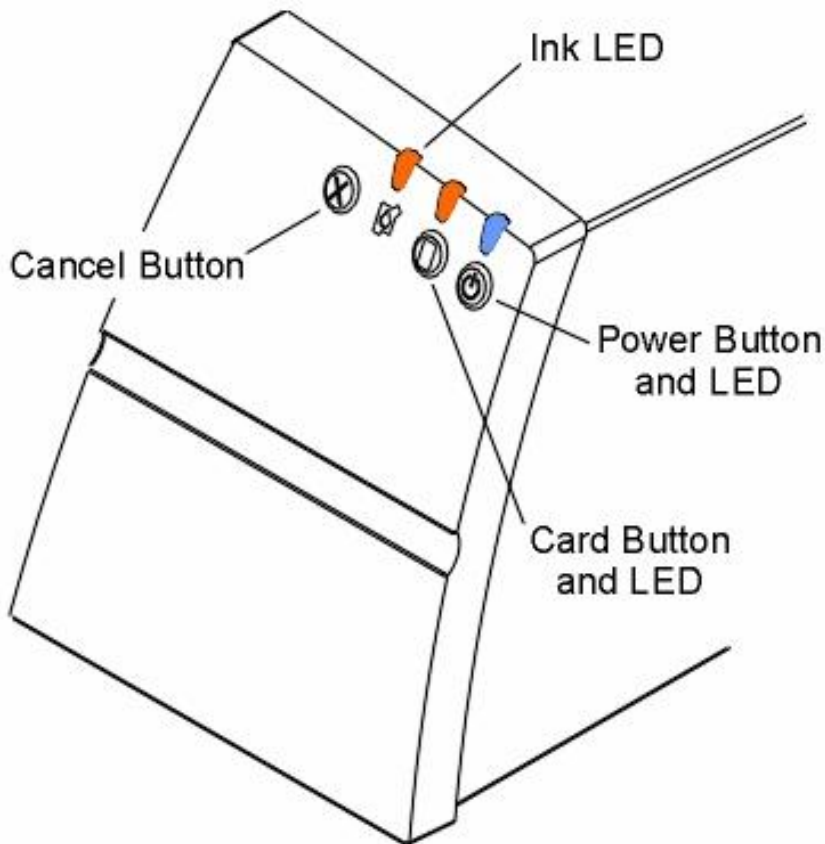
**Danger:** You must unplug the power cable to the Card Printer to ensure that all power is disconnected from the unit. Do not attempt any work on the Card Printer's interior unless you have first unplugged the unit.

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## Interpreting the LED Lights

The LED lights located on the front of the Printer indicate what is working and not working inside the Printer. To accurately interpret what it means when these lights are on, off or flashing, please refer to the following table. Refer to the **Technician Handbook for CardJet Card Printers** in Section 1 (as needed).

Power LED	Card LED	Ink LED	Cause / Solution
On solid	Off	Off	Printer is ON and READY to print.
Flashing	Off	Off	Indicates the Printer is processing a print job. This flashing will begin as soon as the Printer receives the print job and will continue until the job is completely printed.



**Interpreting LED Lights (continued)**

<b>Power LED</b>	<b>Card LED</b>	<b>Ink LED</b>	<b>Cause / Solution</b>
On solid	Flashing	Off	<p>Indicates you need to check the status of the Card Cartridge and/or the card being used for the current print job. <b>This LED will flash when:</b></p> <ul style="list-style-type: none"> <li>• The Card Cartridge is improperly installed or missing. Verify the Cartridge is properly installed. push down on the top of the Cartridge to Ensure it is fully seated in the Printer.</li> <li>• The Card Cartridge is out of cards. Replace the Card Cartridge.</li> <li>• A card is unable to feed from the Card Cartridge. Verify the Cartridge is properly installed. Push down on the top of the Cartridge to Ensure it is fully seated in the Printer.</li> <li>• A card is jammed specificwhere along the Card Path. Clear the jam.</li> <li>• A non Fargo-certified Card Cartridge is installed. Use only Fargo Certified Supplies.</li> </ul> <p>In any of these situations, correct the condition and press the <b>Card</b> button to continue printing.</p> <ul style="list-style-type: none"> <li>• If neither the Ink Cartridge nor the Card Cartridge are installed, only the Card LED will flash at first. When the Card Cartridge is installed, the Ink LED will then flash until the Ink Cartridge is installed. These two lights will not flash simultaneously.</li> <li>• If the Printer has a Magnetic Encoding Module installed and you are attempting to encode magnetic information onto a card while printing, a flashing Card LED can also indicate an encoding mis-verify or specific other type of encoding error.</li> <li>• If information is not encoded properly or encoded onto a bad magnetic stripe, the Printer is unable to verify the encoded data. When this happens, the Printer will signal an error on the PC screen. Follow the on-screen prompts to correct this error.</li> </ul>

Continued on the next page



**Interpreting LED Lights (continued)**

<b>Power LED</b>	<b>Card LED</b>	<b>Ink LED</b>	<b>Cause / Solution</b>
On solid	Off	Flashing	<p>Indicates you need to check the status of the Ink Cartridges.</p> <p><b>This LED will flash when:</b></p> <ul style="list-style-type: none"> <li>• <b>The Top Cover is open.</b> When open, the Ink Cartridge will move to the install position. Regardless of the Ink Cartridge condition, the Cartridge will always move to this position. When the Top Cover is closed, the Cartridge will return to its home position. If a print job has been received, printing will resume when the Top Cover is closed. If the Top Cover is left open, the Cartridge will return to its home position after a few minutes of the Printer sitting idle.</li> <li>• <b>One or both of the Ink Cartridges is improperly installed or missing.</b> Open the Top Cover and install or reinstall the Ink Cartridges.</li> <li>• <b>One or both of the Ink Cartridges is out of ink.</b> Replace the empty Ink Cartridge.</li> <li>• <b>A non Fargo-certified Cartridge is installed.</b> Use only Fargo Certified Supplies.</li> <li>• <b>It flashes when the ink runs out early.</b></li> </ul> <p><b>Troubleshooting Instructions:</b></p> <ol style="list-style-type: none"> <li>1. In any of these situations, correct the condition and close the Top Cover to continue printing.</li> </ol>

## Reviewing the Fargo Controller error types

The Driver periodically requests status information from Fargo Controller.

Error Type	Description
Cartridge Problems	<p>The Ink LED will blink and Ink Cartridges will move to the specified location for replacement. The Driver will read the tags on both Cartridges to determine if it is an out of ink situation.</p> <p>Depending on the result of this read, the Driver will post a message:  <b>Black/Color Cartridge is (are) out of ink or Cover Open.</b></p>
Cartridge Works	<p>If the Cartridges are good this time, the Driver can continue printing.</p>
Closed Lid	<p>If the Lid is closed, the Fargo Controller will read the Cartridges again and send the results to the Driver.</p>
Error Message	<p>If there is any error, the Fargo Controller sends the error number to the host. The Driver shows an error message with detailed explanation of the error condition.</p>
Error Repeated	<p>The Driver will post corresponding error messages again (as generated).</p>

## Reviewing the Error Messages for Printer Drivers

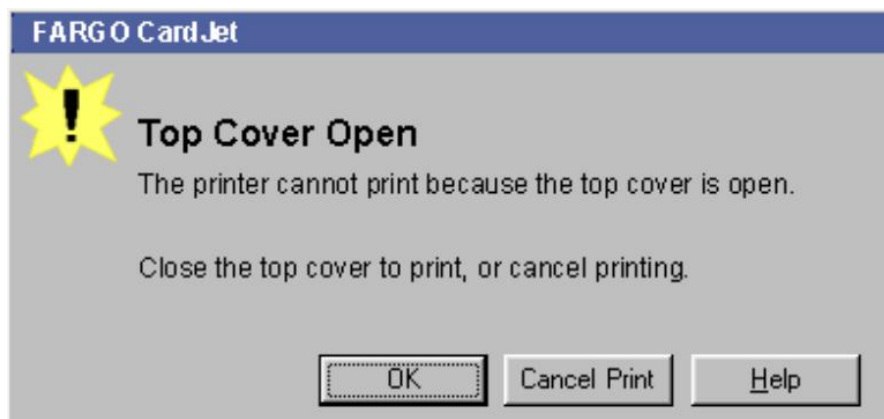
This section applies to the Status Monitor requirements for Windows 98Se/Me/2000/XP Printer Drivers. Refer to the **Technician Handbook for CardJet Card Printers** in Section 1 (as needed).

### Reviewing the Status Monitor dialog box and buttons

The Status Monitor only presents itself to the Operator when an error occurs. (**Note:** The dialog box includes the error message, the cause/solution and the action buttons which allow the Operator to resolve the issue.)

- **Graphic Icon:** The dialog box also shows a generic graphic icon, shown below, that will appear in the same position within the dialog box for all error messages.
- **buttons:** Specific or all of the following buttons are provided depending on the specific Printer condition. Each button will display in its set position indicated above regardless of if all or only one button is displayed.
- **Error Code:** For each error, an error code will also display in the lower left-hand corner of the dialog box. This number should be as unobtrusive as possible and appear in a smaller font.

Buttons	Description
<b>OK</b>	This <b>OK</b> button closes the dialog box. If not clicked, the dialog box will close automatically once the error is corrected.
<b>Cancel Print</b>	The <b>Cancel</b> button cancels the job at Printer and at PC.
<b>Help</b>	This <b>Help</b> button opens the Help file, which is a link to the appropriate topic of the HTML Online Operator's Guide.



## Reviewing the Error Messages Windows 98Se/Me/2000/XP Printer Drivers

Error Message	Problem	Solution
Black Ink Cartridge Not Installed <b>Error Code: 4</b> (displayed on lower left)	Indicates the black Ink Cartridge is not installed. ( <b>Note:</b> The error code is X.)	Install the Cartridge to print or cancel printing by pressing the <b>Cancel</b> button on the front of the Printer.
Black Ink Cartridge Low <b>Error Code: 9</b> (displayed on lower left)	Indicates the black Ink Cartridge in the Printer is low on ink. ( <b>Note:</b> The black ink count has reached 20. This error message displays when 20 prints remain and it opens and closes for each job.)	Consider having a replacement Cartridge available. To order additional Cartridges, please refer to the reordering information on the Cartridge label.  Replace the Cartridge and close the Top Cover to print.
Black Ink Cartridge Out <b>Error Code: 10</b> (displayed on lower left)	Indicates the black Ink Cartridge in the Printer is out of ink. ( <b>Note:</b> The black ink count has reached 0.)	To order additional Cartridges, please refer to the reordering information on the Cartridge label.  Replace the Cartridge and close the Top Cover to print.
Black Ink Cartridge problem <b>Error Code: 6</b> (displayed on lower left)	Indicates Black Ink Cartridge problem. ( <b>Note:</b> The error code is X.)	Try removing and replacing the black Print Cartridge.  If the problem persists, install a new black Print Cartridge.

Continued on the next page

## Reviewing the Error Messages Windows 98Se/Me/2000/XP Printer Drivers (continued)

Error Message	Problem	Solution
Card Cartridge Not Installed  <b>Error Code:</b> 16 (displayed on lower left)	Indicates the Card Cartridge is not installed.	Install the Cartridge, then press the <b>Card</b> button on the front of the Printer to print or cancel printing.
Card Cartridge Problem  <b>Error Code:</b> 19 (displayed on lower left)	Indicates the Card Cartridge failed to interact.	Remove and replace the Card Cartridge. If the problem persists, install a new Card Cartridge.
Card Jam  <b>Error Code:</b> 21 (displayed on lower left)	Indicates a card is jammed inside the Printer. Displays a Card Jam error.	Check under the Printer's Top Cover and clear the obstruction.  Press the <b>Card</b> button on the front of the Printer to try again.
Cards Out  <b>Error Code:</b> 15 (displayed on lower left)	Indicates the Card Cartridge in the Printer is out of cards.	To order additional Cartridges, refer to the reordering information on the Cartridge label.  Replace the Card Cartridge, then press the <b>Card</b> button on the front of the Printer to continue printing.

Continued on the next page

## Reviewing the Error Messages Windows 98Se/Me/2000/XP Printer Drivers (continued)

Error Message	Problem	Solution
Color Ink Cartridge Low <b>Error Code:</b> 7 (displayed on lower left)	Indicates the color Ink Cartridge in the Printer is low on ink. ( <b>Note:</b> The color ink count has reached 20. This error message displays when 20 prints remain and it opens and closes for each job.)	Consider having a replacement Cartridge available. To order additional Cartridges, refer to the reordering information on the Cartridge label.  Replace the Cartridge and close the Top Cover to print.
Color Ink Cartridge Not Installed <b>Error Code:</b> 3 (displayed on lower left)	Indicates the color Ink Cartridge is not installed. ( <b>Note:</b> The error code is X.)	Install the Cartridge to print or cancel printing by pressing the <b>Cancel</b> button on the front of the Printer.
Color Ink Cartridge problem <b>Error Code:</b> 5 (displayed on lower left)	Indicates a Color Ink Cartridge problem. ( <b>Note:</b> The error code is X.)	Try removing and replacing the color Print Cartridge.  If the problem persists, install a new color Print Cartridge.
Color Ink Cartridge Out <b>Error Code:</b> 8 (displayed on lower left)	Indicates the color Ink Cartridge in the Printer is out of ink. ( <b>Note:</b> The color ink count has reached 0.)	To order additional Cartridges, please refer to the reordering information on the Cartridge label.  Replace the Cartridge and close the Top Cover to print.
Exception Error <b>Error Code:</b> 22 (displayed on lower left)	Indicates the Printer is unable to function properly. (The Firmware reports an illegal state.)	Call for technical assistance and report the error code in the lower left-hand corner of this window.

Continued on the next page

## Reviewing the Error Messages Windows 98Se/Me/2000/XP Printer Drivers (continued)

Error Message	Problem	Solution
Illegal Black Ink Cartridge <b>Error Code:</b> 14 (displayed on lower left)	Indicates one of the following: <ul style="list-style-type: none"> <li>• The installed black Ink Cartridge is bad.</li> <li>• It is not a certified CardJet Cartridge.</li> </ul>	Replace the Cartridge with a certified Cartridge and close the Top Cover to print.
Illegal Card Cartridge <b>Error Code:</b> 18 (displayed on lower left)	Indicates the installed card Cartridge is bad or is not a certified CardJet Cartridge.	Replace the Cartridge with a certified Cartridge, then press the <b>Card</b> button on the front of the Printer to continue printing.
Illegal Color Ink Cartridge <b>Error Code:</b> 13 (displayed on lower left)	Indicates one of the following: <ul style="list-style-type: none"> <li>• The installed color Ink Cartridge is bad.</li> <li>• It is not a certified CardJet Cartridge.</li> <li>• No tag is present.</li> <li>• It cannot read the tag.</li> <li>• The tag is corrupted.</li> </ul>	Replace the Cartridge with a certified Cartridge and close the Top Cover to print.

Continued on the next page

## Reviewing the Error Messages Windows 98Se/Me/2000/XP Printer Drivers (continued)

Error Message	Problem	Solution
Improper Black Ink Cartridge  <b>Error Code: 12</b> (displayed on lower left)	Indicates one of the following: <ul style="list-style-type: none"> <li>• The installed black Ink Cartridge is not for use with the Printer model.</li> <li>• There is an incorrect black color Ink Cartridge Id.</li> <li>• Persona supplies are installed into a Professional model.</li> </ul>	Replace with the proper Cartridge and close the Top Cover to print.
Improper Card Cartridge  <b>Error Code: 17</b> (displayed on lower left)	Indicates the installed Card Cartridge is not suitable for the print job for these reasons: <ul style="list-style-type: none"> <li>• It is trying to mag encode blank cards.</li> <li>• The installed Card Cartridge is not for use with the Printer model.</li> <li>• It is trying to send a job with Magnetic Encoding when blank cards are installed.</li> <li>• Persona supplies are installed into a professional model or vice versa.</li> </ul>	Replace with the proper Cartridge, then press the <b>Card</b> button on the front of the Printer to continue printing.
Improper Color Ink Cartridge  <b>Error Code: 11</b> (displayed on lower left)	Indicates one of the following: <ul style="list-style-type: none"> <li>• The installed color Ink Cartridge is not for use with the Printer model.</li> <li>• There is an incorrect black color Ink Cartridge Id.</li> <li>• Persona supplies are installed into a Professional model.</li> </ul>	Replace with the proper Cartridge and close the Top Cover to print.

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## Reviewing the Error Messages for Windows 98Se/Me/2000/XP Printer Drivers (continued)

Error Message	Problem	Solution and Related Service Procedure
Mechanism <b>Error Code: 2</b> (displayed on lower left)	Indicates the Print Cartridge cradle cannot move. ( <b>Note:</b> The error code is 2.)	Check under the Printer's Top Cover for a card jam or other obstruction.
Top Cover Open <b>Error Code: 1</b> (displayed on lower left)	Indicates the Printer cannot print because the Top Cover is open. ( <b>Note:</b> The error code is 1.)	Close the Top Cover to print. To cancel, close the Top Cover and press the <b>Cancel</b> button on the front of the Printer.
Unable To Feed Card <b>Error Code: 20</b> (displayed on lower left)	Indicates a card cannot feed from the Card Cartridge. Displays a No Paper Fed error.	Remove the Card Cartridge and check for a card jam or other obstruction. Reinstall the Card Cartridge and press the <b>Card</b> button on the front of the Printer to try again.

## Reviewing the Error Messages for the Magnetic Encoding Module

Mag Message	Problem	Solution
Card Jam in Encoding Module	Indicates a card is jammed in the Magnetic Stripe Encoding module.	Reposition the card under the encoder's roller and click on the <b>Retry</b> button to try encoding again.  <b>OR</b> Click on the <b>Cancel button</b> to cancel encoding.
Unable to Verify Magnetic Data	Indicates the Magnetic Data encoded on the current card could not be verified.	Click on <b>Retry</b> to try verifying again.  <b>OR</b> Click on <b>Cancel</b> to cancel encoding. ( <b>Note:</b> In most cases, verify errors are due to a defective magnetic stripe.)
Magnetic Data Error	Indicates the data sent to the Magnetic Encoder contains errors. The current encoding job cannot be completed.	Click <b>Cancel</b> and remove the card from the Encoding Module.  Be sure to format the Magnetic Encoding data according to the instructions in the Online Operator's Guide.
Cancelled Card in Encoding Module	Indicates the encoder will feed in reverse a short distance to see if the card is still in the unit.  If it is still in the unit, the card are moved to the Home / Error position and the following message will appear: <b>Cancelled Card in Encoding Module</b>  After the <b>Cancel</b> button is clicked, there is a cancelled card in the Encoding Module.	Remove the cancelled card from the Encoding Module by grasping the end of it and pulling it out.  Be sure to separate this card from the cards that encoded successfully.

Continued on the next page

## Troubleshooting with Printer Components

This section provides troubleshooting procedures for the Technician. Refer to the **Technician Handbook for CardJet Card Printers** in Section 1 (as needed).

### Troubleshooting with the Card and Ink LED Indicators

Step	Description
1	<p>Determine if the Printer correctly detects and reports empty, illegal or improperly loaded Card Cartridges.</p> <ul style="list-style-type: none"> <li>• <b>Card LED (bad Smart tag):</b> Before running out of cards, the Printer correctly validates a replacement Card Cartridge and reports that it has a bad Smart tag via the Card LED.</li> <li>• <b>Technician Note:</b> Ensure that printing continues when the Card Cartridge with the bad Smart tag is replaced with a good Cartridge.</li> </ul>
2	<p>Determine if the Printer correctly detects and reports empty, illegal or improperly loaded Card Cartridges.</p> <ul style="list-style-type: none"> <li>• <b>Card LED (illegal Card Cartridge):</b> Before running out of cards, the Printer correctly validates a replacement Cartridge and reports that it is illegal via the Card LED.</li> <li>• <b>Technician Note:</b> Ensure that printing continues when the Card Cartridge is replaced with a legal Cartridge.</li> </ul>
3	<p>Determine if the Printer correctly detects and reports empty, illegal or improperly loaded Ink Cartridges.</p> <ul style="list-style-type: none"> <li>• <b>Ink LED (empty Ink Cartridge):</b> Before running out of ink, the Printer correctly notifies the Operator of the empty Ink Cartridge via the Ink LED.</li> <li>• <b>Technician Note:</b> Ensure that the remainder of the print job is restarted when a new Cartridge is correctly installed.</li> </ul>

**Troubleshooting with the Card and Ink LED (continued)**

<b>Step</b>	<b>Description</b>
4	<p>Determine if the Printer correctly detects and reports empty, illegal or improperly loaded Ink Cartridges.</p> <ul style="list-style-type: none"><li>• <b>Ink LED (illegal Ink Cartridge):</b> Before running out of ink and having a new Ink Cartridge installed, the Printer correctly validates the replacement Cartridge and reports that it is illegal via the ink LED.</li><li>• <b>Technician Note:</b> Ensure that printing continues and that printing are restarted when the Ink Cartridge is replaced with a good Cartridge.</li></ul>
5	<p>Determine if the Printer correctly detects and reports empty, illegal or improperly loaded Card and Ink Cartridges.</p> <ul style="list-style-type: none"><li>• <b>Ink LED (bad tag):</b> Before running out of ink and having a new Ink Cartridge installed, the Printer correctly validates the replacement Cartridge and reports that it has a bad tag via the ink LED.</li><li>• <b>Technician Note:</b> Ensure that printing continues and that printing are restarted when the Ink Cartridge is replaced with a legal Cartridge.</li></ul>

## Troubleshooting with the Printer Driver Ink Fuel Gauges

Step	Description
1	Determine if the Printer Driver Ink Fuel Gauge correctly provides the Operator with a display of the estimated amount of ink remaining in the Cartridge when the Operator requests it.

## Troubleshooting with the normal Printer Driver Preference Options

Step	Description
1	Ensure that when the Operator selects normal Printer Driver preference options, the cards are printed with color reproduction matching the required color characteristics of a sample image to within acceptable limits.

## Troubleshooting with the Magnetic Encoding Module (both 410/C7 models)

Step	Description
1	<p>Ensure that the Printer (which has had a Magnetic Encoding module installed) correctly:</p> <ul style="list-style-type: none"> <li>• Prints an image when the Operator provides Magnetic Encoding as part of the requested card image data via the Driver software.</li> <li>• Encodes HiCo Magnetic Encoding data onto a magnetic strip on each card.</li> </ul>

## Troubleshooting with the Error Messages

Step	Description
1	<p>Determine if the Printer performs these functions:</p> <ul style="list-style-type: none"> <li>• <b>Encoding Errors:</b> The Printer traps and reports encoding error responses via required LED illumination and messages at the Driver Operator Interface.</li> <li>• <b>Technician Note:</b> Ensure that Batch jobs are correctly resumed and that after an error has been detected and reported, an <b>Encoding Retry</b> option is provided the Operator via an on-screen button that correctly initiates an attempt to re-encode the card when selected.</li> </ul>
2	<p>Determine if the Printer performs these functions:</p> <ul style="list-style-type: none"> <li>• <b>Card Feeding Errors:</b> The Printer correctly detects the card feed error condition and indicates a fatal error condition via the Card LED and a PC on-screen error message indicating a card feeding error via the Driver Operator Interface.</li> <li>• <b>Technician Note:</b> After an error has been detected and reported, physically fix the card feed error conditions and press the card button to correctly initiate an attempt to resume the print job starting with a fresh card.</li> </ul>
3	<p>Determine if the Printer performs these functions:</p> <ul style="list-style-type: none"> <li>• <b>LED and PC on-screen Error Messages:</b> The Printer correctly detects the card printing jam condition and indicates a fatal error condition via Card LED and a PC on-screen error message via the Driver Operator Interface.</li> <li>• <b>Technician Note:</b> After an error has been detected and reported, open the cover and removing the jammed card and then close the cover to correctly initiate an attempt to continue the print job starting with a fresh card.</li> </ul>

## Troubleshooting with the Printer connections

Step	Description
1	<p>Ensure that Printer connections provide these functions:</p> <ul style="list-style-type: none"> <li>• <b>PC via a USB cable connection:</b> When a Printer is connected to a host PC via a USB cable, device initialization and Firmware downloading occur when Printer start-up is initiated.</li> <li>• <b>Technician Note:</b> Ensure that the cards are printed with acceptable color reproduction and image placement when the Operator selects normal Printer Driver preference options and initiates a print job.</li> </ul>
2	<p>Ensure that Printer connections provide these functions:</p> <ul style="list-style-type: none"> <li>• <b>US power source connection:</b> When a Printer is connected to a domestic US power source via appropriate power cord, device initialization and Firmware downloading occur when Printer start-up is initiated.</li> <li>• <b>Technician Note:</b> Ensure that the cards are printed with acceptable color reproduction and image placement when the Operator selects normal Printer Driver preference options and initiates a print job.</li> </ul>
3	<p>Ensure that Printer connections provide these functions:</p> <ul style="list-style-type: none"> <li>• <b>Non-domestic power source connection:</b> When a Printer is connected to a specific non-domestic power source via the appropriate supplied power cord, device initialization and Firmware downloading occur when Printer start-up is initiated.</li> <li>• <b>Technician Note:</b> Ensure that the cards are printed with acceptable color reproduction and image placement when the Operator selects normal Printer Driver preference options and initiates a print job.</li> </ul>

## Troubleshooting the Card Jam

If a card becomes jammed inside the Printer, the Card LED light will flash and the Printer will pause operation. Refer to the following steps for instructions to clear the jam:

Step	Procedure
1	Leave the power ON and open the Printer's Top Cover.
2	Remove the Card Cartridge.
3	Locate the jammed card and remove it from the Printer.
4	Press the <b>Card</b> button to resume printing.
5	Close the Top Cover and reload the Card Cartridge.

## Troubleshooting with the Host Driver Download Software

Step	Description
1	<p>Troubleshooting as follows:</p> <ul style="list-style-type: none"> <li>• <b>Software downloaded:</b> The host Driver download software automatically opens and prompts the Operator through the Driver installation process when the Driver CDROM is loaded into the PC.</li> <li>• <b>Technician Note:</b> Ensure that device initialization and Firmware downloading occur when Printer start-up is initiated and cards are printed with acceptable color reproduction and image placement when the Operator initiates a print job following Driver installation.</li> </ul>

## Troubleshooting with an open Printer Top Cover

Step	Description
1	<p>Troubleshooting as follows:</p> <ul style="list-style-type: none"> <li>• <b>Open Printer Top Cover:</b> When a print job and the Printer is initiated with normal conditions and the Printer Top Cover is opened during the print process, the Firmware will trap the condition and will put the Printer into a Safe Pause mode.</li> <li>• <b>Technician Note:</b> Ensure that the Printer will restart the operation and will continue printing cards after the Operator closes the Printer Top Cover. See CardJet Engineering Drawing R400019 in the appendix.</li> </ul>



## Resolving the CardJet Card Printer problems

Refer to the **Technician Handbook for CardJet Card Printers** in Section 1 (as needed).

### Resolving the Printer Startup problems

Step	Description
1	<p>Troubleshooting as follows:</p> <ol style="list-style-type: none"><li data-bbox="347 537 1399 600">a. Ensure that the Printer Driver is installed, the interface cable is connected and the power cord is plugged in securely on both ends and that the Printer is ON.</li><li data-bbox="347 621 1114 653">b. Confirm power is applied by pressing the <b>Power</b> button.</li><li data-bbox="347 674 1360 737">c. Be sure the Printer is ready. (<b>Note:</b> The blue Power LED light should be lit when the Printer is ready to print.)</li><li data-bbox="347 758 1349 821">d. No other LED lights should be lit when the Printer is in ready mode. If they are, verify that Ink and Card Cartridges are properly installed.</li><li data-bbox="347 842 1349 926">e. Make certain that the Printer cable is securely connected. (<b>Note:</b> An error message in the software application telling you that the Printer is not responding is often due to a missing or defective interface cable.)</li></ol>

## Resolving the Bar Code problems

Step	Description
1	Are you using an infrared bar code scanner? If so, select the Infrared Bar Codes option within the Image Color tab. ( <b>Note:</b> This option directs the Printer to print black text and bar codes with the black pigmented Ink Cartridge which is required for printing infrared bar codes.)

## Resolving the Off-center Card Printing problems

Use the **Image Position** tab in the Driver to precisely center the image. See the [Selecting the Image Position tab](#).



## Resolving the pixelated or grainy ID Card Photo problems

Step	Description
1	<p>For best photo-realistic output, you should always use high resolution, 24-bit color images.</p> <ul style="list-style-type: none"><li>• If scanning an image, always scan the image at a 24-bit color setting, at the same size at which you will be printing and at a minimum of 300 dpi or higher, depending on the image size and the application.</li><li>• If you stretch or blow up a small or low resolution image, you will always get a pixelated or grainy effect when printing.</li><li>• If capturing images with a digital camera or video camera, be sure the camera has a high enough resolution for photos to be printed at about the same size at which they were captured.</li></ul>



# Section 4: Printer Adjustments



The purpose of this section is to provide the Operator with specific information on Printer adjustment procedures. Refer to the **Technician Handbook for CardJet Card Printers** in Section 1 (as needed).

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## Safety Messages (review carefully)

Symbol	Critical Instructions for Safety purposes
<p><b>Danger:</b></p> 	<p><b>Failure to follow these installation guidelines can result in death or serious injury.</b></p> <p>Information that raises potential safety issues is indicated by a warning symbol (as shown to the below).</p> <ul style="list-style-type: none"> <li>• <b>To prevent personal injury</b>, refer to the following safety messages before performing an operation preceded by this symbol.</li> <li>• <b>To prevent personal injury</b>, always remove the power cord prior to performing repair procedures, unless otherwise specified.</li> <li>• <b>To prevent personal injury</b>, Ensure only qualified personnel perform these procedures.</li> </ul>
<p><b>Caution:</b></p> 	<p><b>This device is electrostatically sensitive. It can be damaged if exposed to static electricity discharges.</b></p> <p>Information that raises potential electrostatic safety issues is indicated by a warning symbol (as shown to the below).</p> <ul style="list-style-type: none"> <li>• <b>To prevent equipment or media damage</b>, refer to the following safety messages before performing an operation preceded by this symbol.</li> <li>• <b>To prevent equipment or media damage</b>, observe all established Electrostatic Discharge (ESD) procedures while handling cables in or near the Circuit Board and Printhead Assemblies.</li> <li>• <b>To prevent equipment or media damage</b>, always wear an appropriate personal grounding device (e.g., a high quality wrist strap grounded to avoid potential damage).</li> <li>• <b>To prevent equipment or media damage</b>, always remove the Ribbon and Cards from the Printer before making any repairs, unless otherwise specified.</li> <li>• <b>To prevent equipment or media damage</b>, take jewelry off of fingers and hands, as well as thoroughly clean hands to remove oil and debris before working on the Printer.</li> </ul>

## Additional Safety Precautions for CardJet Technicians (review carefully)

Symbol	Critical Instructions for Safety purposes
<p data-bbox="289 394 406 426"><b>Danger:</b></p> 	<p data-bbox="480 394 1287 459"><b>Before operating the unit, please read the following safety precautions carefully:</b></p> <ul style="list-style-type: none"> <li data-bbox="480 480 1312 543">• <b>Fire or Shock Hazard:</b> Prevent fire or shock hazard by not exposing the unit to rain or moisture.</li> <li data-bbox="480 564 1369 695">• <b>Electronic Shock:</b> Reduce the risk of electronic shock by not removing the front, top or back Panels. No Operator-serviceable parts inside. (<b>Technician Note:</b> Refer servicing to qualified service personnel.)</li> <li data-bbox="480 716 1398 879">• <b>Correct Voltage Rating:</b> Operate the unit only on 100-240 VAC, 50/60 Hz. (<b>Technician Note:</b> If you have any doubt as to whether you have a unit with the correct voltage rating for the country's power supply, DO NOT attempt to use the unit. Contact the dealer or the factory.)</li> <li data-bbox="480 900 1378 1031">• <b>Liquid or Solid Object:</b> Stop operation immediately if any liquid or solid object should fall into the cabinet. (<b>Technician Note:</b> Unplug the unit and have it checked by qualified service personnel.)</li> <li data-bbox="480 1052 1369 1115">• <b>AC power cord:</b> Use only the AC power cord included with this unit or an equivalent cord.</li> <li data-bbox="480 1136 1344 1230">• <b>ESD procedures:</b> Be sure to observe all established Electro-Static Discharge (ESD) procedures while handling cables in or near the Circuit Board.</li> <li data-bbox="480 1251 1378 1346">• <b>Grounding Device Safeguards:</b> Always wear an appropriate personal grounding device, such as a wrist strap with integral resistor, connected to an ESD ground to avoid potential damage.</li> <li data-bbox="480 1367 1382 1566">• <b>Electrostatic Sensitive Device:</b> At a minimum, make positive contact with the bare metal chassis of the Printer with the hand before proceeding with the procedure. (<b>Technician Note:</b> This device is electrostatic sensitive. It may be damaged if exposed to static electrical discharges. Discharges may be generated by various means, such as walking on a carpeted floor.)</li> </ul>

## Installing the Windows Printer Driver

The Printer Driver software is located on the Software Installation CD included with the Printer. If you would like to provide others with these instructions, however, the following describes how to install the Printer Driver.

**IMPORTANT!** Do not connect the Printer to the PC before asked to do so. The Printer Driver installation program will prompt you when to connect the Printer.

### Installing the Printer Driver from the Software Installation CD

To install the Printer Driver, refer to the following steps:

Step	Procedure
1	Close down all other programs and insert the Software Installation CD into the computer's CD drive.
2	The CD will automatically open (if it does not open, go the procedure on the next page.). Click on the photo of the specific Printer model to begin installation.





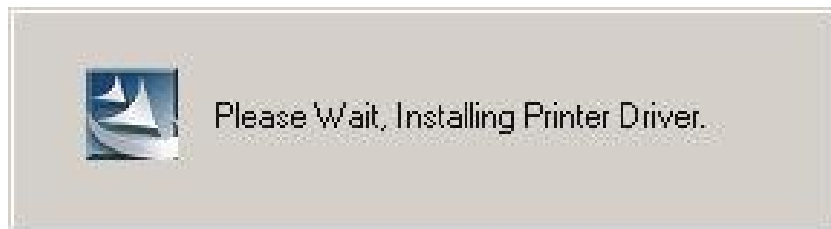
**Installing the Windows Printer Driver (continued)**

<b>Step</b>	<b>Procedure</b>
3	Follow the on-screen instructions to complete installation. When prompted, connect the Printer to the computer using a USB cable. <b>DO NOT connect the Printer to the computer until prompted by the installation program.</b>
4	The Online Operator's Guide will also automatically install along with the Printer Driver. An icon for this will appear in the <b>Start &gt; Programs &gt; Fargo</b> folder.  Select this icon to open the Online Operator's Guide any time you have a question about operating the Printer.



**Installing the Windows Printer Driver (continued)**

Step	Procedure
5	The InstallShield Wizard will now open to configure the Windows Installer. Wait during this initialization process.



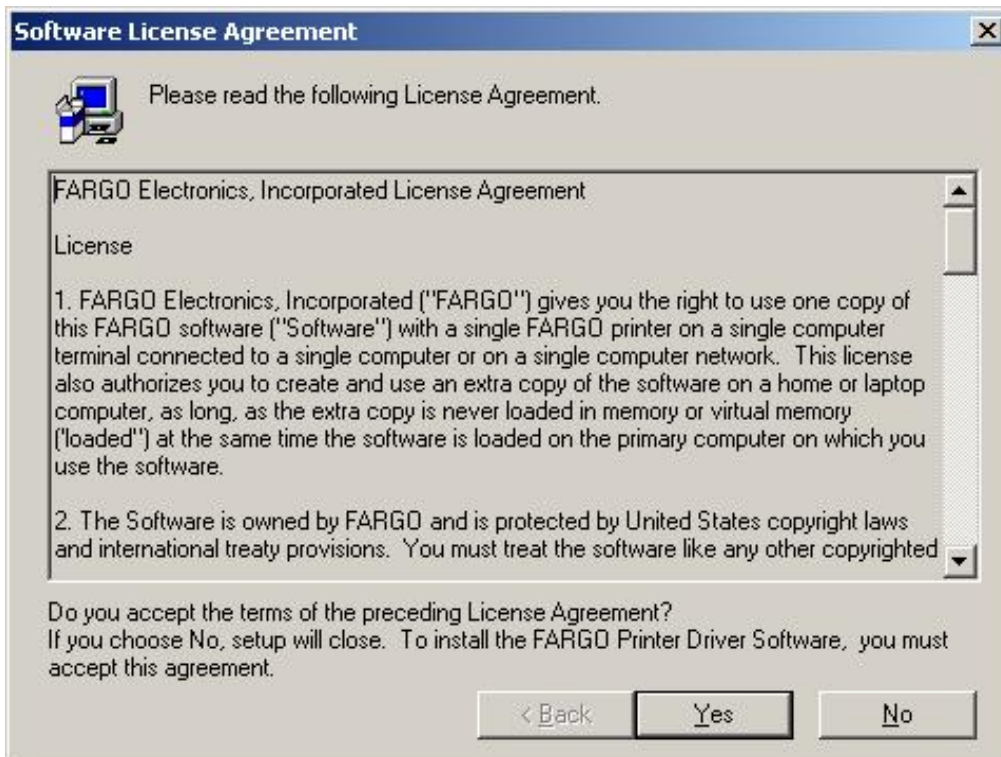
### Installing the Windows Printer Driver (continued)

Step	Procedure
6	<p>This window will remind you to save your work and close all open applications before starting the installation.</p> <p>Click on the <b>Next</b> button.</p>



**Installing the Windows Printer Driver (continued)**

Step	Procedure
7	Select the <b>Yes</b> button after reading the agreement.



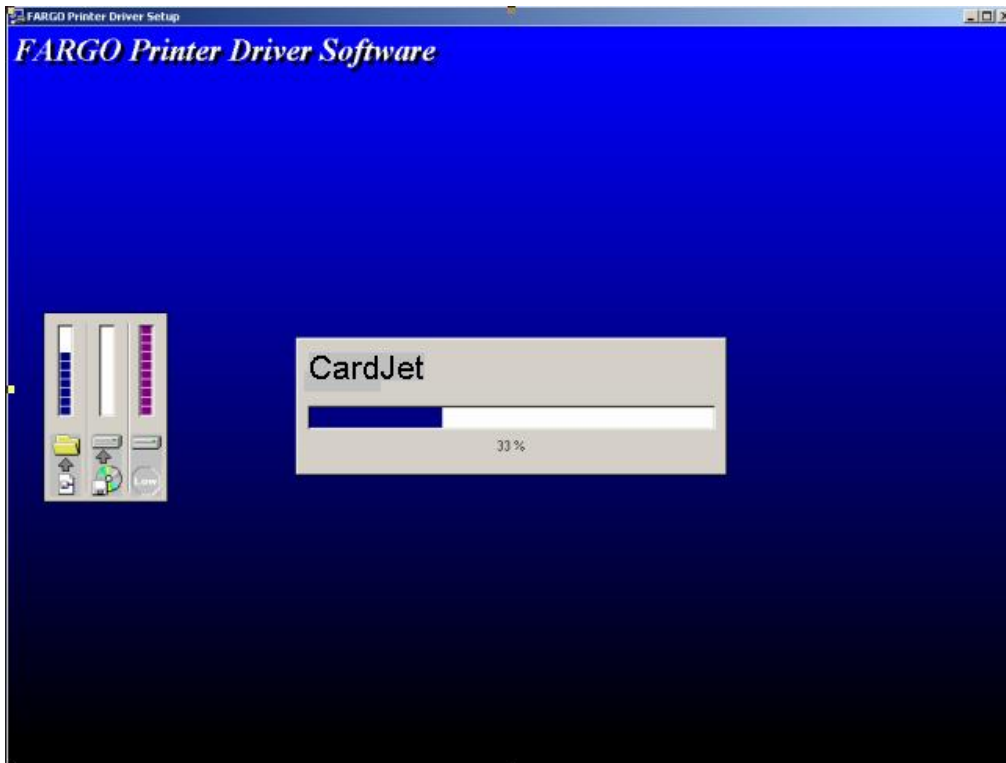
### Installing the Windows Printer Driver (continued)

Step	Procedure
8	Select either the Glossy Card Stock or Matte Card Stock radio button (as needed).



**Installing the Windows Printer Driver (continued)**

Step	Procedure
9	Now, all CardJet Printer Driver components are being copied to your PC.



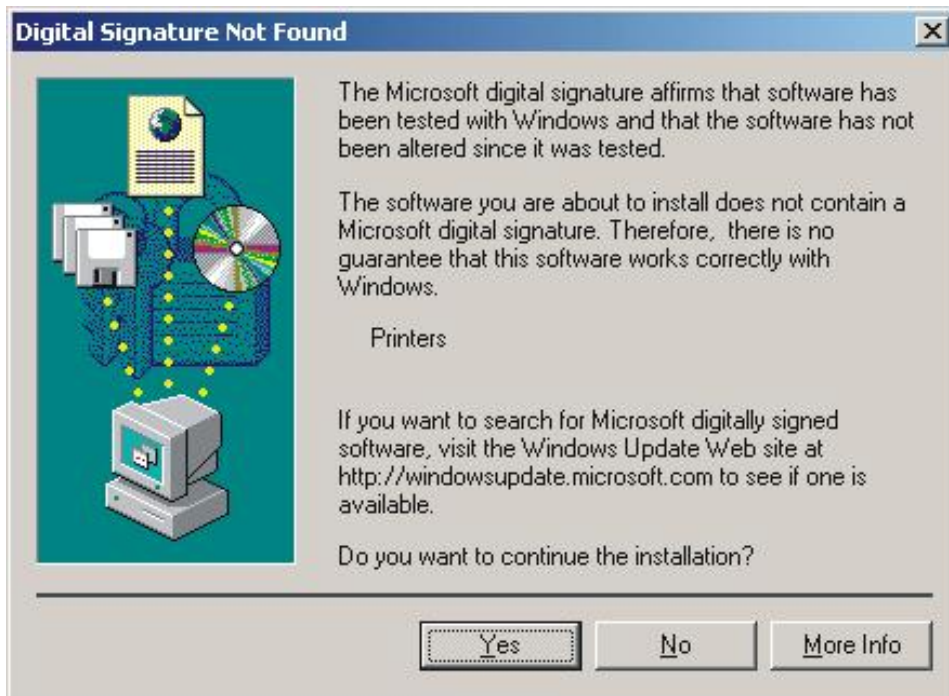
**Installing the Windows Printer Driver (continued)**

Step	Procedure
10A	<b>(Windows XP only).</b> Windows XP users will encounter the Warning message, shown on the next page. Fargo Electronics, Inc. has extensively tested this software with Windows XP and has found no incompatibilities.  Click on the <b>Continue Anyway</b> button.



**Installing the Windows Printer Driver (continued)**

Step	Procedure
10B	<b>(Windows 2000 only).</b> Windows 2000 users will encounter this Warning message. Click on the <b>Yes</b> button.





### Installing the Windows Printer Driver (continued)

Step	Procedure
11	Wait while all Printer Driver files are copied to your PC.



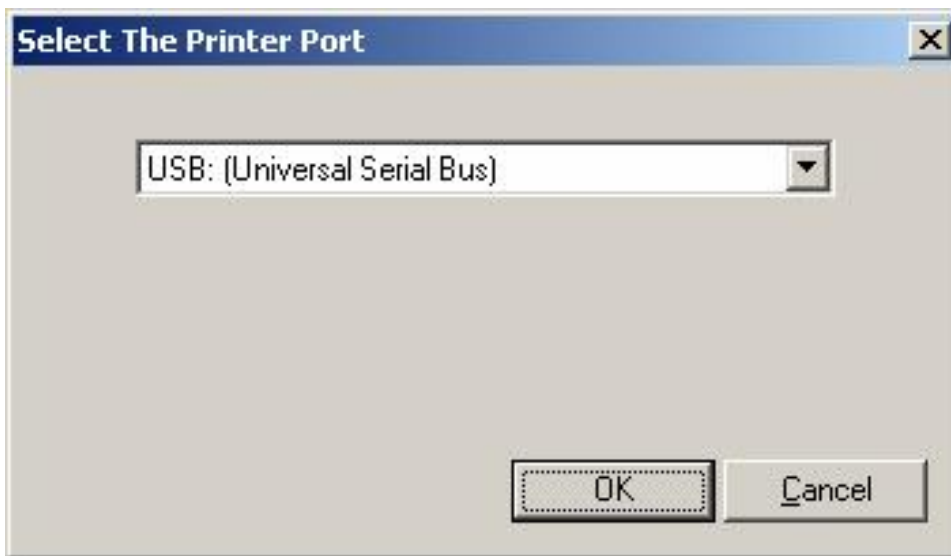
**Installing the Windows Printer Driver (continued)**

Step	Procedure
12	<b>(Windows XP only).</b> Click on the <b>Continue Anyway</b> button.



**Installing the Windows Printer Driver (continued)**

Step	Procedure
13	Leave the Printer Port selection on USB: (Universal Serial Bus). Click on the <b>OK</b> button.



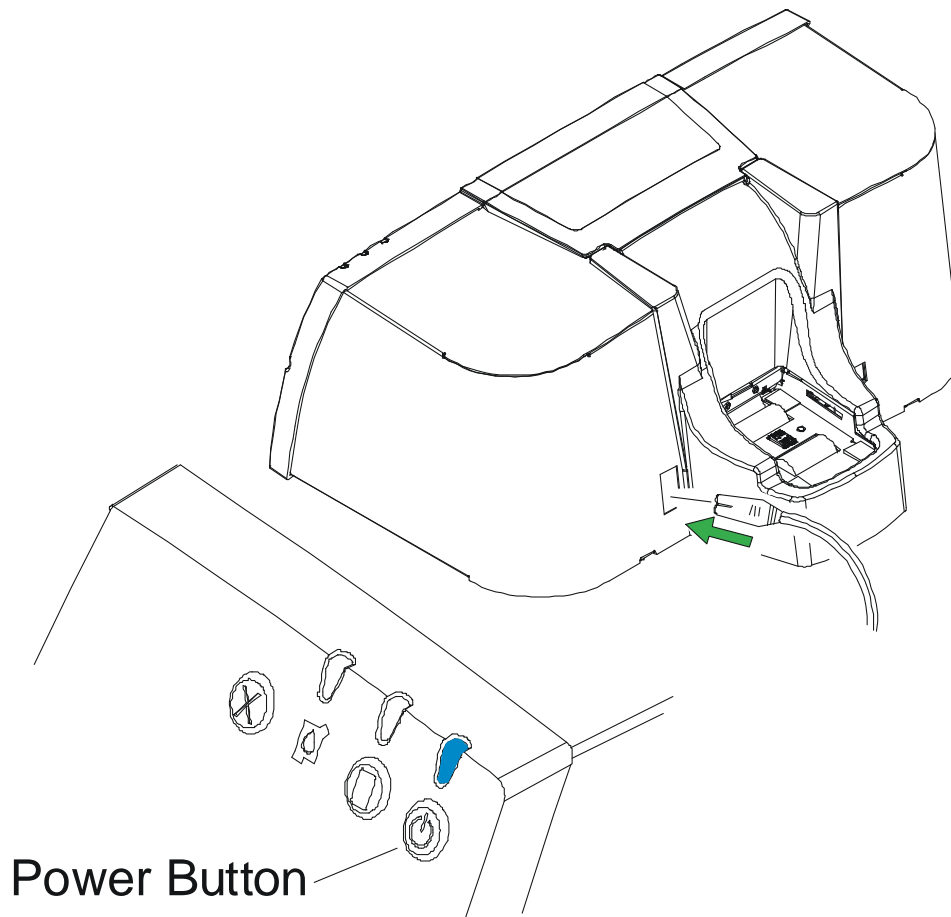
**Installing the Windows Printer Driver (continued)**

Step	Procedure
14	See Steps 11 and 12 for illustrations of the Power and USB cable connections at this time.



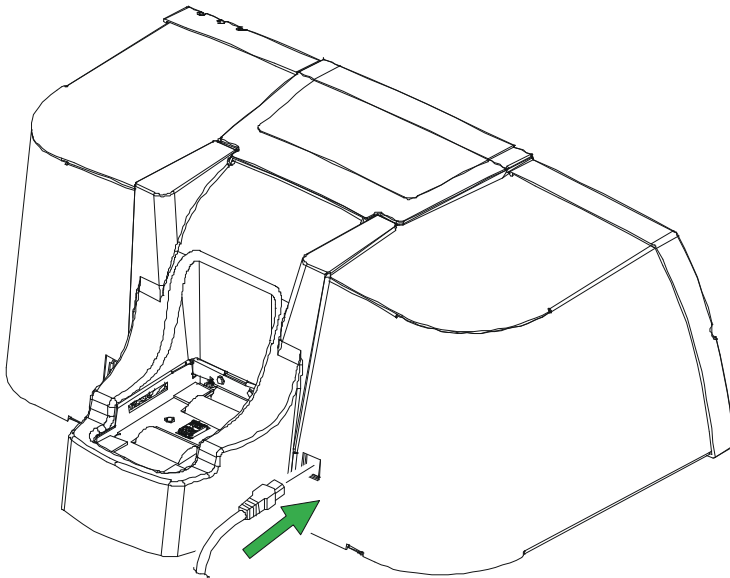
**Installing the Windows Printer Driver (continued)**

Step	Procedure
15	Connect the Power Cable to a power outlet. Plug the other end into the Printer. Press the <b>Power</b> button to turn <b>ON</b> the power.



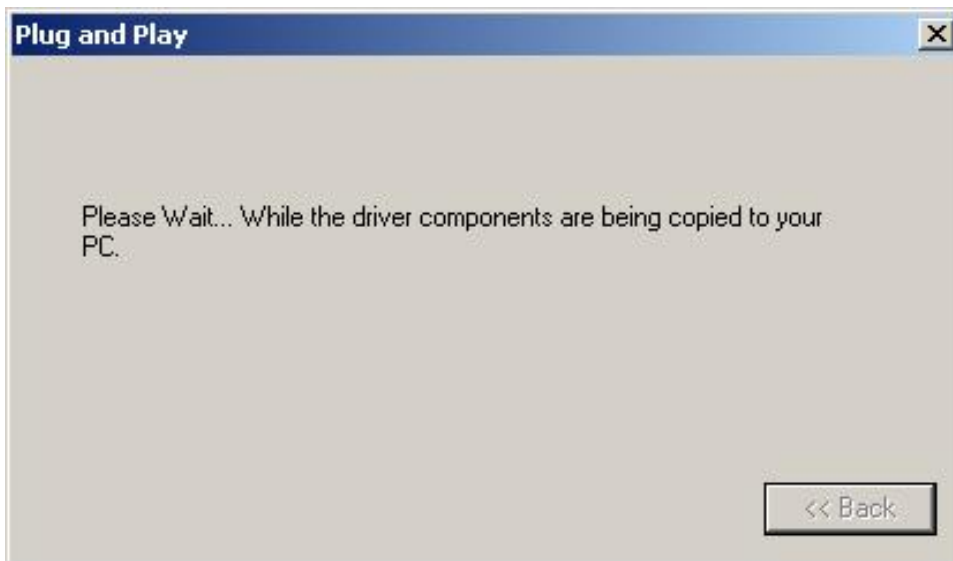
**Installing the Windows Printer Driver (continued)**

<b>Step</b>	<b>Procedure</b>
16	a. Plug one end of the USB cable into the Printer's USB port. b. Plug the other end into a USB port on the PC.



**Installing the Windows Printer Driver (continued)**

Step	Procedure
17	Please wait while the Driver components are being copied to your PC.



## Installing the Windows Printer Driver (continued)

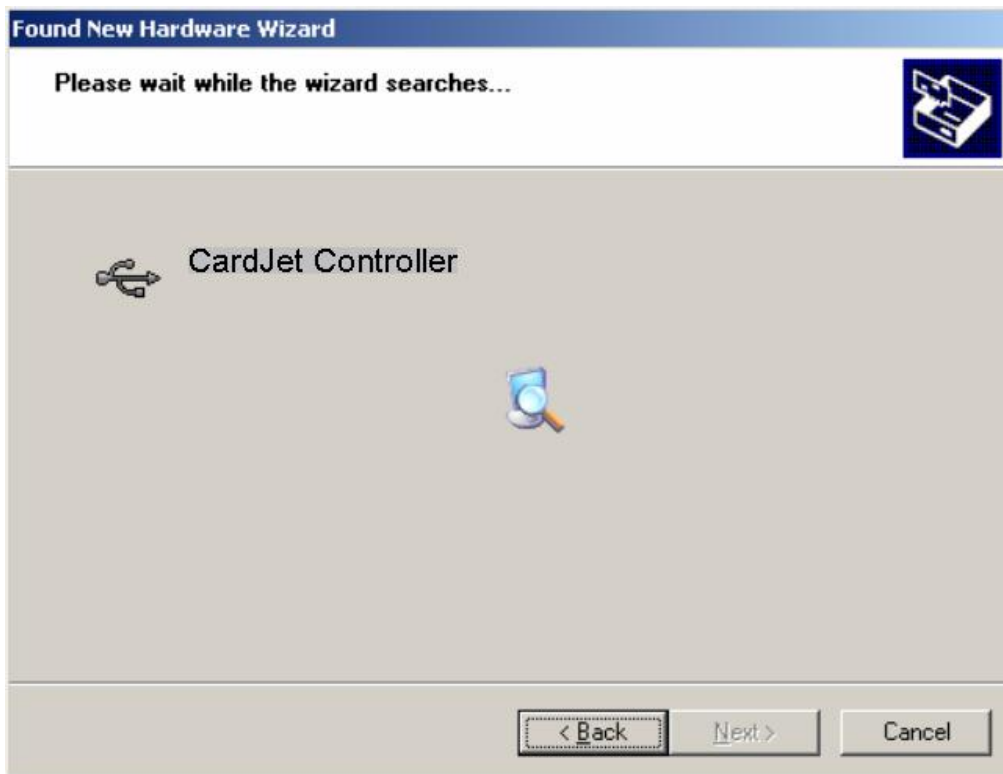
Step	Procedure
18	<b>(Windows XP only).</b> This default setting allows you to install the Printer Controller component. Click on the <b>Next</b> button.





**Installing the Windows Printer Driver (continued)**

Step	Procedure
19	<b>(Windows XP only).</b> Please wait while installation of the Printer Controller begins.



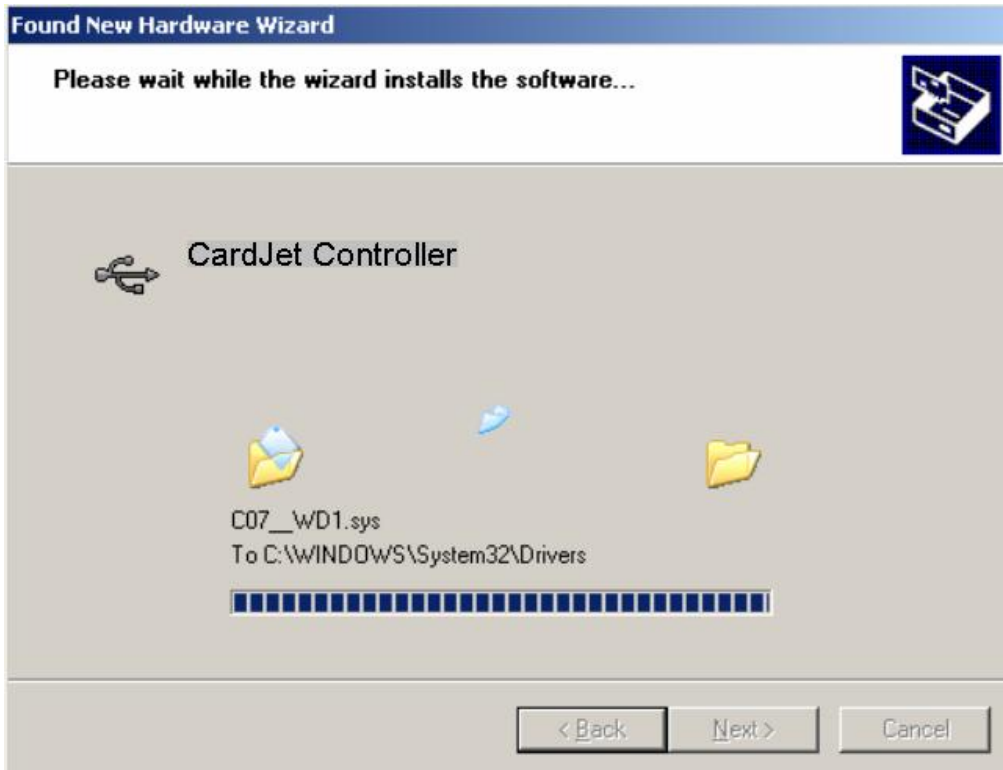
**Installing the Windows Printer Driver (continued)**

Step	Procedure
20	<b>(Windows XP only).</b> Select the <b>Continue Anyway</b> button.



### Installing the Windows Printer Driver (continued)

Step	Procedure
21	<b>(Windows XP only).</b> Please wait while the Printer Controller installation continues.



### Installing the Windows Printer Driver (continued)

Step	Procedure
22	<b>(Windows XP only).</b> The Printer Controller has been successfully installed. Click on the <b>Finish</b> button to close the wizard.



**Installing the Windows Printer Driver (continued)**

Step	Procedure
23	<b>(Windows XP only).</b> This default setting allows you to install the Printer Driver. Click on the <b>Next</b> button.



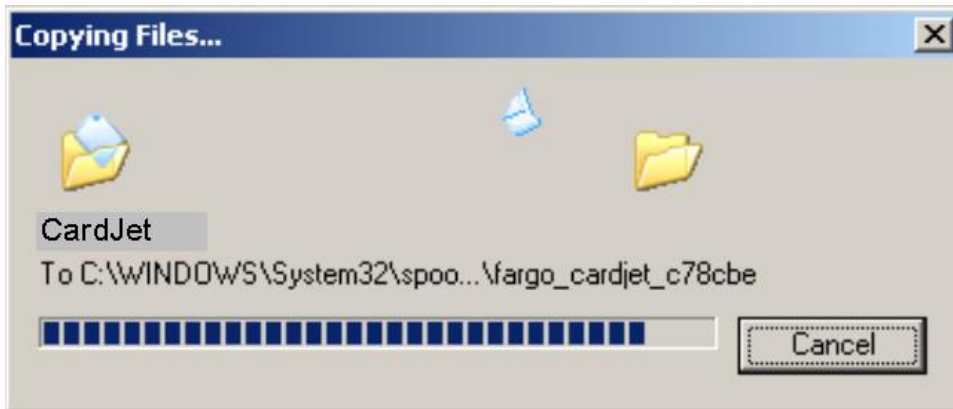
**Installing the Windows Printer Driver (continued)**

Step	Procedure
24	<b>(Windows XP only).</b> Click on the <b>Continue Anyway</b> button.



### Installing the Windows Printer Driver (continued)

Step	Procedure
25	Wait while the Printer Driver files are copied to your PC.



### Installing the Windows Printer Driver (continued)

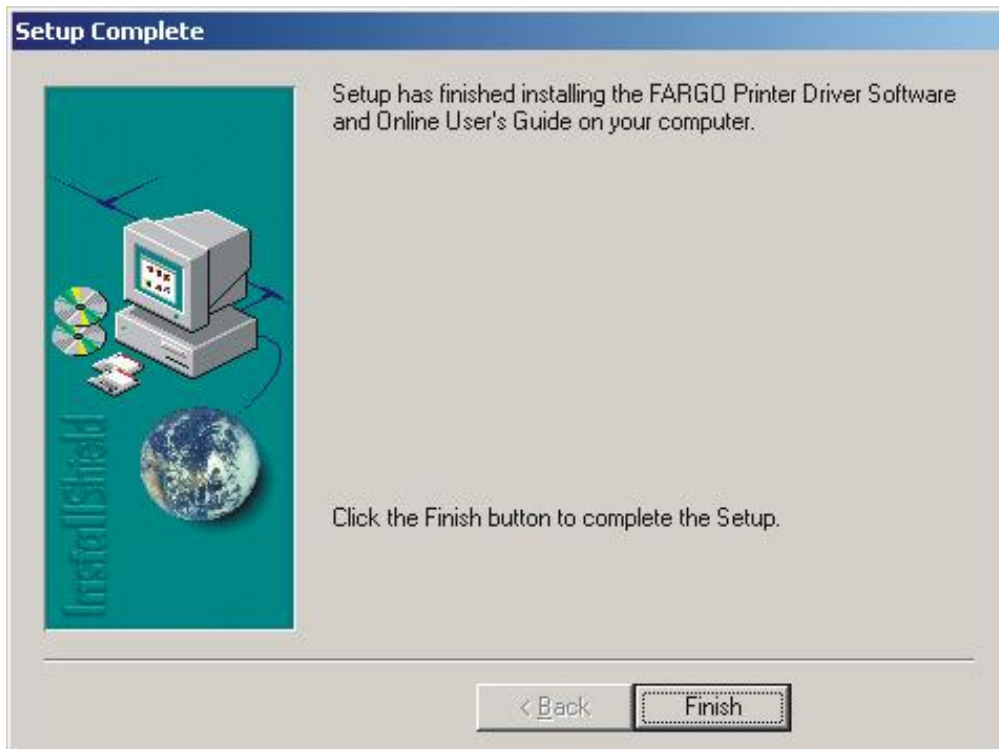
Step	Procedure
26	Click on the <b>Finish</b> button. The Printer Driver has been successfully installed.





**Installing the Windows Printer Driver (continued)**

Step	Procedure
27	a. Click on the <b>Finish</b> button. All Printer files have been installed on your PC. b. Proceed to Steps 25 through 29 to install the Build-A-Badge software.



## Resolving the unopened CD Installer Program problem

If the CD installer program does not automatically open when the CD is inserted into the computer, refer to the following steps to manually open the CD installer:

Step	Procedure
1	Insert the Software Installation CD into the computer's CD drive.
2	Use <b>My Computer</b> or <b>Windows Explorer</b> to view the contents of the CD. Windows Explorer can be opened by selecting it from the Start, Programs Menu.
3	Double-click on the <b>Setup.exe</b> file listed on the CD.
4	The CD will automatically open and prompt you to click on the photo of the specific Printer model to begin installation. ( <b>Note:</b> Follow the on-screen instructions to complete installation. Once installed, the Card Printer icon for the specific Printer model will appear in the Printers folder.)

## Installing the Printer Driver Updates

Occasionally, new Printer Driver versions are released which have new or updated features. To check on what version you have, select the **About** box under the Card tab.

Step	Procedure
1	<p>Before installing an updated Printer Driver version, always delete the existing Printer Driver version from the system.</p> <p>To do this, select Start, Programs and point to the Fargo folder.</p>
2	<p>Select the <b>Uninstall Printer Driver</b> icon for the specific Printer model as shown here.</p>
3	<p>Once the existing Printer Driver is deleted, the updated version can be installed. (<b>Note:</b> The best way to get Printer Driver updates is to download them from the Fargo Website.)</p> <p>If prompted to restart your computer, follow the instructions to do so.</p>
4	<p>Access the Fargo Website at <a href="http://www.Fargo.com">www.Fargo.com</a> in order to download Printer Driver updates. (<b>Note:</b> The following instructions explain how to download and install updated Printer Drivers.)</p>



## Downloading the Printer Driver Files

Downloadable Printer Driver files have names ending in **.exe** and are self-extracting WinZip archives. (**Note:** A WinZip archive is a package, containing one or more files, that have been zipped to make it smaller and provide easy downloading of numerous files simultaneously. An archive that is self-extracting is capable of "unzipping" itself.)

Step	Procedure
1	To download the latest Printer Driver version, click on the Printer Driver's highlighted ".exe" file name on the web site. ( <b>Note:</b> You will then be prompted to Save this program to disk.)
2	Click <b>OK</b> , then choose the folder in which you would like to save the Printer Driver file. ( <b>Note:</b> You may want to save it in an empty folder to prevent mingling its files with other folders already on the computer.)
3	Once the file has completely downloaded to the computer, unzip the contents of the file by simply double-clicking on it. ( <b>Note:</b> The archive will unzip itself, revealing its contents as a new list of files within the folder.)

## Setting up the Printer Driver

Once the Printer Driver has been installed, you may need to select Printer Driver options other than the default settings. To open the Printer Driver setup window, please refer to the following steps for the specific operating system:

**IMPORTANT!** Before you can print, the Printer Driver must be installed and the Printer's power and USB cables must be connected. Also, be sure Ink and Card Cartridges are installed. Do not connect the Printer to the PC before asked to do so.

### Windows 98 / Windows Millennium

Step	Procedure
1	Select <b>Start</b> button, <b>Settings</b> and <b>Printers</b> .
2	Double-click on the specific <b>Card Printer</b> and select <b>Properties</b> .

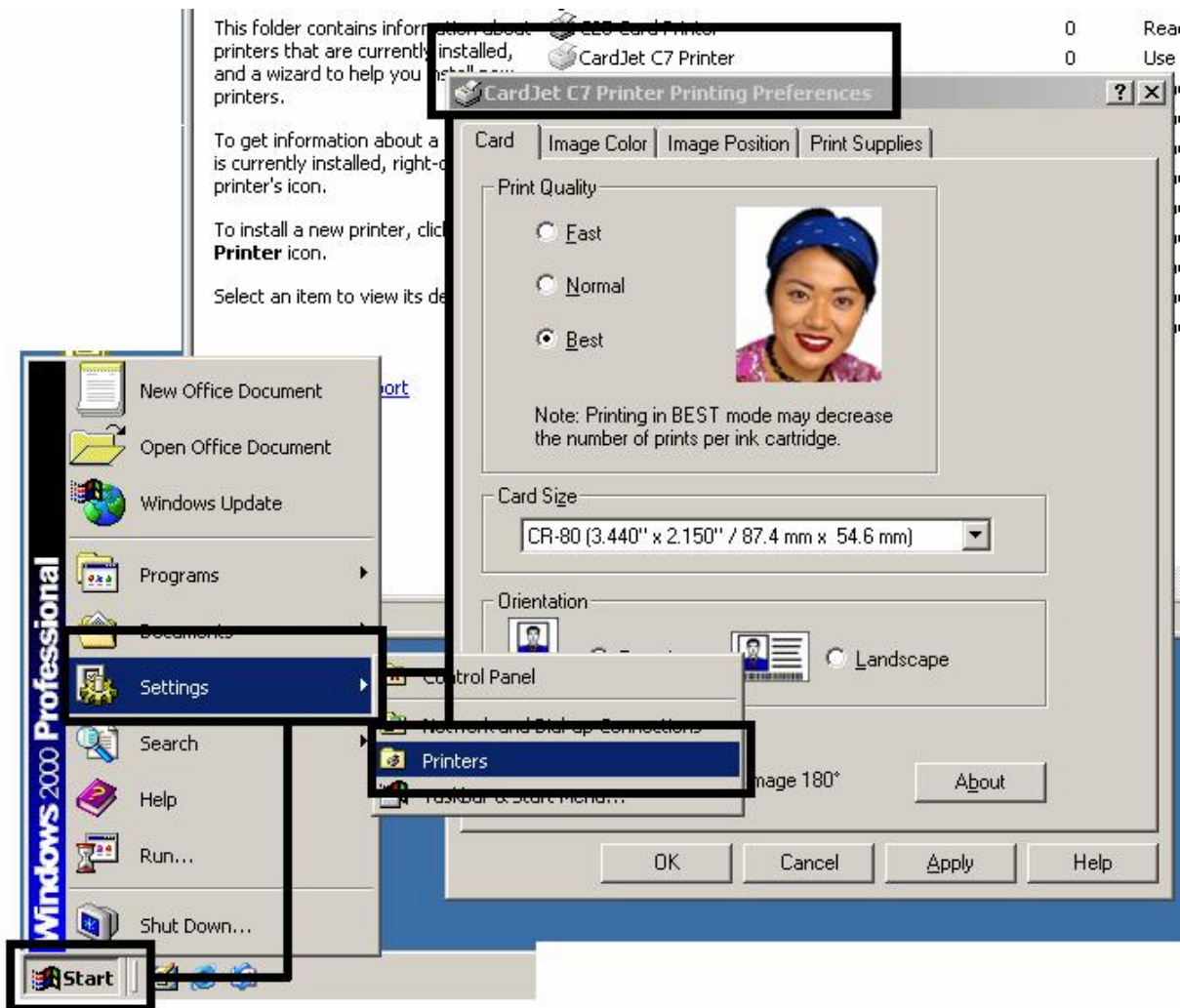
### Windows 2000 / Windows XP

Step	Procedure
1	Select the <b>Start</b> button, <b>Settings</b> and <b>Printers</b> .
2	Double-click on the specific <b>Card Printer</b> and select <b>Properties</b> , then click on <b>Printing Preferences...</b>  <b>(Note:</b> If you would like to permanently save the Printer Driver settings so you will not need to change them again, do so through the main Printer Driver setup window described above. Although most applications do allow you to change these same Printer Driver options from their own Print screens, the settings may not be permanently saved.)
3	To change or verify the appropriate Printer Driver options for the print job, please refer to the topics describing each of the Printer Driver's tabs.

# Printer Driver Options

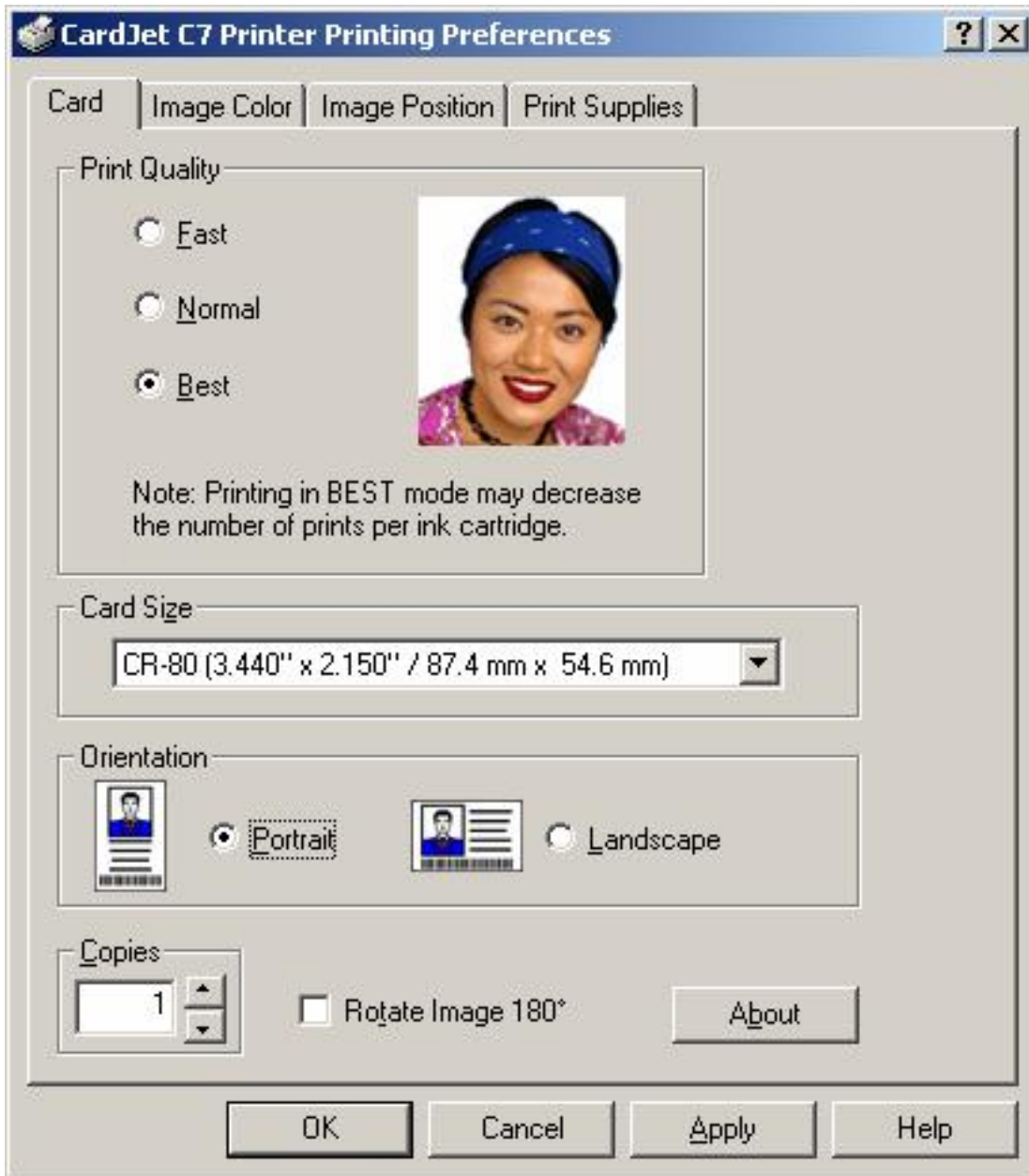
**IMPORTANT!** Fargo Card Printers require highly specialized Ink Cartridges to function properly. To maximize Printer life, reliability, printed card quality and durability, you must use only Fargo Certified Supplies. For this reason, the Fargo warranty is void, where not prohibited by law, if you use non-Fargo Certified Supplies. To order additional materials, please contact the Fargo authorized reseller.

Select Start > Settings > Printers > Printers window > CardJet 410 or CardJet C7 Card Printer Printing Preferences window to access the CardJet Printer Driver tabs, as shown below.



## Selecting the Card tab window

Select the Card tab to bring up the Card window (same in both 410/C7 models). Go to the next page.



## Selecting the Print Quality (Best, Normal or Fast print modes)

The three (3) modes of print quality are the **Best**, **Normal** or **Fast** print modes (described below). (**Note:** The Normal print mode is the default selection.)

- **Photographic Icon:** The photographic icon on the right side change in order to represent the different print quality images. The icon only changes when the selection involves the **Best**, **Normal** or **Fast** print modes. The icon does not change when the selection involves the Normal and Fast print modes.
- **Default Selection (Best):** When **Best** is selected, an additional check box will activate allowing Operators to select the use of the pigmented pen. Initially, most Operators will only need to select this if they need bar code readability by an infrared bar code scanner.

Step	Procedure
1	<p>Select either the <b>Fast</b>, <b>Normal</b> or <b>Best</b> radio buttons for the desired print quality and print speed mode.</p> <ul style="list-style-type: none"> <li>• <b>Fast Print Mode:</b> The Speed mode is 26 seconds per card / 138 cards per hour in Fast mode. <b>Fast</b> provides a very fast print, but a slightly lower level of print quality.</li> <li>• <b>Normal Print (Default) Mode:</b> The Speed mode is under 42 seconds per card / 86 cards per hour in the Normal speed mode. <b>Normal</b> provides a medium level of print quality and speed. <b>Normal</b> is the default setting.</li> <li>• <b>Best Print Mode:</b> The Speed mode is under 76 seconds per card / 47 cards per hour in the Best print mode. <b>Best</b> provides maximum print quality, but takes the longest to print. Over the edge printing is supported. The printed card is dry to the touch and does not transfer ink to hands or clothing within 5 seconds of printing.</li> </ul>





**Selecting the Print Quality (Best, Normal or Fast print modes) (continued)**



## Using the default Card Size

The **Card Size** selection indicates that the Printer accepts standard, credit card size CR-80 cards. (**Note:** The dimensions of the total print area for this card size are also given. When designing a card format, always set the card size or page size within the card design program to these exact dimensions.)

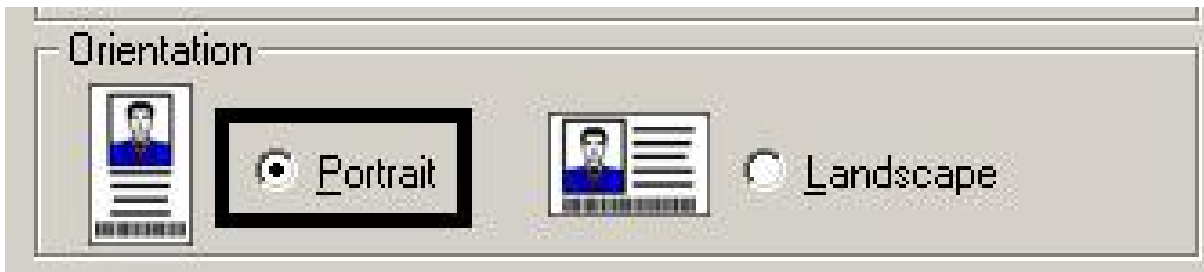
Step	Procedure
1	Note that CR-80 (3.407" x 2.147" / 86.6 mm x 54.6 mm) is pre-selected under the Card Size dropdown menu as the only default card size for this Card Printer.



## Selecting the Orientation (Portrait or Landscape)

Select either the **Portrait** or **Landscape** radio buttons for Orientation. (**Note:** An icon illustrating a printed card helps represent the difference between the two.)

Step	Procedure
1	Select <b>Portrait</b> to cause the card to print in a vertical orientation. <b>OR</b> Select <b>Landscape</b> to cause the card to print in a horizontal orientation, as shown on the below.



## Selecting the Rotate Front by 180 Degrees option

Use this option to change the position of the printed image in relation to the set location of a card's magnetic stripe.

Step	Procedure
1	<p>Select the <b>Rotate Front 180 Degrees</b> option to rotate the image on the front of the card by 180 degrees when printed. This will rotate the image 180 degrees.</p> <ul style="list-style-type: none"> <li>• <b>Default:</b> The default orientation of the image will effectively be rotated 180 to what it is currently so that in the Portrait the image will eject bottom first; if Rotate 180° is selected, the image will eject top first.</li> <li>• <b>Unselected Option:</b> When the Rotate Image 180° option is not set, the Driver will perform a 180° degree rotation of the image; when the Rotate Image 180° option is set the Driver will not perform the 180 degree rotation).</li> </ul>

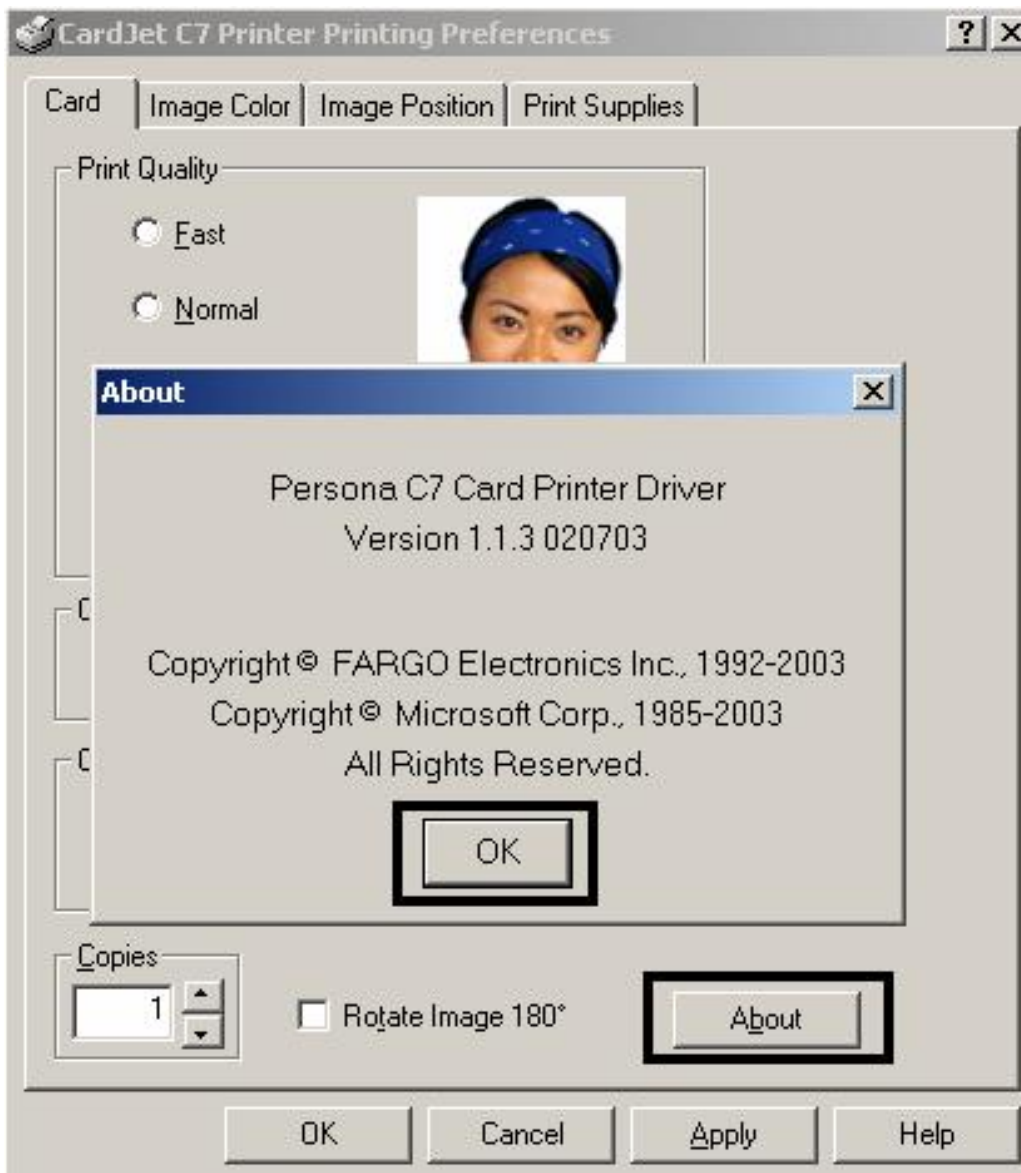
## Specifying the Copies

Specifies the number of copies to be printed, as shown above.



## Clicking on the About button

Click on this **About** button to open a dialog box containing the copyright and version information about this Printer Driver software.



## Selecting the Image Color tab

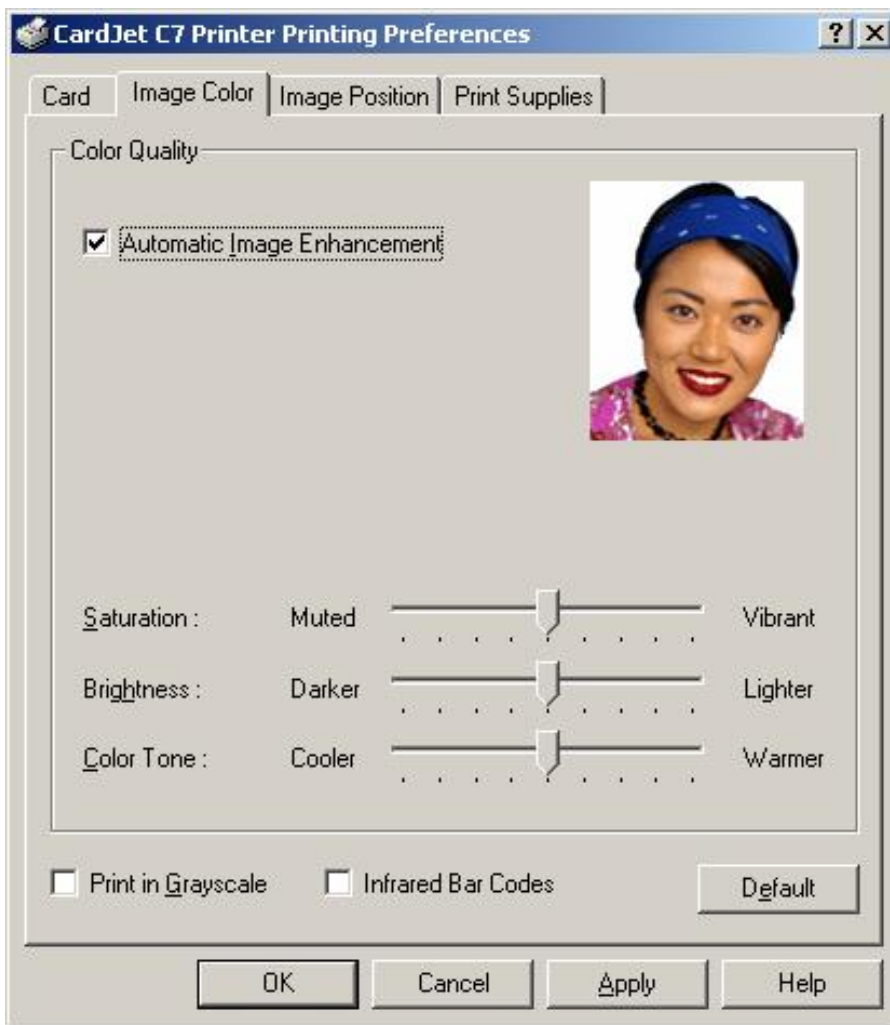
To return all options to their factory settings, click on the **Default** button. Review the information below and proceed to the procedure on the next page.

Function	Description
Automatic Image Enhancement	When selected, this allows the Driver to apply image enhancement techniques that optimize the color and print quality of most images.
Saturation, Brightness, Color Tone Sliders	<p>Allows you to control the color Saturation, Brightness and Color Tone for the specific image.</p> <p>Although the Automatic Image Enhancement generally provides the best color, you may wish to adjust these to optimize the specific image when printed.</p> <p>Click and drag on the slider to adjust. <b>(Note:</b> The photo above these options changes to show the approximate effect the adjustments will have on the printed image.)</p>
Print in Grayscale	Select this option to print only in shades of gray.
Infrared Bar Codes	<p>Select this option if you are printing bar codes which need to be read by an infrared bar code scanner. <b>(Note:</b> When this is selected, the black pigmented ink in the black Ink Cartridge will be applied where ever black appears in the image, text or bar codes. This allows extra drying time on the card to minimize smearing or to apply laminate.)</p> <p>In this mode, you may notice that drying time is slightly increased and that the overall image color may appear to have slightly more contrast. <b>(Note:</b> The black Ink Cartridge will only decrement when this option is selected.)</p> <p>Do not select this option if you are not printing bar codes or if you are printing bar codes which will be read by a visible-light scanner.</p>

## Selecting the Color Quality under the Image Color tab

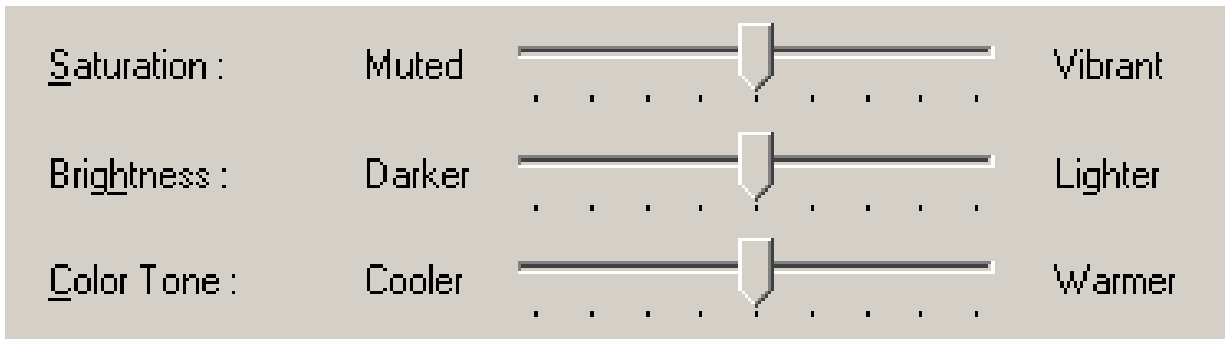
Use this option to control specific Printer functions under the Image Color tab (same in both 410/C7 models).

Step	Procedure
1	Select the <b>Automatic Image Enhancement</b> checkbox, to select a predetermined color correction mode based on HP's model optimized for Fargo. Do not select the Automatic Image Enhancement to select a manual enhancement.



## Selecting the Color Quality

Step	Procedure
1	<p>In either mode, the Operator can adjust Saturation, Brightness and Color Tone. As these are changed, the large color photo will change accordingly. These options are available only when the Print in Grayscale option is not selected. When Print in Grayscale is selected, these options are grayed out.</p> <p>Control the overall darkness and lightness of the dye-sub printed image by adjusting the slide by clicking and dragging the slide's box.</p> <ul style="list-style-type: none"> <li>• Move the <b>Saturation</b> slide to the left for Muted saturation and to the right for Vibrant saturation.</li> <li>• Move the <b>Brightness</b> slide to the left for Darker brightness and to the right for Lighter brightness.</li> <li>• Move the <b>Color Tone</b> slide to the left for Cooler color tone and to the right for Warmer color tone.</li> </ul> <p><b>(Note: .)</b></p>





## Selecting the Print in Grayscale checkbox



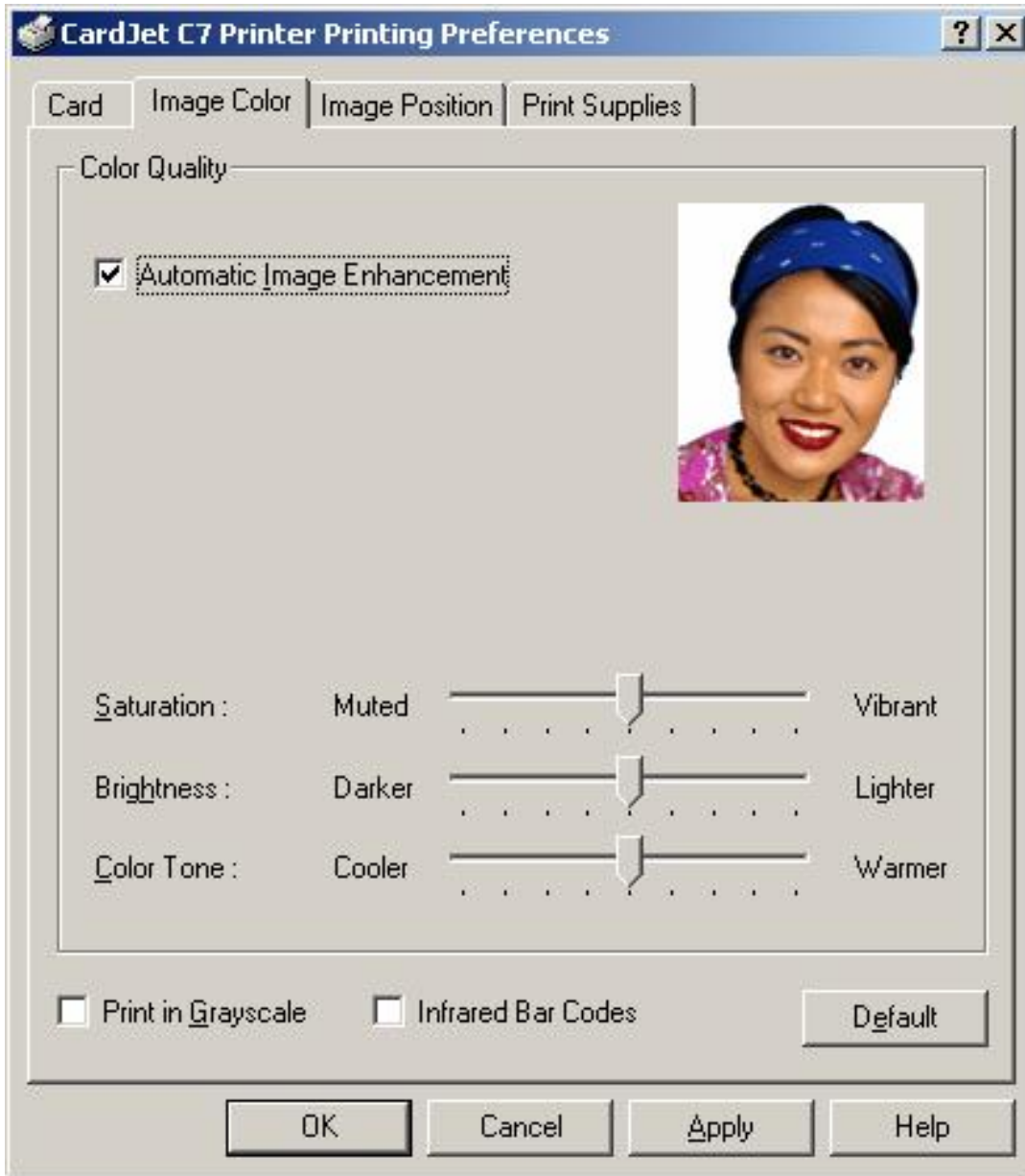
## Selecting the Infrared Bar Codes checkbox

This is only an active option in the Best print mode. See above). When selected, the Best Print Quality option will auto select and the Fast and Normal options will gray out. See the [Selecting the Print Quality \(Best, Normal or Fast print modes\)](#) procedure.

- This option forces all black pixels to be printed with both the YMC and the black pigmented pens.
- This mode will apply a minimum amount of pigmented black to minimize smudging of the pigmented inks.

## Selecting the Default button

This button returns all Print Quality and Color Quality settings to their factory settings.

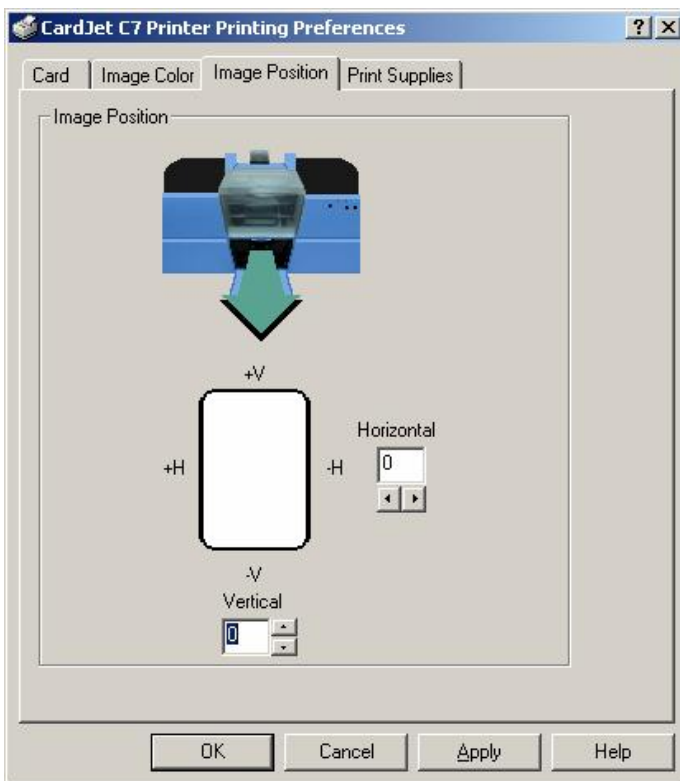


## Selecting the Image Position tab

In both 410/C7 models, the **Image Position** controls allow you to adjust the position of the overall print area to be precisely centered on a card. In most cases this adjustment is only necessary if you are printing a full-bleed image and are consistently getting a white border on one of the card edges. (**Note:** This allows Operators to fine tune the position of the print area on the card. Note that the orientation of the card icon is portrait due to the front-to-back orientation of the Printer's Card Path.)

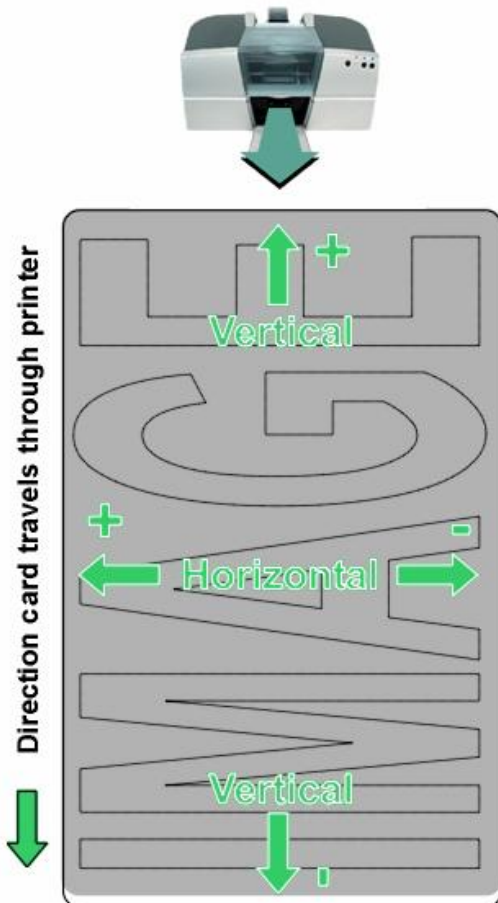
The adjustment arrows indicate the direction the image will move in relation to how the card travels through the Printer.

- **Positive Vertical** moves the image toward the rear of the Printer or trailing edge of the card.
- **Negative Vertical** moves the image toward the front of the Printer or leading edge of the card.
- **Positive Horizontal** moves the image more toward the left hand side and **negative Horizontal** moves it more toward the right hand side. The default value for both settings is 0.



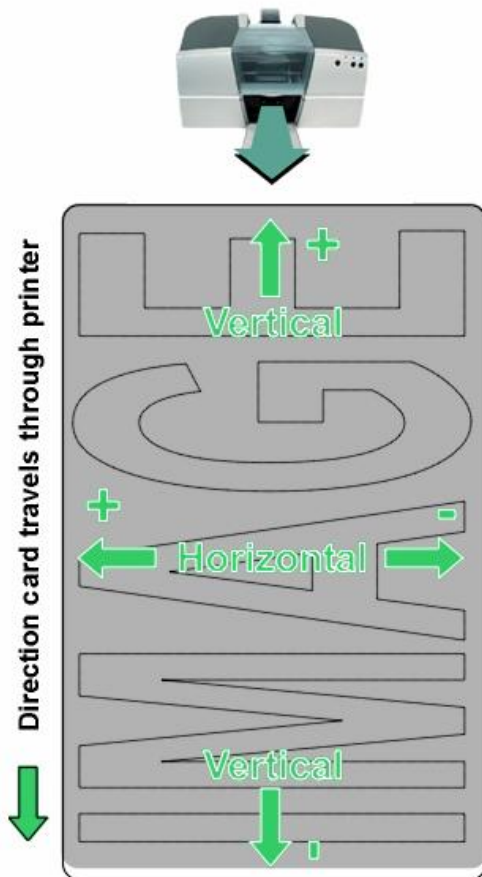
## Using the Vertical and Horizontal Adjustment arrows

Step	Procedure
1	<p>To adjust the Image Position values, click on the <b>Vertical</b> and <b>Horizontal</b> adjustment arrows. (<b>Note:</b> When adjusting these values, keep in mind that cards always remain in the same position as they travel through the Printer, regardless of image orientation.)</p> <p>To illustrate this, the blank card icon shown in the Image Position box will always remain in the same portrait orientation, regardless of the orientation of the specific image.</p> <p>The following diagram represents how the printed image will move in relation to the fixed card position as positive and negative image placement values are entered.</p>



## Using the Vertical and Horizontal Adjustment arrows

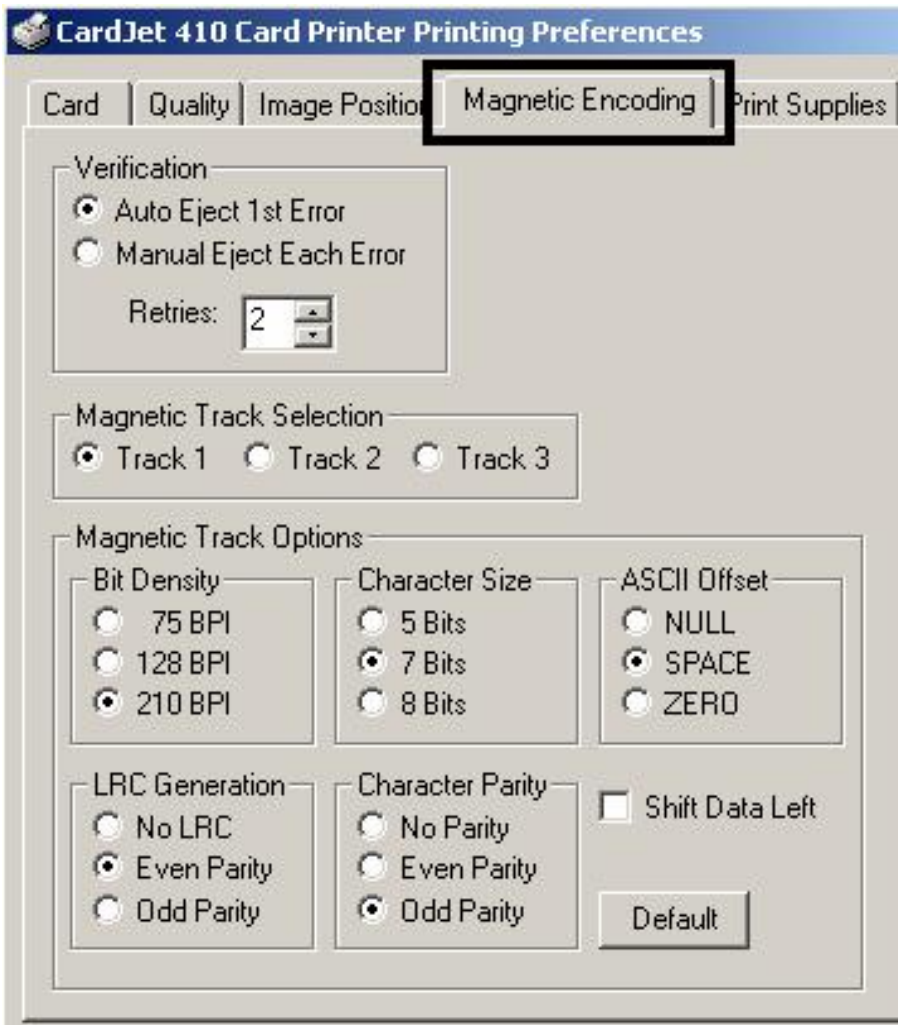
Step	Procedure
2	<p>As you can see:</p> <ul style="list-style-type: none"> <li>• The <b>Vertical</b> adjustment moves the image more toward the rear of the Printer if a positive number is entered and more toward the front of the Printer if a negative number is entered.</li> <li>• The <b>Horizontal</b> adjustment moves the image more toward the left-hand side of the Printer if a positive number is entered and more toward the right-hand side of the Printer if a negative number is entered.</li> </ul> <p>The maximum value for the Vertical and Horizontal adjustments is <math>\pm 100</math> pixels (10 pixels = about .03"/.8mm).</p> <p>(<b>Note:</b> The direction the Vertical and Horizontal adjustment arrows point within the Image Position window are representative of the direction the printed image moves.)</p>



## Selecting the Magnetic Encoding tab (both 410/C7 models)

Use these options only if the CardJet Card Printer has an optional Magnetic Stripe Encoding Module installed. (**Note:** Only high-coercivity encoding are supported. No Encode Only mode is supported.)

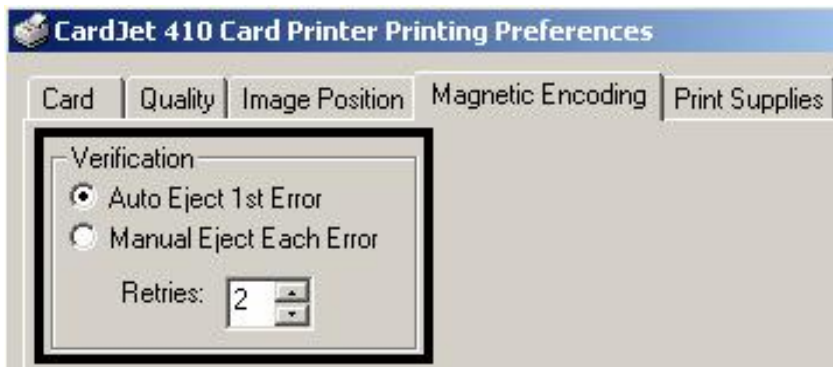
Step	Procedure
1	Select the <b>Magnetic Encoding</b> tab to display options for controlling the magnetic stripe encoding process. ( <b>Note:</b> The following describes these options and the Printer's Magnetic Encoding process.)



## Using the Verification option under Magnetic Encoding

Use the **Verification** option, which instructs the Printer to verify that all magnetic data has been correctly encoded on each card. (**Note:** With either of these options, the number of verification retries can be specified. A range of 1 to 5 retries is available.)

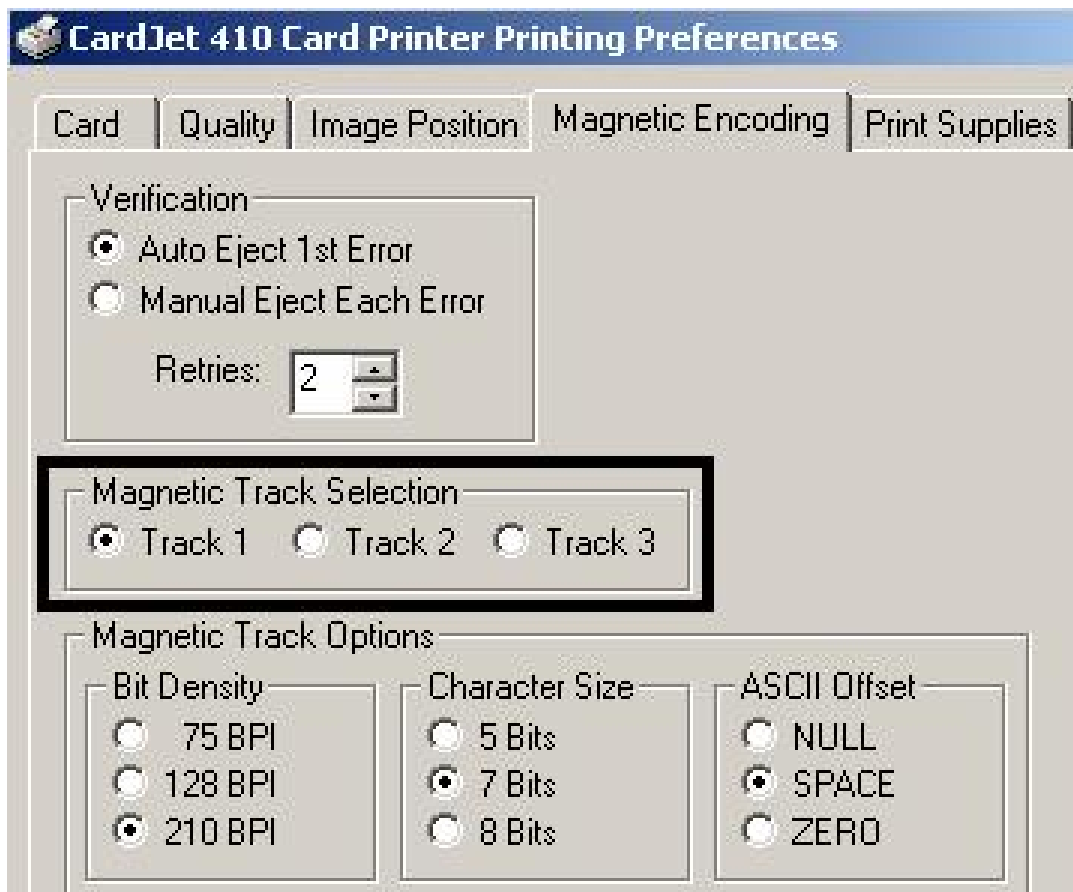
Step	Procedure
1	<p>Select the <b>Auto Eject 1st Error</b> option, which instructs the Printer to automatically eject a card containing miss-verified magnetic data (that cannot be verified). (<b>Note:</b> This option is helpful since magnetic stripe verification can at specific times require more than a single pass.)</p> <ul style="list-style-type: none"> <li>• <b>Manual Eject mode:</b> Only the first miss-verified card would be automatically ejected. If a second consecutive card cannot be verified, the Printer will signal an error and go into a <b>Manual Eject</b> mode.</li> <li>• <b>Auto Eject option:</b> The <b>Auto Eject</b> option is the most direct means of dealing with miss-verified cards. However, it may be undesirable (if batch printing) since miss-verified blank cards are ejected into the same stack as verified printed cards.</li> </ul> <p><b>OR</b></p> <p>Select the <b>Manual Eject Each Error</b> option so the Printer will signal an error on its LCD display (stating that the magnetic data could not be verified). (<b>Note:</b> When this occurs, press the <b>Cancel</b> soft key to manually eject the miss-verified card.)</p>



## Using the Magnetic Track Selection option under Magnetic Encoding

Use these options to customize the ISO encoded data format for each of the magnetic stripe's three tracks.

Step	Procedure
1	<p>Select the <b>Magnetic Track Selection</b> option to specify which track is to be configured through the <b>Magnetic Track</b> options (if the application being used requires customization of the standard ISO encoding process. Specify which of the three (3) tracks to customize by selecting one of the three track options. ).</p> <ul style="list-style-type: none"> <li>• After making the required selection, the Magnetic Track Options box displays the current set of customization options for the selected track.</li> <li>• Remember that each track is customized independently of the other two tracks.</li> </ul>





## Using the Magnetic Track Options under Magnetic Encoding

Use the **Magnetic Track** options for these purposes:

- Customize the ISO encoded data format for each of the magnetic stripe's three tracks.
- Customize each track independently of the other two.
- Specify which of the three tracks to customize by selecting one of the three track options.)

**(Note #1:** After making the required selection, the Magnetic Track Options box displays the current set of customization options for the selected track.)

**(Note #2:** For most applications, the default settings for these options do not need to be changed.)

The image shows a software dialog box titled "Magnetic Track Options". At the top, there is a section "Magnetic Track Selection" with three radio buttons: "Track 1" (selected), "Track 2", and "Track 3". Below this is a larger section "Magnetic Track Options" which is highlighted with a thick black border. This section contains several sub-sections:

- Bit Density:** Three radio buttons: "75 BPI", "128 BPI", and "210 BPI" (selected).
- Character Size:** Three radio buttons: "5 Bits", "7 Bits" (selected), and "8 Bits".
- ASCII Offset:** Three radio buttons: "NULL", "SPACE" (selected), and "ZERO".
- LRC Generation:** Three radio buttons: "No LRC", "Even Parity" (selected), and "Odd Parity".
- Character Parity:** Three radio buttons: "No Parity", "Even Parity", and "Odd Parity" (selected).
- Shift Data Left:** A checkbox that is currently unchecked.
- Default:** A button located at the bottom right of the "Magnetic Track Options" section.

### Using the Bit Density radio buttons under Magnetic Encoding

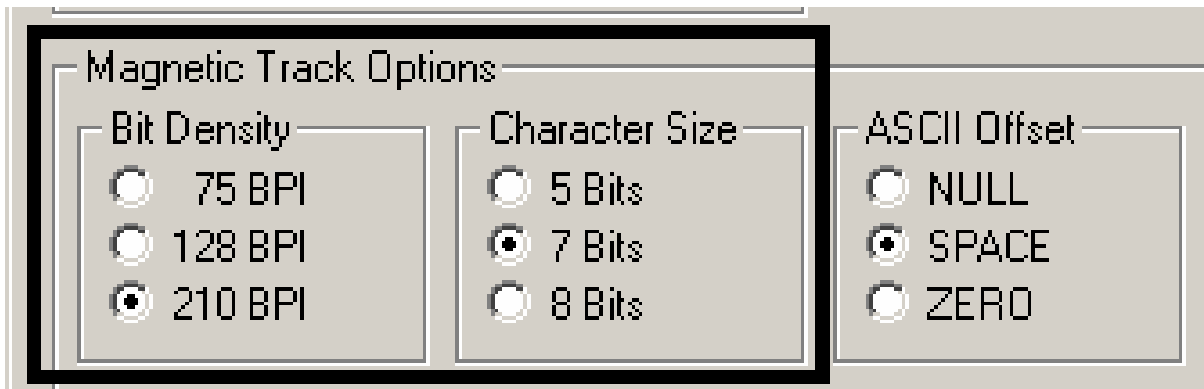
Use this option to customize the Bit Recording Density (Bits per Inch) used to encode the magnetic data on the currently selected track. The default ISO Standard selections for this option are as follows:

Step	Procedure
1	Select 75 BPI to change the bits per inch to 75 BPI. <b>OR</b> Select 128 BPI to change the bits per inch to 128 BPI. <b>OR</b> Select 210 BPI to change the bits per inch to 210 BPI.

### Using the Character Size radio buttons under Magnetic Encoding

Use this option to customize the Character Data Size (Bits per Character) used to encode the magnetic data on the currently selected track. (**Note:** This character size includes the parity bit (if enabled).)

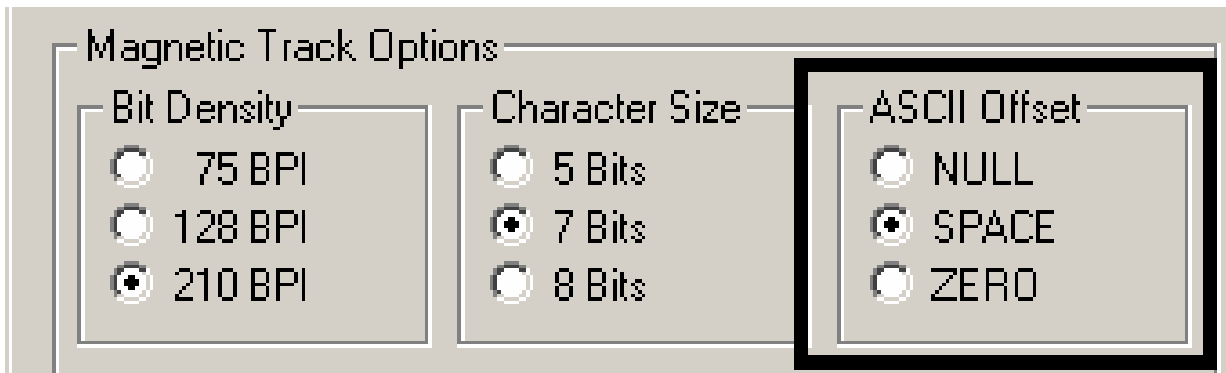
Step	Procedure
1	Select 5 Bits to change the bits per character to 5 BPC. <b>OR</b> Select 7 BPI to change the bits per character to 7 BPC. <b>OR</b> Select 8 BPI to change the bits per character to 8 BPC.



## Using the ASCII Offset under Magnetic Encoding

Use this option to customize the Character ASCII Offset used to encode the magnetic data on the currently selected track. **(Note:** This character-offset value is subtracted from the ASCII value of each magnetic stripe data character prior to encoding on the track.)

Step	Procedure
1	Select NULL to change the ASCII Offset to NULL. <b>OR</b> Select SPACE to change the ASCII Offset to SPACE. <b>OR</b> Select ZERO to change the ASCII Offset to ZERO.



## Using the LRC Generation radio buttons under Magnetic Encoding

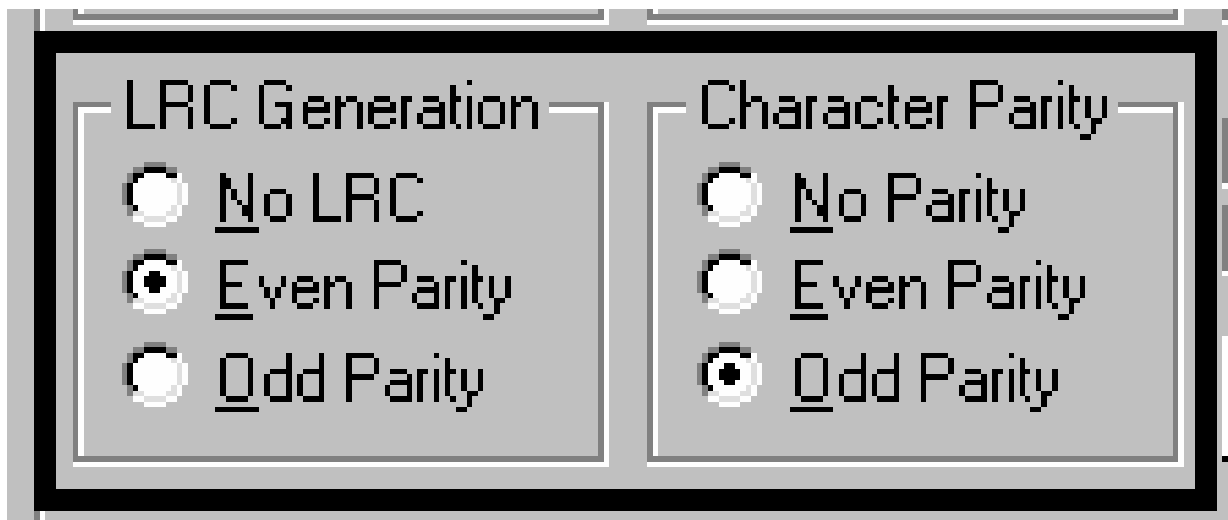
Use this option to customize the LRC Generation Mode (used to encode the magnetic data on the currently selected track).

Step	Procedure
1	Select NO LRC to change the LRC Generation to none. <b>OR</b> Select Even Parity to change the LRC Generation to Even Parity. <b>OR</b> Select Odd Parity to change the LRC Generation to Odd Parity.

## Using the Character Parity radio buttons under Magnetic Encoding

Use this option to customize the Character Data Parity (used to encode the magnetic data on the currently selected track).

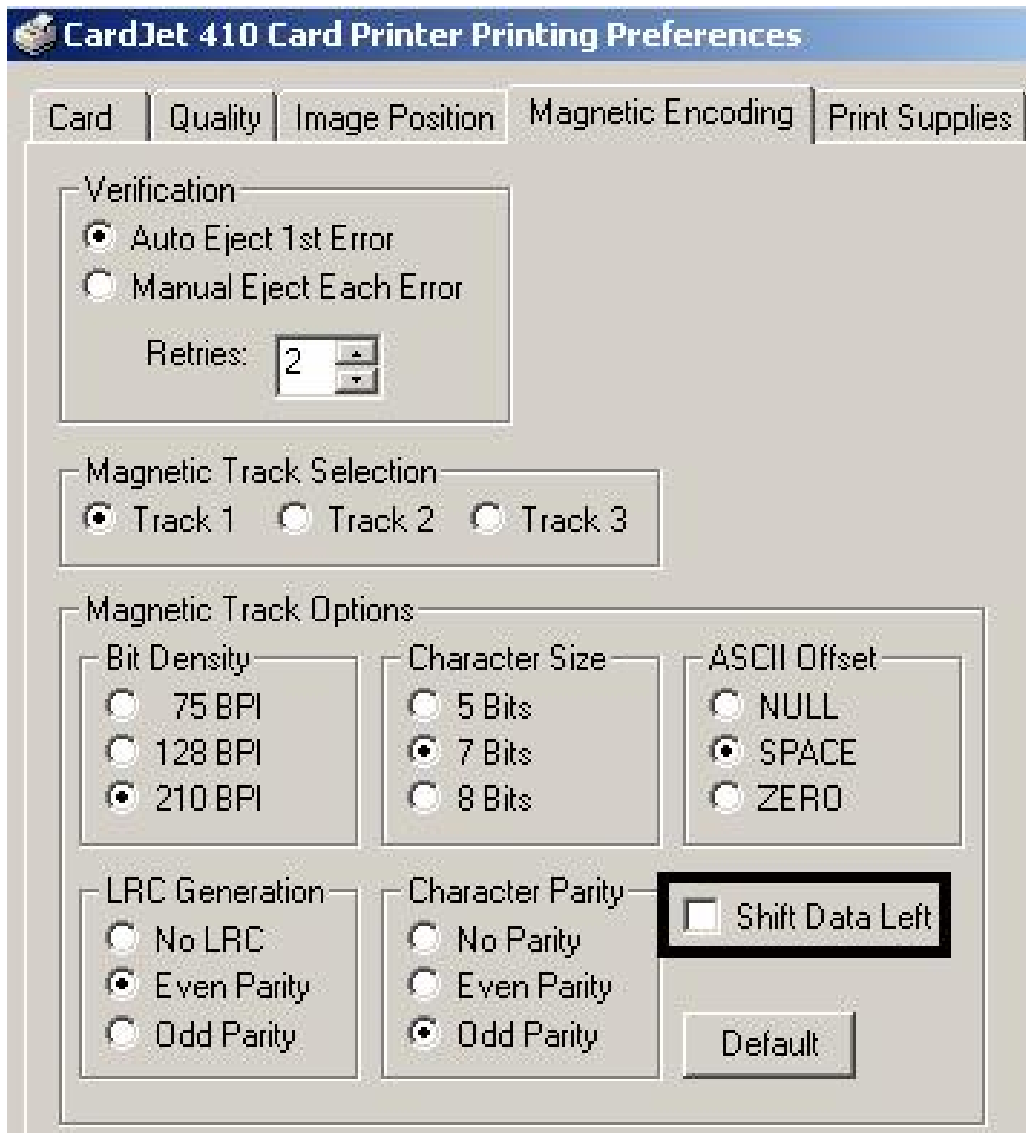
Step	Procedure
1	Select No Parity to change the Character Parity to none. <b>OR</b> Select Even Parity to change the Character Parity to Even Parity. <b>OR</b> Select Odd Parity to change the Character Parity to Odd Parity



## Reviewing the Shift Data Left under Magnetic Encoding

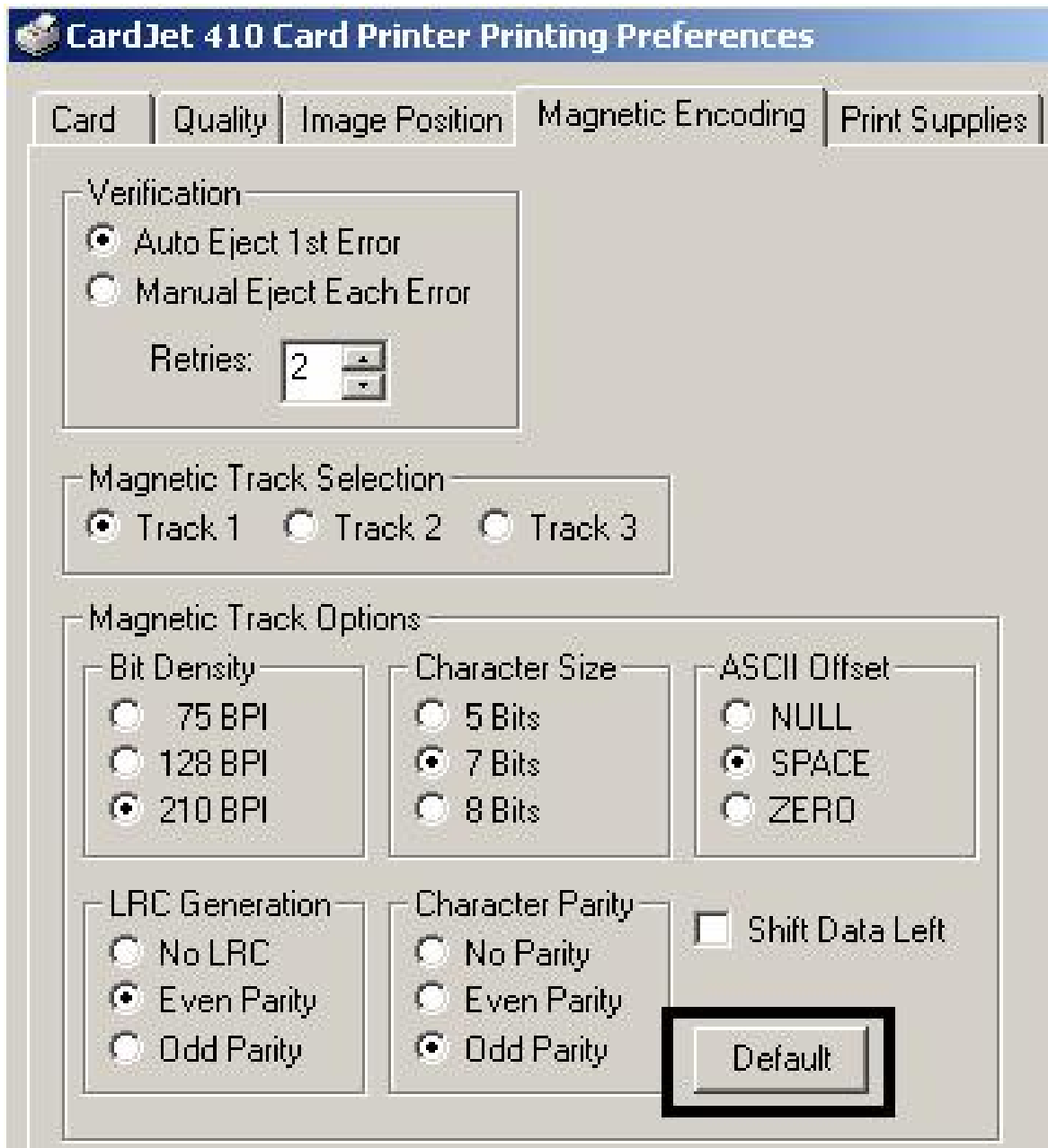
Use the **Shift Data Left** option, which applies to all tracks when selected.

Step	Procedure
1	Select this option to shift the recorded magnetic data to the left-hand side of the card's magnetic stripe. <b>(Note:</b> This is useful in situations that require cards to be readable with insert type readers.)



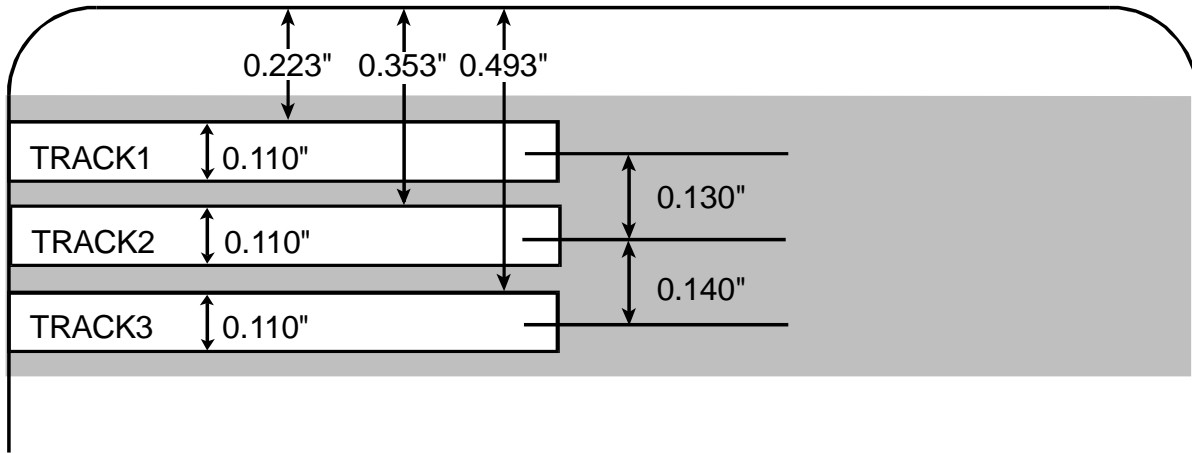
## Using the Default button under Magnetic Encoding

Step	Procedure
5	Return all options to their factory settings by clicking on the <b>Default</b> button.



## Reviewing the ISO Track Locations

The Magnetic Encoding module encodes onto tracks in accordance with an ISO 7811-2 magnetic stripe. For track locations, review the display below.



## Reviewing the Sample String

- Sending Data to Track 1: ~1%JULIEANDERSON^1234567890?
- Sending Data to Track 2: ~2;1234567890987654321?
- Sending Data to Track 3: ~3;1234567890987654321?

Track	Start Sentinel	End Sentinel	Field Separator	Valid Characters	Maximum Number of Characters
<b>Track 1</b>	%	?	^	ASCII 32-95 See the ASCII Code and Character Table on the next page.)	78
<b>Track 2</b>	;	?	=	ASCII 48-63 See the ASCII Code and Character Table on the next page.)	39
<b>Track 3</b>	;	?	=	ASCII 48-63 See the ASCII Code and Character Table on the next page.)	106



## Reviewing the ASCII Code and Character Table

ASCII Code	Character	ASCII Code	Character	ASCII Code	Character
32	space	56	8	80	P
33	!	57	9	81	Q
34	"	58	:	82	R
35	#	59	;	83	S
36	\$	60	<	84	T
37	%	61	=	85	U
38	&	62	>	86	V
39	'	63	?	87	W
40	(	64	@	88	X
41	)	65	A	89	Y
42	*	66	B	90	Z
43	+	67	C	91	[
44	,	68	D	92	\
45	-	69	E	93	]
46	.	70	F	94	^
47	/	71	G	95	_
48	0	72	H		
49	1	73	I		
50	2	74	J		
51	3	75	K		
52	4	76	L		
53	5	77	M		
54	6	78	N		
55	7	79	O		

## Sending the Track Information

Magnetic track data is sent in the form of text strings from the application software to the Printer Driver. Specific characters are added to the magnetic data (to be encoded) in order for the Printer Driver to differentiate between magnetic track data and the rest of the printable objects. (**Note:** These specify the data and the tracks to encode and indicate the Start and Stop Sentinels and the Field Separators. The Start Sentinels are the “%” and the “;”. The End Sentinel is the “?”) See the previous page.

- **Automatic:** In specific cases, these specific characters are automatically added to the string of track data by ID software applications.
- **Manual:** In most cases, the Operator must manually add these characters to the string of magnetic track data. (**Note:** If these characters are not added to the track data, the text intended for the magnetic track will appear as printed text on the card.)

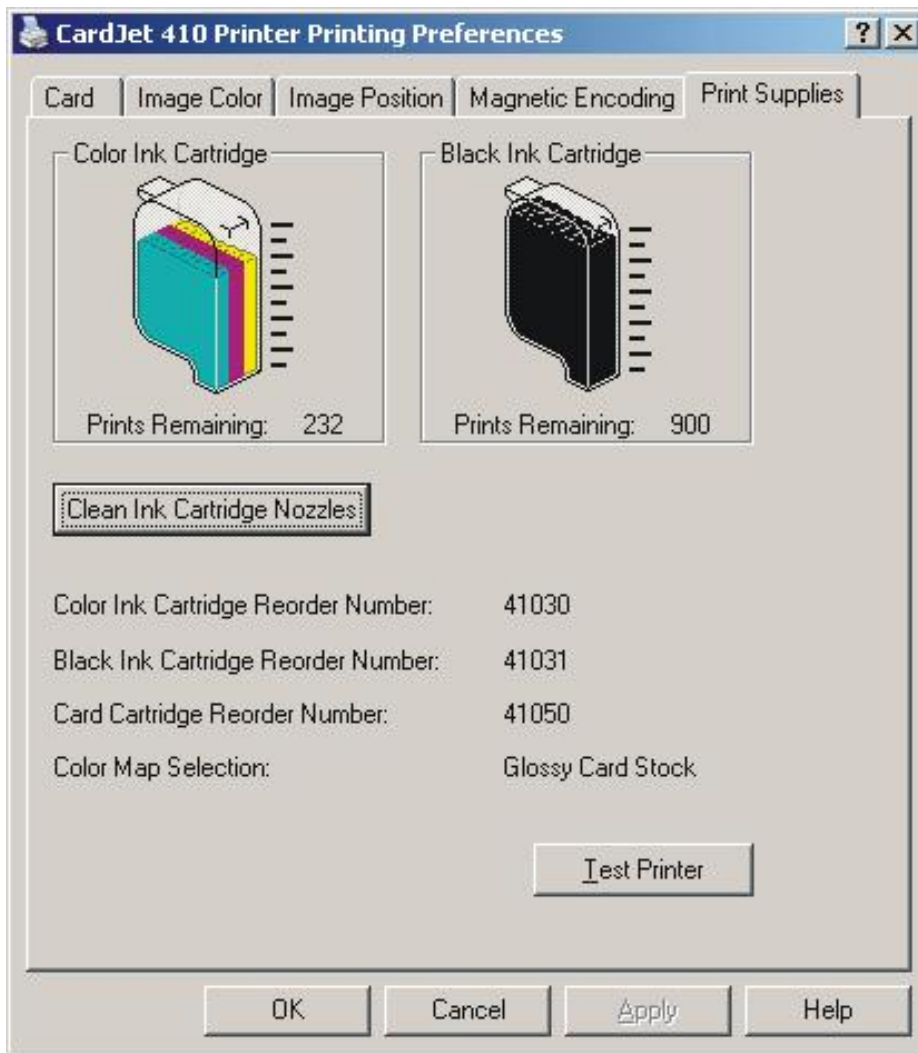
To avoid this, track information is entered as described below.

Step	Procedure
1	<p>When entering track data, the "~" (tilde) character is entered first, followed by the track number (1, 2 or 3) on which the data should encode. This is followed by the data to be encoded.</p> <ul style="list-style-type: none"> <li>• <b>Start Sentinel and End Sentinel:</b> The first character of this data string is the track's specific Start Sentinel (SS) and the last character is the specific End Sentinel (ES). (<b>Note:</b> The characters or data in between the SS and ES can include all of the valid characters specific to each track.)</li> <li>• <b>Maximum Character Capacity:</b> The number of these characters, however, is limited by each track's maximum character capacity.</li> <li>• <b>Field Separator:</b> When segmenting track data, the appropriate Field Separator (FS) is used. (<b>Note:</b> See the table on the next page, which displays the SS, ES, FS and the valid characters defined for each track.)</li> </ul>

## Selecting the Print Supplies tab

This option displays the prints remaining in both the Color and Black Ink Cartridges.

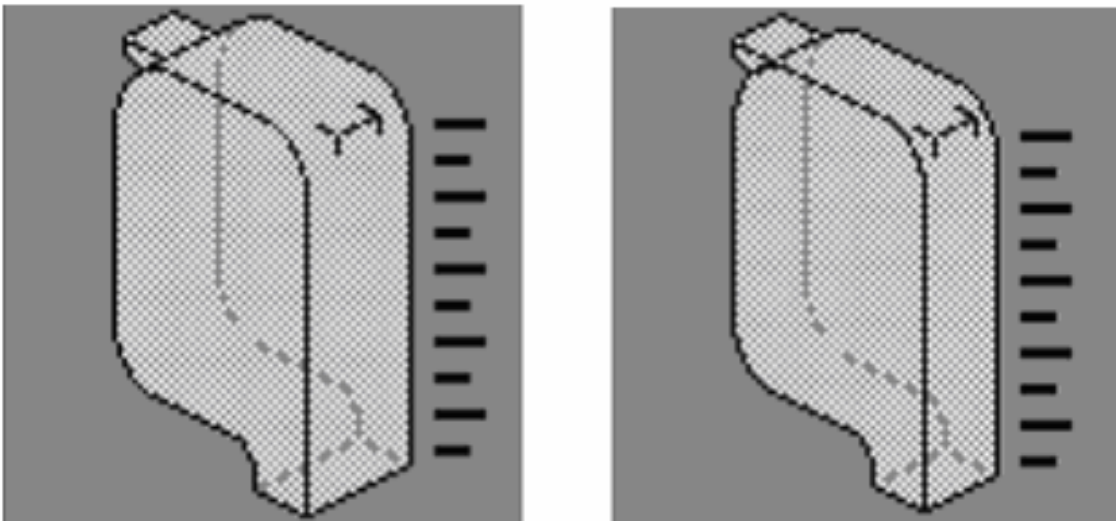
- As you print cards, the prints remaining will decrement after each card, displaying the exact number of prints remaining in each Cartridge. The Color Cartridge decrements each time you print a card. The black Ink Cartridge decrements only if printing with the **Infrared Bar Codes** option selected. (**Note:** When the Cartridge is completely out of ink, the Printer will alert you that it is time to replace the Ink Cartridge.) See [Selecting the Clean Ink Cartridge Nozzles button](#).
- As you print, you will notice the icons above Prints Remaining will indicate the approximate level of ink within the Cartridge. (**Note:** If an Ink Cartridge is not installed or if a non-certified Cartridge is installed, the Printer Driver will display the Ink Cartridge icons with question marks "?" to indicate the prints remaining cannot be determined.



### Using the Print Supplies tab (continued)

This option will display the current ink level of the Cartridges.

- The three color bars will always move down at the same rate to represent the total number of color prints remaining. The black bar will move down independently to represent the total number of black prints remaining.
- The Prints Remaining gives the exact number of the prints remaining for both the color Cartridge and the black Cartridge. Until we have a pigment-receptive card stock, the Black Ink Cartridge will only decrement on those prints which have the **Infrared Bar Codes** option selected.
- The Ink Cartridge icons will decrement in 1/10<sup>th</sup> increments. The upper icons will display when 0 prints remain. The lower icons (with the question mark) will display when an unknown Cartridge is installed.

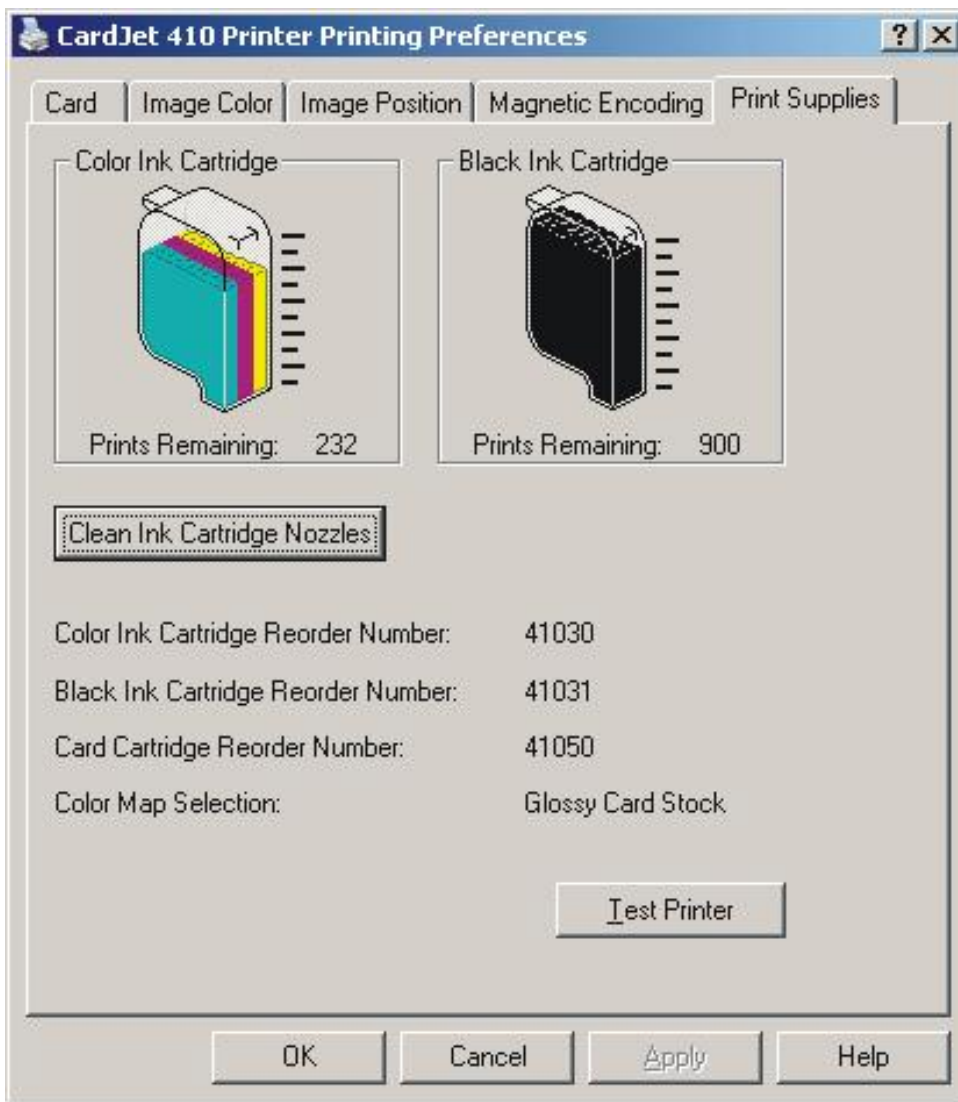


## Using the Reorder Numbers indicators

The first three indicators display the reorder numbers for the **Color Ink Cartridge**, **Black Ink Cartridge** and **Card Cartridge** currently installed or last installed in the Printer. The fourth **Color Map Selection**: indicator displays the color map selection for the currently-selected Card Media Type. (**Note:** Use this helpful information when reordering Fargo Certified Printing Supplies from an authorized reseller.)

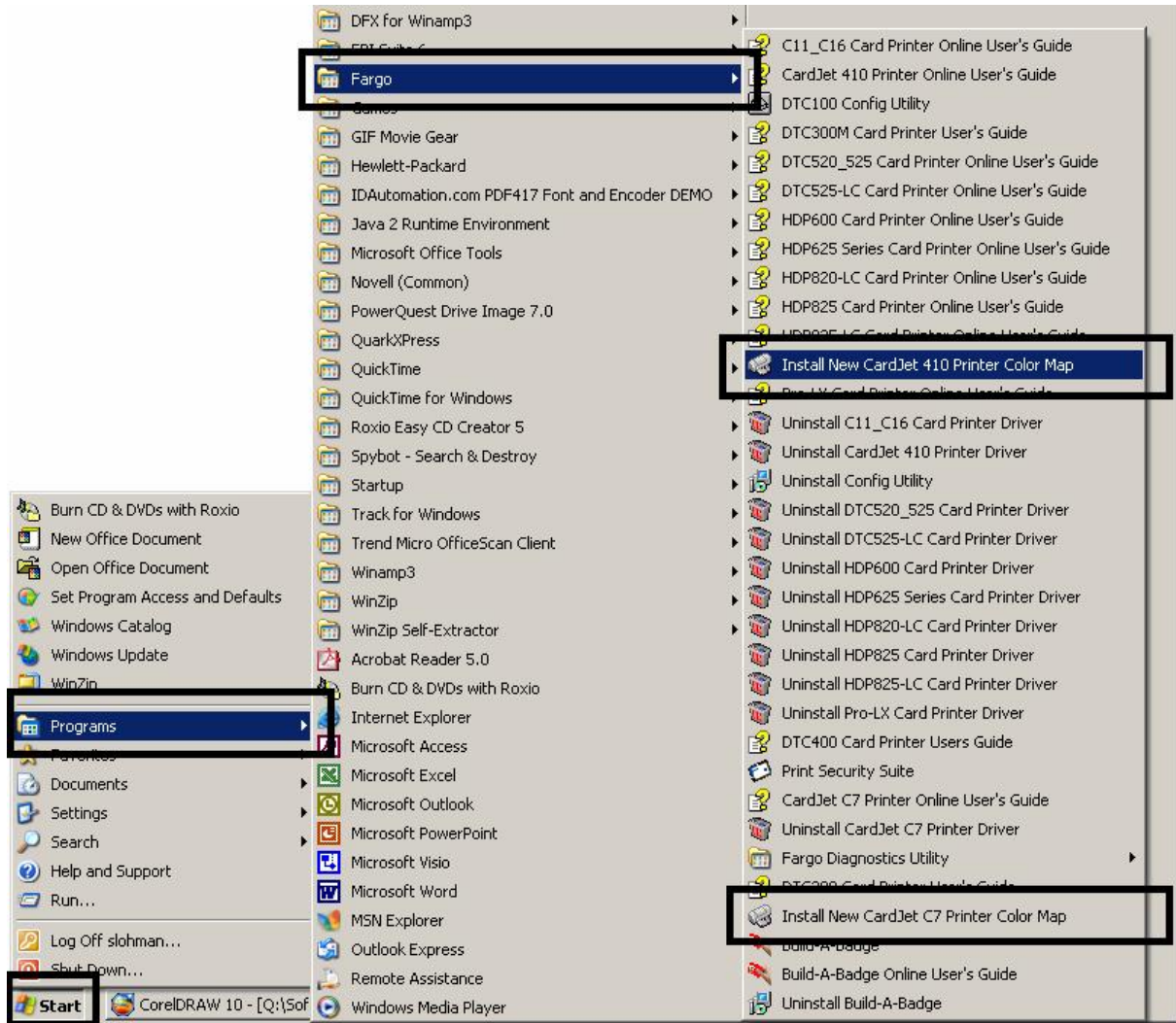
The Reorder numbers display is based on the last successful read of the last legal Cartridge that was inserted. This way, if an illegal Cartridge is inserted, this tab will continue to report a valid reorder number for that Printer. Also, these numbers can be used to determine to which reseller the SecureMark Printer should be associated.

The on screen message will appear when custom Cartridge is first loaded into a Printer only if there is a problem with Cartridge initialization.



## Accessing the Color Map Selection Dialog

Select Start > Programs > Fargo > Install New CardJet 410 Printer Color Map or Install New CardJet C7 Printer Color Map to bring up the dialog shown on the next page.



## Selecting the Color Map (Card Media Type)

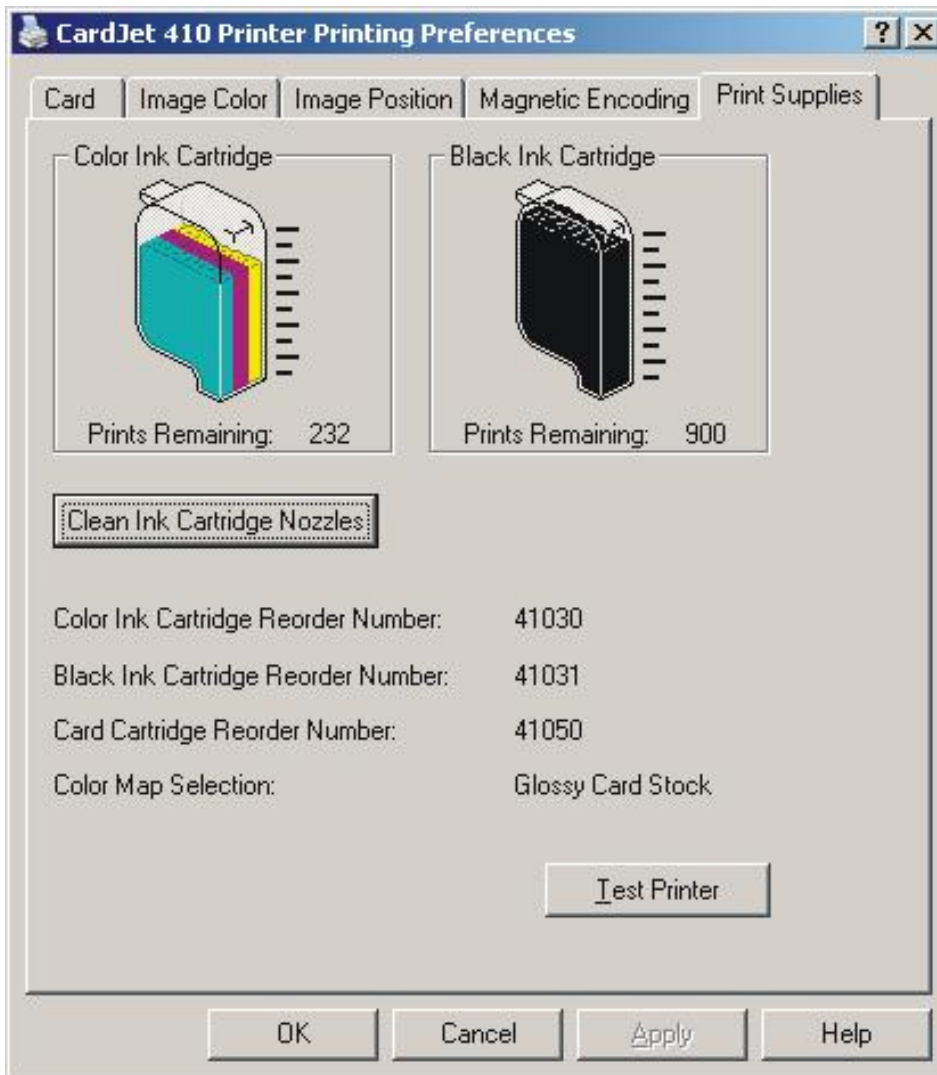
Select either the **Glossy Card Stock** or **Matte Card Stock** radio button for the Card Media type (required at the time).



## Selecting the Clean Ink Cartridge Nozzles button

Select the **Clean Ink Cartridge Nozzles** button to bring up a toolbox that displays clean print Cartridge sequences, to initiate a clean sequence to clean the nozzles of both the Color and Black Ink Cartridges and to clean the Ink Cartridge nozzles when lines and dots are missing from what you have printed. (**Note:** The on-screen prompts will guide you through the cleaning process.)

- **Printed Card:** The printed card is the same for each level of cleaning.
- **Clean Print:** Each clean print will decrement both a card and Ink whenever printed.

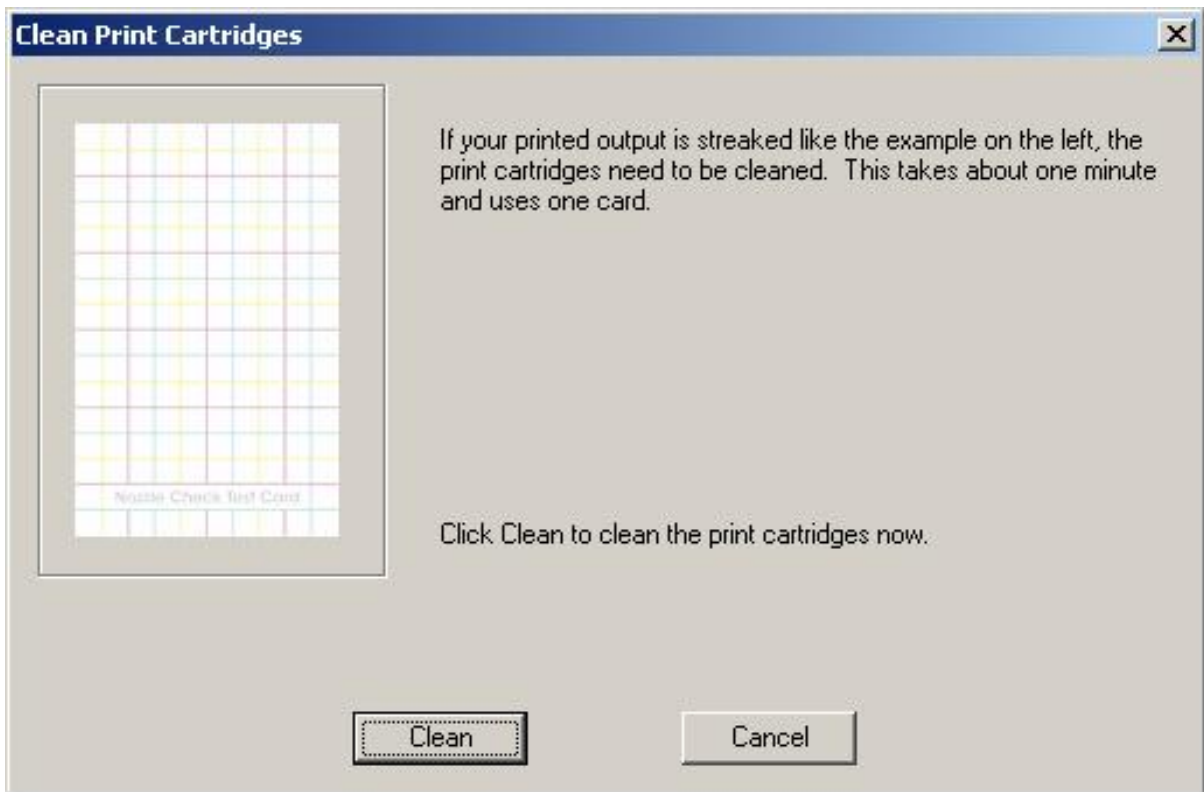




## Cleaning the Ink Cartridge Nozzles (continued)

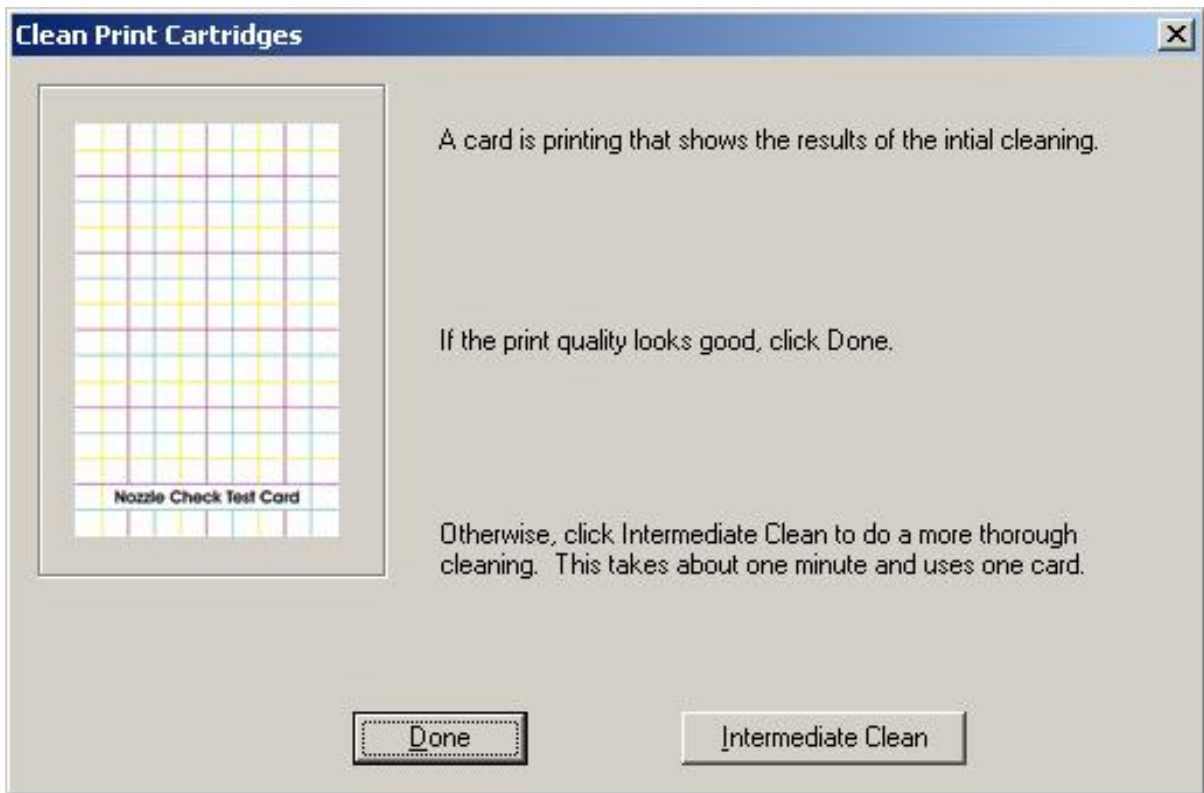
When completely out, the Printer operation pauses and a separate message for Color Ink Cartridge Out or Black Ink Cartridge Out is displayed. (**Note:** Operators can resume Printer operations without losing a print job or without causing any type of non-recoverable error in a Batch print.)

Step	Procedure
1	<ol style="list-style-type: none"><li>Click on the <b>Clean</b> button to clear the Print Cartridges if the printed output is streaked as shown below.</li><li>Wait one minute during the cleaning process.</li></ol>



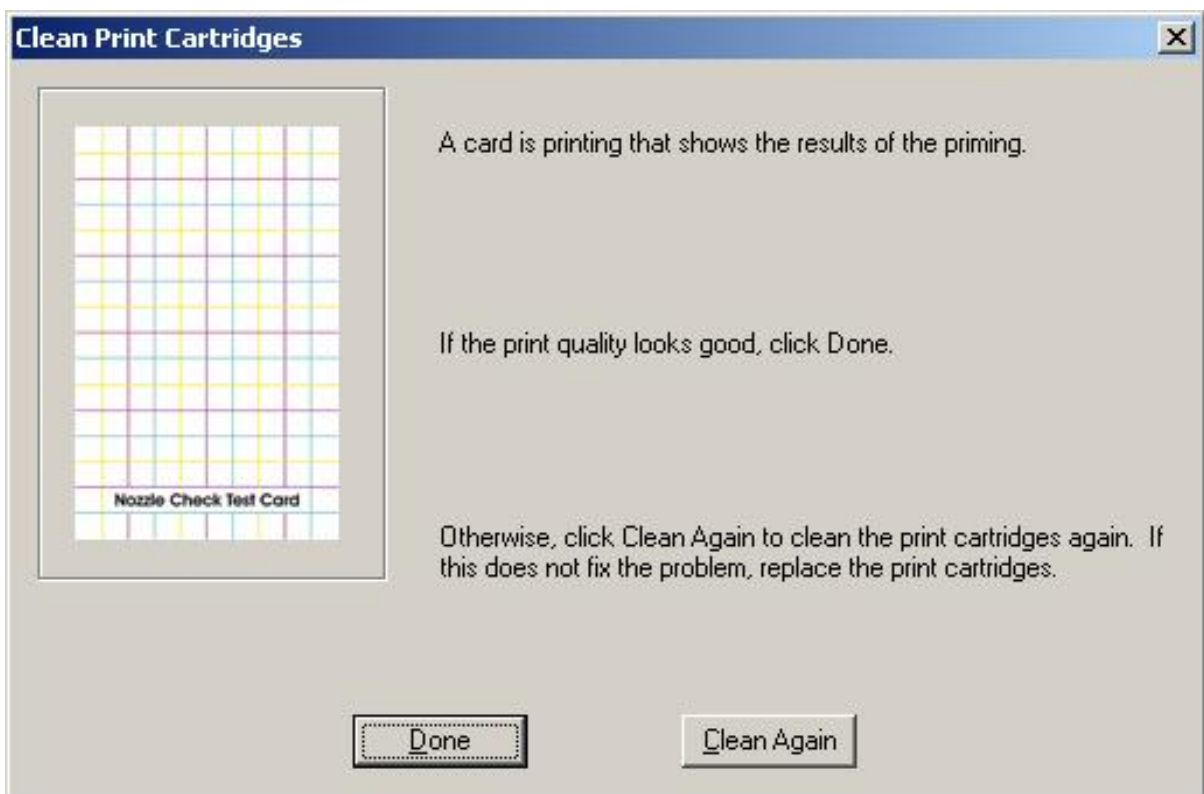
**Cleaning the Ink Cartridge Nozzles (continued)**

Step	Procedure
2	<p>A card is printing that shows the results of the initial cleaning.</p> <ul style="list-style-type: none"> <li>Click on the <b>Done</b> button to clear the Print Cartridges if the print quality is acceptable. (<b>Note:</b> Wait one minute during the cleaning process.)</li> </ul> <p><b>OR</b></p> <ul style="list-style-type: none"> <li>Click on the <b>Intermediate Clean</b> button to do a more thorough cleaning. (<b>Note:</b> Wait one minute during the cleaning process.)</li> </ul>



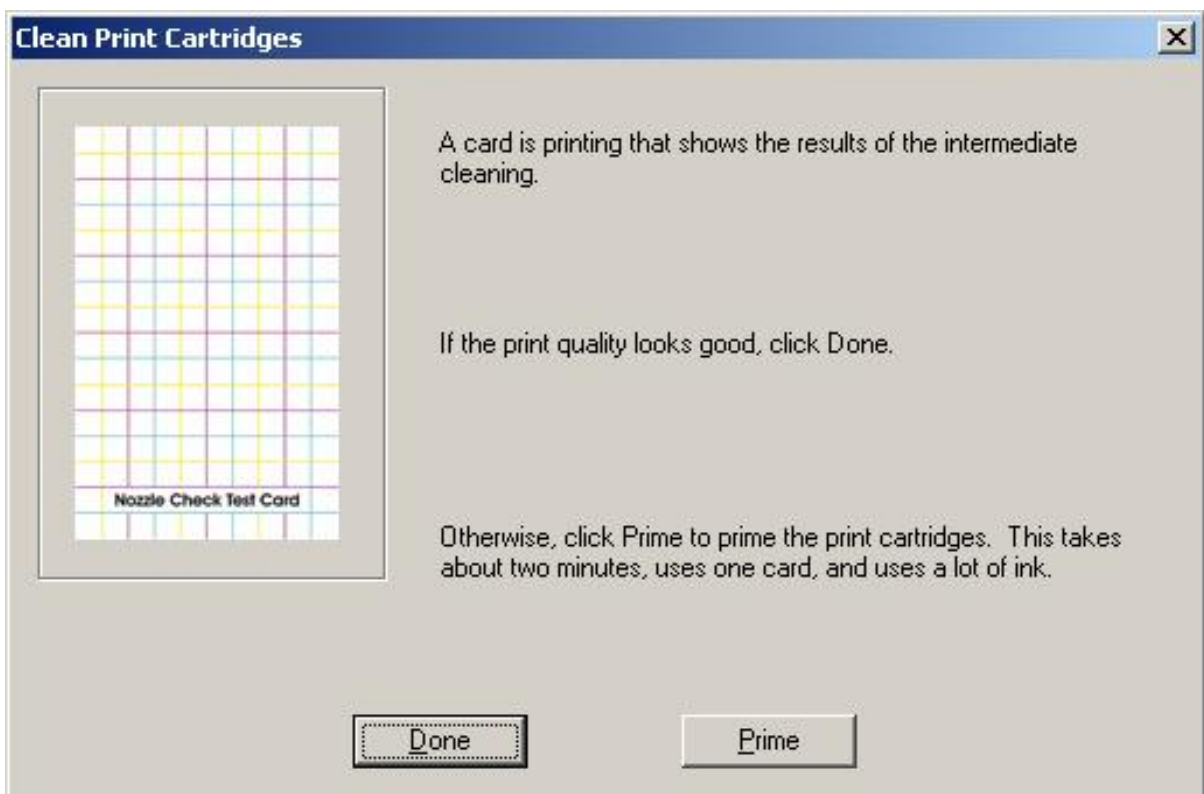
**Cleaning the Ink Cartridge Nozzles (continued)**

Step	Procedure
3	<p>A card is printing that shows the results of the printing.</p> <ul style="list-style-type: none"><li>• Click on the <b>Done</b> button to clear the Print Cartridges if the print quality is acceptable. (<b>Note:</b> Wait one minute during the cleaning process.)</li></ul> <p><b>OR</b></p> <ul style="list-style-type: none"><li>• Click on the <b>Clean Again</b> button to clean the Print Cartridges again. (<b>Note:</b> If this does not fix the problem, replace the Print Cartridges.).</li></ul>



**Cleaning the Ink Cartridge Nozzles (continued)**

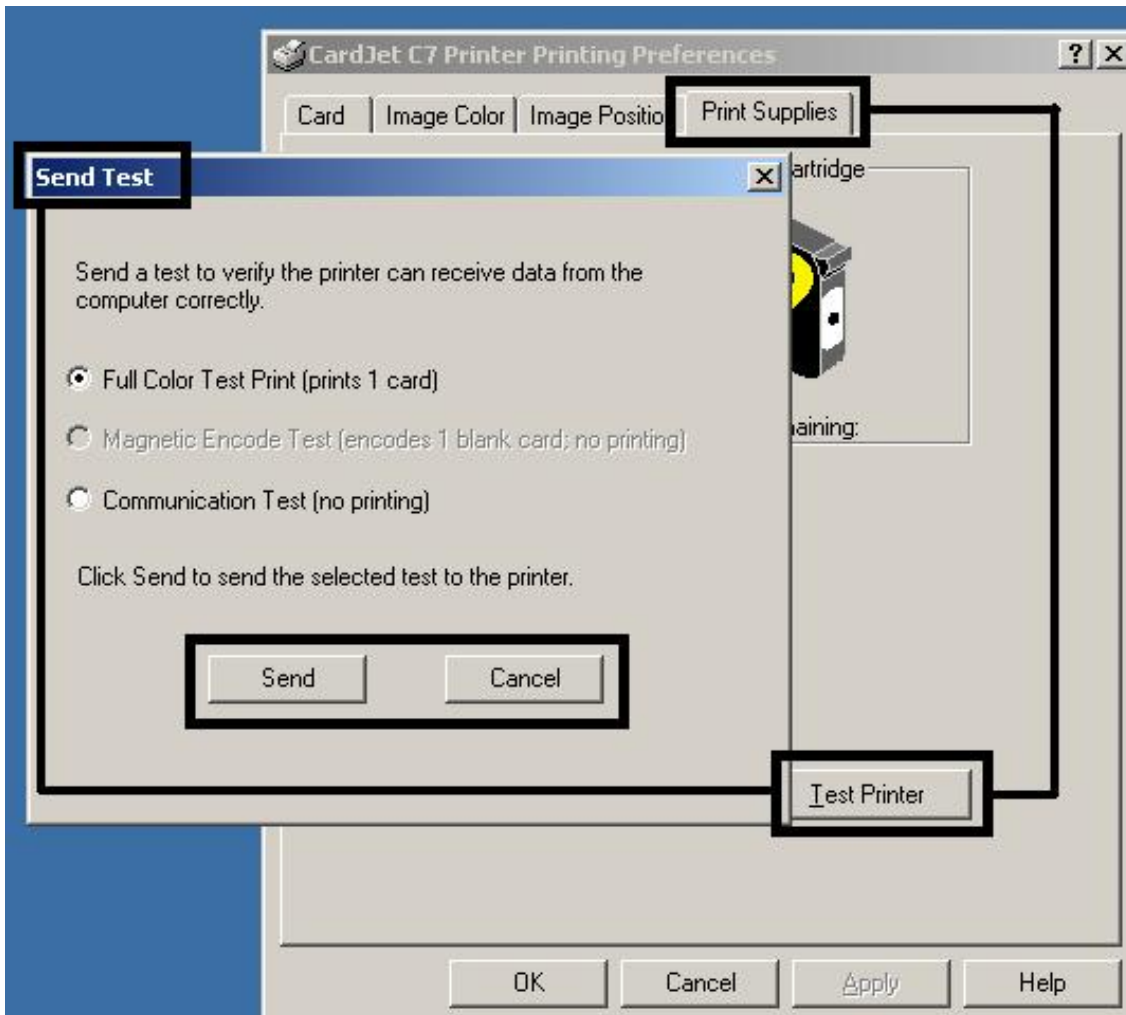
Step	Procedure
4	<p>A card is printing that shows the results of the intermediate cleaning.</p> <ul style="list-style-type: none"><li>Click on the <b>Done</b> button to clear the Print Cartridges if the print quality is acceptable. (<b>Note:</b> Wait one minute during the cleaning process.)</li></ul> <p><b>OR</b></p> <ul style="list-style-type: none"><li>Click on the <b>Prime</b> button to prime the Print Cartridges. (<b>Note:</b> This takes about two minutes, uses one card and uses considerable ink.)</li></ul>



## Selecting the Test Printer button

The **Test Printer** option allows you to send a variety of tests to the Printer. (**Note:** These test procedures can be helpful in ensuring that the computer is effectively communicating with the Printer and that the Printer is functioning properly.)

Select the appropriate test and click on the **Send** button to send it to the Printer. If sending the Full Color Test Print, the printing will begin printing after a few seconds. (**Note:** This window also displays the total number of prints or cards the Printer has produced. This number is often required for service or warranty information.)





# Section 5: Cleaning and Maintenance

The Card Printer is built to require a minimum amount of maintenance. Nevertheless, there are a few procedures you can perform on a regular basis or as needed to ensure the best possible performance.


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## Safety Messages (review carefully)

Symbol	Critical Instructions for Safety purposes
<p><b>Danger:</b></p> 	<p><b>Failure to follow these installation guidelines can result in death or serious injury.</b></p> <p>Information that raises potential safety issues is indicated by a warning symbol (as shown to the below).</p> <ul style="list-style-type: none"> <li>• <b>To prevent personal injury</b>, refer to the following safety messages before performing an operation preceded by this symbol.</li> <li>• <b>To prevent personal injury</b>, always remove the power cord prior to performing repair procedures, unless otherwise specified.</li> <li>• <b>To prevent personal injury</b>, Ensure only qualified personnel perform these procedures.</li> </ul>
<p><b>Caution:</b></p> 	<p><b>This device is electrostatically sensitive. It may be damaged if exposed to static electricity discharges.</b></p> <p>Information that raises potential electrostatic safety issues is indicated by a warning symbol (as shown to the below).</p> <ul style="list-style-type: none"> <li>• <b>To prevent equipment or media damage</b>, refer to the following safety messages before performing an operation preceded by this symbol.</li> <li>• <b>To prevent equipment or media damage</b>, observe all established Electrostatic Discharge (ESD) procedures while handling cables in or near the Circuit Board and Printhead Assemblies.</li> <li>• <b>To prevent equipment or media damage</b>, always wear an appropriate personal grounding device (e.g., a high quality wrist strap grounded to avoid potential damage).</li> <li>• <b>To prevent equipment or media damage</b>, always remove the Ribbon and Cards from the Printer before making any repairs, unless otherwise specified.</li> <li>• <b>To prevent equipment or media damage</b>, take jewelry off of fingers and hands, as well as thoroughly clean hands to remove oil and debris before working on the Printer.</li> </ul>

## Additional Safety Precautions for CardJet Technicians (review carefully)

Symbol	Critical Instructions for Safety purposes
<p data-bbox="289 394 406 426"><b>Danger:</b></p> 	<p data-bbox="480 394 1287 459"><b>Before operating the unit, please read the following safety precautions carefully:</b></p> <ul style="list-style-type: none"> <li data-bbox="480 480 1312 543">• <b>Fire or Shock Hazard:</b> Prevent fire or shock hazard by not exposing the unit to rain or moisture.</li> <li data-bbox="480 564 1369 695">• <b>Electronic Shock:</b> Reduce the risk of electronic shock by not removing the front, top or back Panels. No Operator-serviceable parts inside. (<b>Technician Note:</b> Refer servicing to qualified service personnel.)</li> <li data-bbox="480 716 1398 879">• <b>Correct Voltage Rating:</b> Operate the unit only on 100-240 VAC, 50/60 Hz. (<b>Technician Note:</b> If you have any doubt as to whether you have a unit with the correct voltage rating for the country's power supply, DO NOT attempt to use the unit. Contact the dealer or the factory.)</li> <li data-bbox="480 900 1378 1031">• <b>Liquid or Solid Object:</b> Stop operation immediately if any liquid or solid object should fall into the cabinet. (<b>Technician Note:</b> Unplug the unit and have it checked by qualified service personnel.)</li> <li data-bbox="480 1052 1369 1115">• <b>AC power cord:</b> Use only the AC power cord included with this unit or an equivalent cord.</li> <li data-bbox="480 1136 1344 1230">• <b>ESD procedures:</b> Be sure to observe all established Electro-Static Discharge (ESD) procedures while handling cables in or near the Circuit Board.</li> <li data-bbox="480 1251 1378 1346">• <b>Grounding Device Safeguards:</b> Always wear an appropriate personal grounding device, such as a wrist strap with integral resistor, connected to an ESD ground to avoid potential damage.</li> <li data-bbox="480 1367 1382 1566">• <b>Electrostatic Sensitive Device:</b> At a minimum, make positive contact with the bare metal chassis of the Printer with the hand before proceeding with the procedure. (<b>Technician Note:</b> This device is electrostatic sensitive. It may be damaged if exposed to static electrical discharges. Discharges may be generated by various means, such as walking on a carpeted floor.)</li> </ul>



## Using the Required Supplies

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**IMPORTANT!** Fargo Card Printers require highly specialized Ink Cartridges to function properly. To maximize Printer life, reliability, printed card quality and durability, you must use only Fargo Certified Supplies. For this reason, the Fargo warranty is void, where not prohibited by law, if you use non-Fargo Certified Supplies. To order additional materials, please contact the Fargo authorized reseller.

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For the maintenance procedures outlined for the Printer, use Printer Cleaning Kit provided by the reseller. This kit includes the following:

- Cleaning Pads pre-moistened with 99.99% isopropyl alcohol for cleaning the Printer's general inside and outside area.



**Caution:** As with any electronic device, internal components of the Printer, such as the Printhead, may be damaged if exposed to static electrical discharges. See CardJet Engineering Drawing No. D400147 in the appendix.

- To avoid potential damage, always wear an appropriate personal grounding device, such as a wrist strap (with integral resistor) connected to an ESD ground.
- Or, at a minimum, make positive contact with the bare metal chassis of the Printer with the hand prior to touching any internal electrical components.



**Danger:** You must unplug the power cable to the Card Printer to ensure that all power is disconnected from the unit. Do not attempt any work on the Card Printer's interior unless you have first unplugged the unit.

## Cleaning the Printer's Exterior


Because the Printer ejects ink on to the card in a fine mist, ink smudges may eventually appear on the Printer case. Refer to the following to clean the Printer's exterior.

- Do NOT clean the interior of the Printer. Keep all fluids away from the interior.
- To remove stains, smudges and/or dried ink from the exterior of the Printer, use a soft cloth moistened with water. Do NOT use household cleaners or detergent.

## Cleaning the Ink Cartridges

### Automatically Cleaning Ink Cartridges

If the printed cards are missing lines or dots or if they contain ink streaks, the Ink Cartridges need to be cleaned. Ink Cartridges are cleaned automatically using the following procedure:

Step	Procedure
1	Open the Card Printer Driver.
2	Select the Print Supplies tab.
3	Select the Clean Ink Cartridge Nozzles button and follow the on-screen directions.   <b>Caution:</b> Only clean the Ink Cartridges when it is necessary. Unnecessary cleaning wastes ink and shortens the life of the Cartridge.
4	If the printed cards are still missing lines or dots after cleaning, the print Cartridges and print Cartridge cradle may need to be cleaned manually.

## Manually cleaning the Ink Cartridges



**Caution:** If the Printer is used in a dusty environment, a small amount of debris may accumulate inside the case. This debris can include dust, hair, carpet or clothing fibers. When it gets on the Ink Cartridges and Cradle, it can cause ink streaks and smudges on printed card. Ink streaking is easily corrected by manually cleaning the Cartridges and cradle.

## Gathering the Cleaning Supplies



You will need the following items to clean the print Cartridges and Cradle:

- Use distilled or bottled water. Tap water contains contaminants that damage Ink Cartridges.
- Use cotton swabs or other soft, lint-free material that will not stick to the Cartridges.



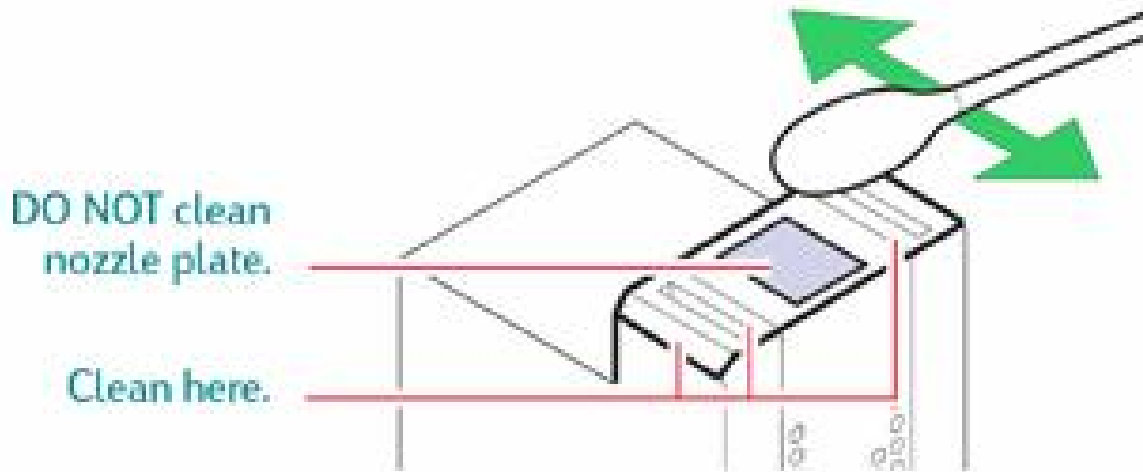
**Caution:** Be careful not to get ink on the hands or clothing as you clean.

## Preparing to Clean the Ink Cartridges

Step	Procedure
1	Remove the Ink Cartridges from the Printer before cleaning.
2	With the Printer power ON and the Printer connected to the PC, raise the Top Cover. The Ink Cartridges move to the center of the Printer.
3	Disconnect the power cord from the back of the Printer.
4	<p>Remove the Ink Cartridges and place them on a piece of paper with the ink nozzle plate facing up.</p> <p> <b>Caution #1:</b> Do not leave the Cartridges outside the Printer for more than 30 minutes.</p> <p> <b>Caution #2:</b> Do not touch the Ink Cartridge nozzles or copper contacts. Do not remove the copper strips.</p>

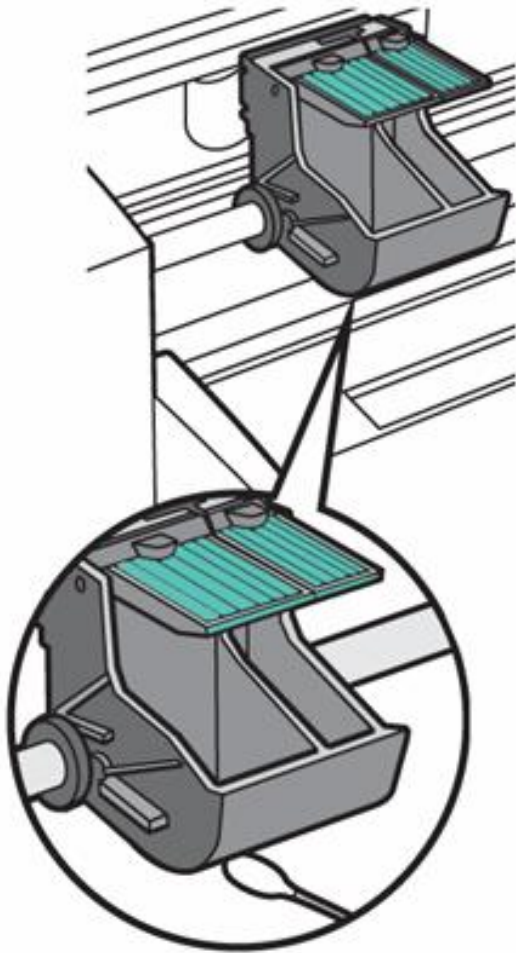
## Cleaning the Ink Cartridges and Ink Cartridge Cradle

Step	Procedure
1	Dip the end of a clean cotton swab into the distilled water and remove any excess water.
2	Clean the face and edges of the first Ink Cartridge with the swab, as shown in the following illustration. Do NOT wipe the nozzle plate.
3	Inspect the face and edges of the Ink Cartridge for fibers. Repeat steps 1 and 2 above if fibers are still present. See the next page.
4	Repeat steps 1 through 3 for the other Ink Cartridge.
5	Wipe the underside of the Ink Cartridge Cradle walls using clean, moistened cotton swabs, as shown below. Repeat this process until no ink residue appears on a clean swab.



**Cleaning the Ink Cartridges and Ink Cartridge Cradle (continued)**

Step	Procedure
6	Reinsert the Ink Cartridges and close the Printer's Top Cover.
7	Reconnect the power cord to the back of the Printer and close the Top cover.
8	Print a test card.
9	Repeat the cleaning procedure if smeared ink still appears on the printed cards.



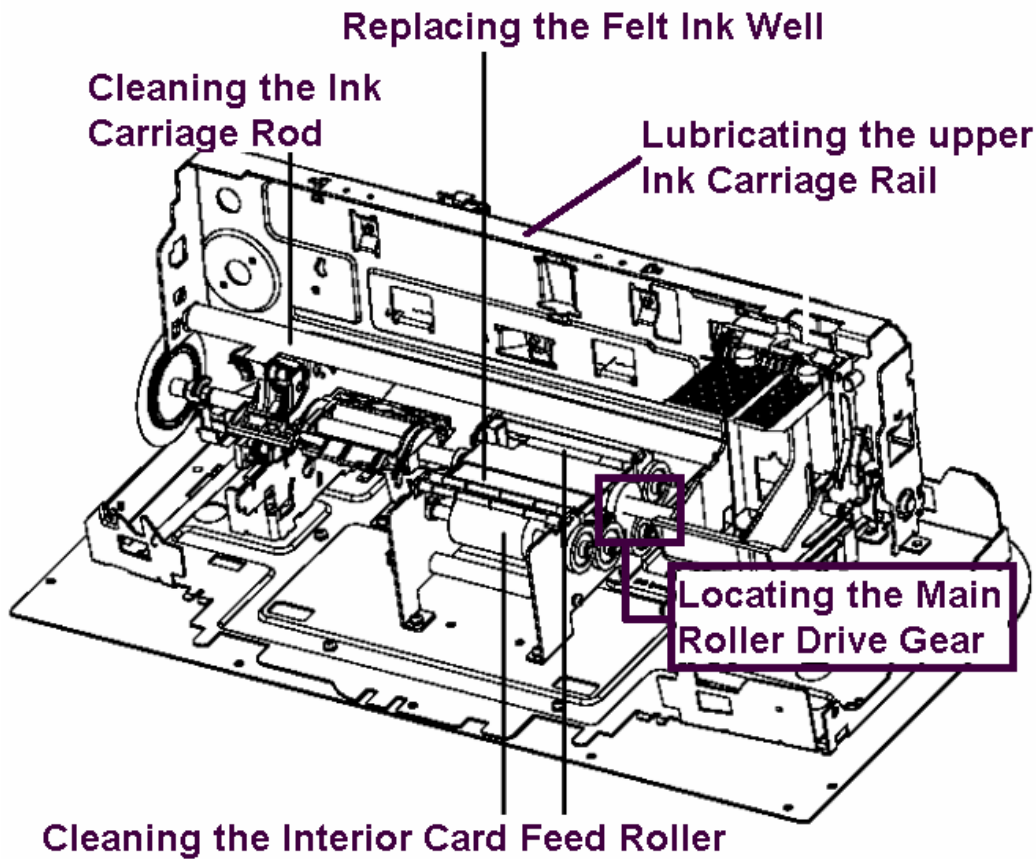
# CardJet Maintenance Kit Instructions

**Maintenance Kit Number: 085884**

- CardJet Maintenance Kit Instructions (P/N L000399)
- CardJet Cleaning Card (P/N 081760)
- CardJet Alcohol Wipe (P/N 076843)
- CardJet Ink Felt (P/N D840094)
- CardJet Blister Pack of Grease (P/N F000320)
- CardJet Tweezers (P/N F000321)
- CardJet Kit Bag (P/N F000322)

## Reviewing related Displays

This is for viewing only. Do not remove the Printer Cover for these cleaning procedures.



### Reviewing related Displays (continued)

This photo displays the Card Hopper Feed Roller.



## Lubricating the upper Ink Carriage Rail

This procedure needs to be completed when the ink cradle is jittery or jumps during operation.

Step	Procedure
1	Unplug the Printer.
2	Open the Printer Cover.

*Continued on the next page*





**Lubricating the upper Ink Carriage Rail (cont.)**

Step	Procedure
3	Apply grease from the CardJet Maintenance Kit to the under side of the upper Ink Carriage Rail guide, as shown below. Wipe off any excess grease.
4	Close the Cover.
5	Power up the Printer and check the Carriage travel for smooth movement. <b>This procedure is completed.</b>

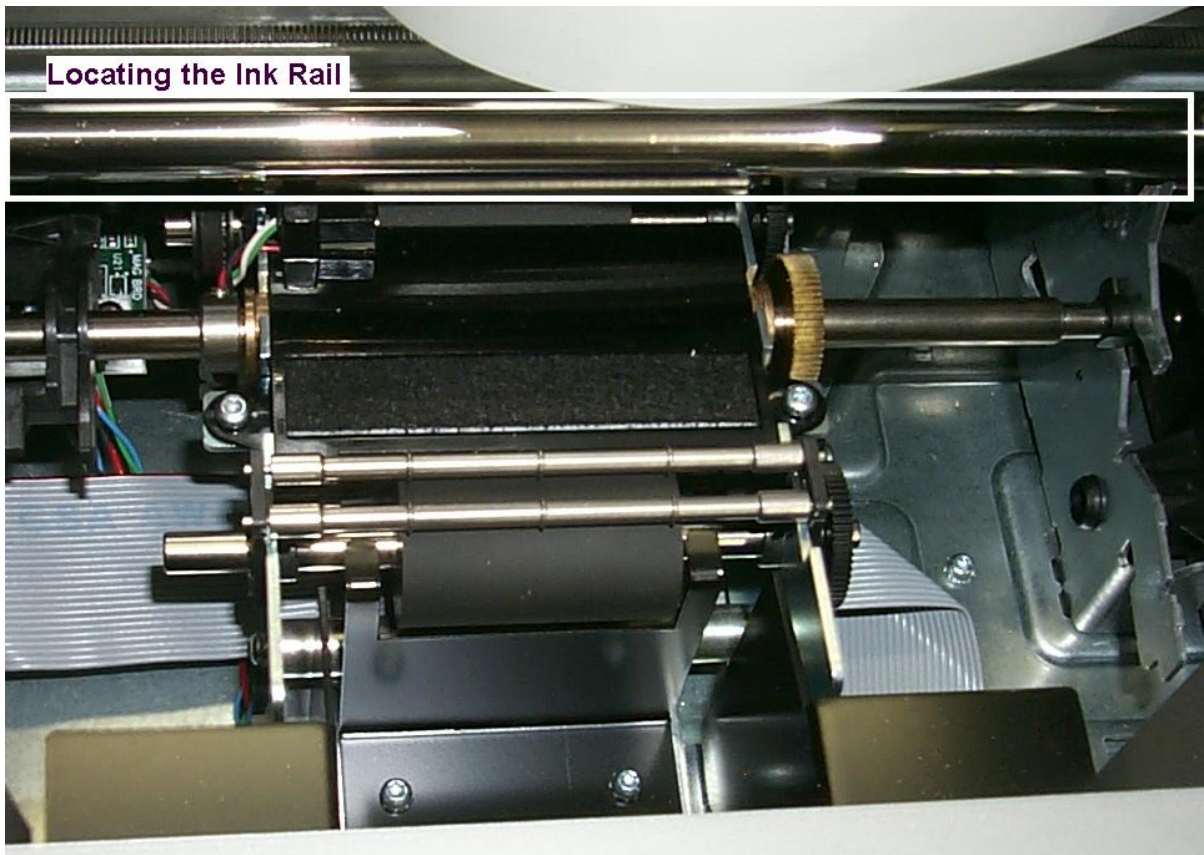


## Cleaning the Ink Carriage Rod

This procedure needs to be completed when the ink cradle is jittery or jumps during operation.

Step	Procedure
1	Unplug the Printer.
2	Open the top Cover.

*Continued on the next page*



**Cleaning the Ink Carriage Rod (continued)**

Step	Procedure
3	Use the alcohol pad from the CardJet Maintenance Kit to gently wipe the Ink Carriage Rod clean, as shown below.
4	Close the Cover.
5	Power up the Printer and check the Carriage travel for smooth movement. <b>This procedure is completed.</b>



## Replacing the Felt Ink Well


This procedure need to be completed when the ink felt becomes saturated with ink and begins to smudge the back of the card.

Step	Procedure
1	Unplug the Printer.
2	Open the top Cover.

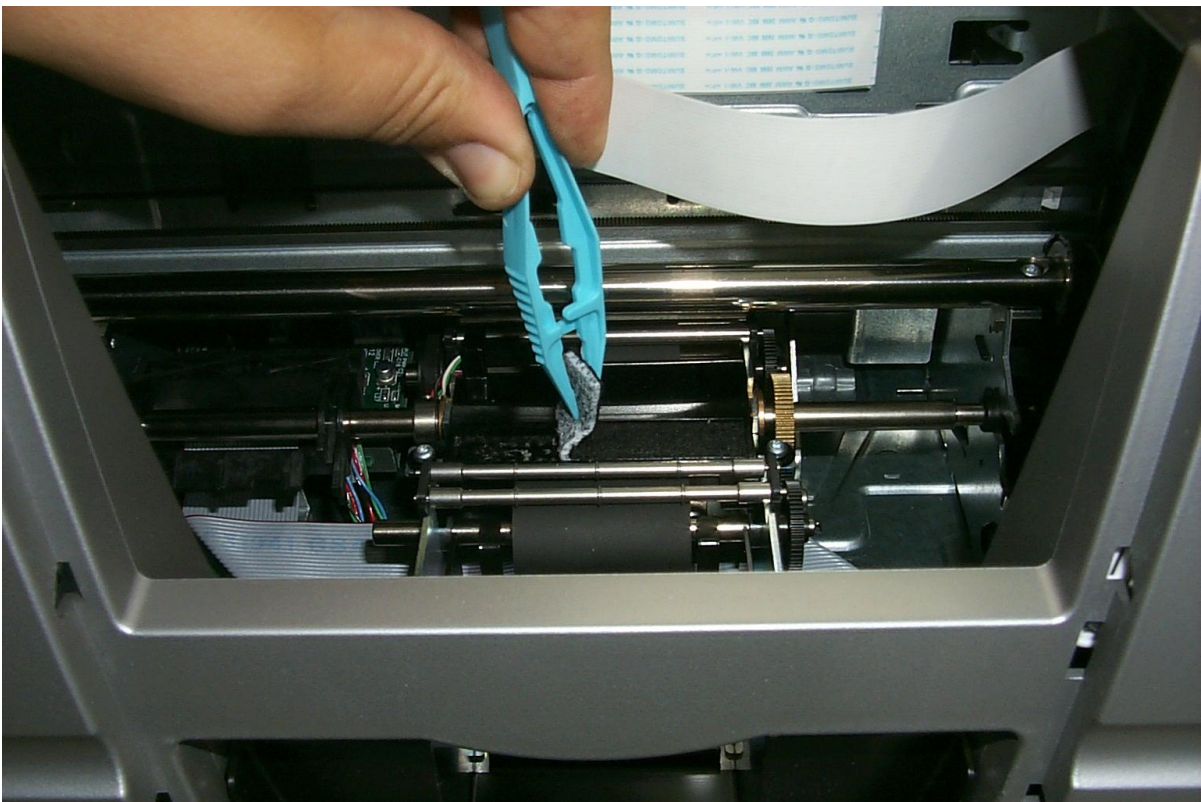
*Continued on the next page*



## Replacing the Felt Ink Well (continued)

Step	Procedure
3	<p>Use the Ink Felt removal tool to firmly grasp the left corner of the Ink Felt. Remove it by pulling the Felt up and to the right, as shown below</p> <p> <b>Caution:</b> The old Ink Felt contains wet ink and will stain anything it contacts. It is recommended that the old Ink Felt be placed in a small plastic bag and then discarded.</p>

*Continued on the next page*



**Replacing the Felt Ink Well (continued)**

<b>Step</b>	<b>Procedure</b>
4	Clean the Ink Well Tray with an alcohol pad from the Maintenance Kit, as shown below.
5	Remove the backing off the new Ink Felt.
6	Place the new felt in the card path. Use a paper towel to press the felt down into the card path.
7	Close the Cover. <b>This procedure is completed.</b>

## Cleaning the Card Hopper Feed Roller

This procedure needs to be completed when the Card Feed Rollers become dirty, and the Rollers can no longer properly grip the card.

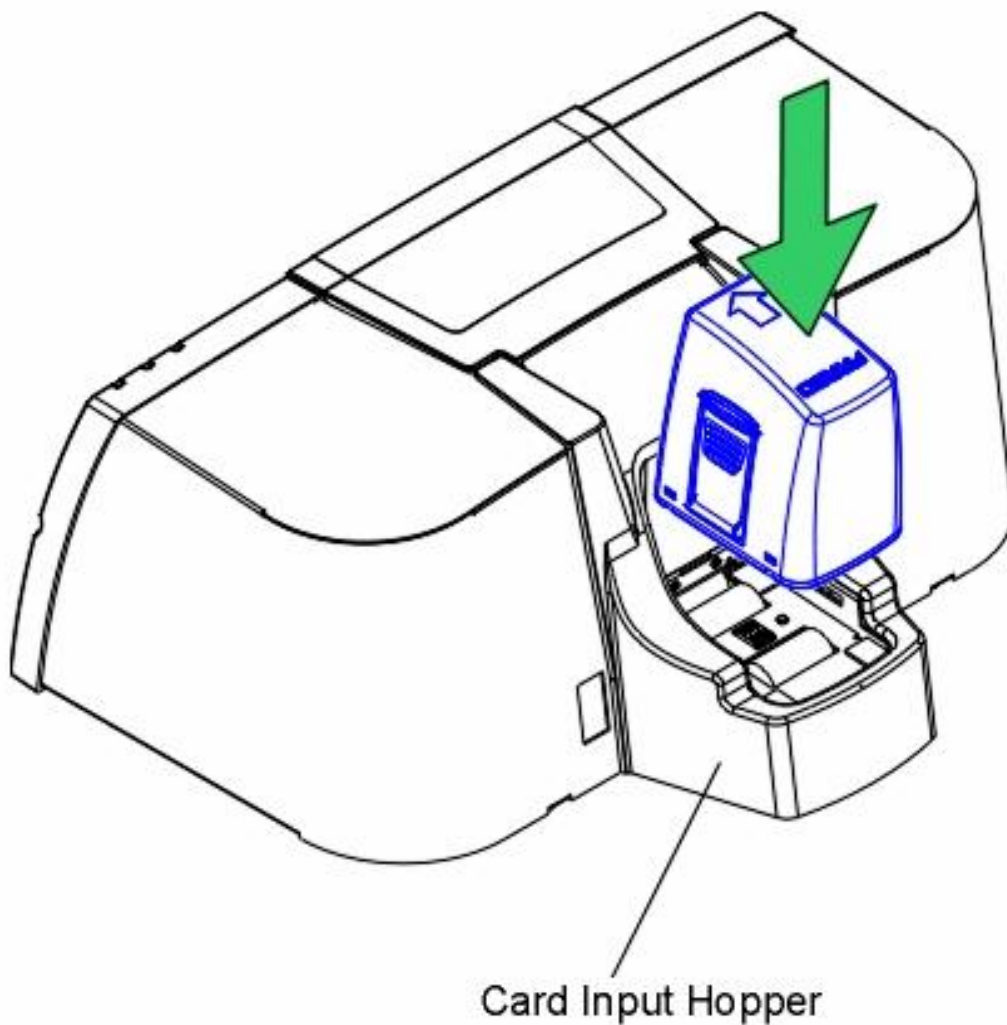
Step	Procedure
1	Unplug the Printer.
2	Remove the Card Cartridge.
3	Use the alcohol pad from the CardJet Maintenance Kit to gently wipe the Roller clean, as shown below.

*Continued on the next page*



**Cleaning the Card Hopper Feed Roller (cont.)**

Step	Procedure
4	Replace the Card Cartridge.
5	Power up the Printer.
6	Run a test card to check the card feed. <b>This procedure is completed.</b>





## Cleaning the interior Card Feed Rollers

This procedure needs to be completed when the Card Feed Rollers become dirty, and the Rollers can no longer properly grip the card.

Step	Procedure
1	Unplug the Printer.
2	Remove the Card Cartridge. See the previous page.
3	Remove the backing from the Fargo cleaning card and (with the sticky side down) gently push it into the Card hopper Feed Path as shown below.

*Continued on the next page*



**Cleaning the interior Card Feed Rollers (cont.)**

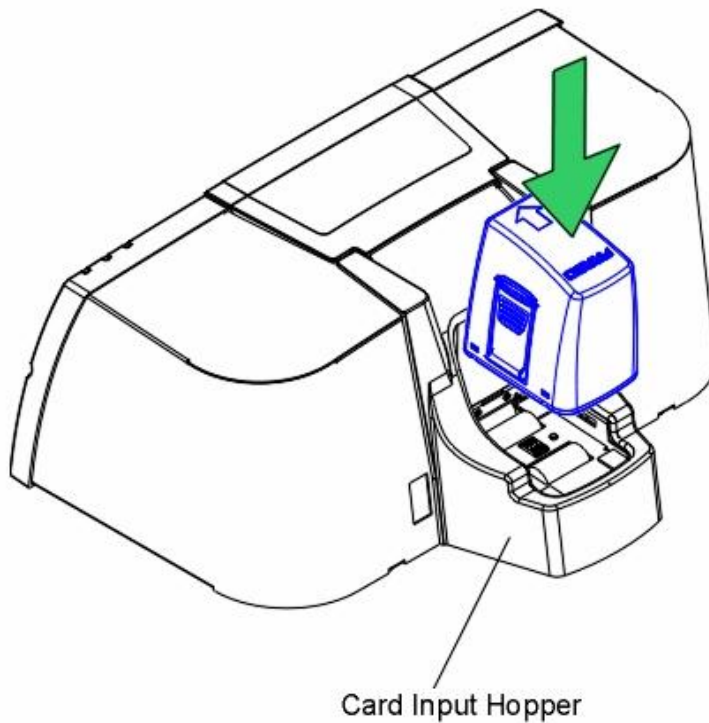
Step	Procedure
4	Open the top Cover.
5	Locate the Main Roller Drive Gear (located on main Drive Shaft) as seen below.
6	Use your fingers to gently turn the Main Roller Drive Gear in order to feed the cleaning card into the Printer.

*Continued on the next page*



**Cleaning the interior Card Feed Rollers (cont.)**

Step	Procedure
8	When the cleaning card is feed to the Card Image Station, turn the Drive Gear the opposite direction to feed the cleaning card back into the card Hopper.
9	Remove and dispose of the cleaning card.
10	Close the Covers.
11	Replace the Card Cartridge.
12	Power up the Printer.
13	Run the test card and check the card feed. <b>This procedure is completed.</b>



## Section 6: Fargo Technical Support

The purpose of this section to provide the Operator with an efficient, step-by-step procedure to be used when contacting Fargo Technical Support as needed for the CardJet Card Printer.

### Contacting Fargo Technical Support

Step	Procedure
1	<p>Read the suggested Sections of the Technical Service and Maintenance Manual in order to troubleshoot this Printer.</p> <p>As needed, contact the Fargo Technical Support Group for additional, technical assistance:</p> <ul style="list-style-type: none"> <li>• by phone at (952) 941-0050.</li> </ul> <p style="text-align: center;"><b>OR</b></p> <ul style="list-style-type: none"> <li>• by fax at (952) 941-1852.</li> </ul> <p style="text-align: center;"><b>OR</b></p> <p>Contact Fargo Technical Support via the Web:  <a href="http://www.fargo.com/tech_support/contact_tech_support.asp">http://www.fargo.com/tech_support/contact_tech_support.asp</a></p>
2	<p>Position a phone near the Printer and Computer so Fargo Technicians can help troubleshoot the Printer(s).</p>
3	<p>Please have a self-test and a sample card ready when calling Fargo Technical Support.</p>

# Section 7: Reviewing the Spare Parts List

CardJet 410 ID Card Printer

Recommended Spare Parts List

Effective Date: April 2004

For current pricing see [http://www.fargopartner.com/support\\_services/](http://www.fargopartner.com/support_services/)

## Section 8: Glossary of Terms

Term	Definition
24-bit color	A color depth for an image that uses 8 bits for each color (red, blue, green) combining the possible 256 shades to provide a color depth of 16.7 million colors.
AC - Alternating Current	An electrical current that reverses its direction at regular intervals (typically 50 - 60 times a second).
Adhesion	The firm attachment of a material to the card surface, confirmed by using the Tape Test -pulling an applied piece of adhesive tape (Scotch 600 or equivalent) off the card at 1 sec/in to see if any material is pulled off by the tape.
Algebraic	A type of color matching that takes the colors value of pixels and applies them to an algebraic equation to adjust the levels of hue, saturation and brightness.
ANSI (American National Standards Institute)	The United States Representative to ISO, providing standardization for U.S. Manufactures prior or in addition, to acceptance by ISO.
ASCII (American Standard Code for Information Interchange)	A standard for processing information in computer processors. An 8-bit character set of 255 decimal numbers, each assigned to numbers, letters, punctuation and special characters.

Continued on the next page

**Glossary of Terms (continued)**

<b>Term</b>	<b>Definition</b>
Barcodes	A series of alternating black and white stripes, of varying widths (each character denoted by a set number and width of black stripes) that allows characters to be optically read by a computer.
Batch print	A file sent down from the computer that contains commands to print a number of cards, sequentially.
Bi-directional	A communication standard that allows two-way data transfer between PC and Printer.
BIOS (Basic Input/Output System)	The part of the operating system in a computer that handles communication between the PC mainBoard and its peripherals. Typically residing in chip-based, non-volatile memory.
Bit	An abbreviation for binary digital. Each bit is an element of information that can have two states: off and on.
Bit map	A graphic produced by an array of pixel elements with the color hue, brightness and saturation information stored in bits. The more bits, the more values and thus the greater variety. 1 bit color is black and white, 8-bit color produces 256 shades of gray and 24-bit color can produce 16.7 million colors.
Board	A term used for the circuit Board, a hard mylar plate made of many layers, that holds the electronic circuit elements and wire traces.
Boot-up	A series of operations that the Printer runs through when power is first applied including a series of initializing, status testing and a diagnostics program to ensure a ready state.
Buffer	A block of memory, in the Printer or PC, that holds print files until the processor is ready to print them.
Cable	A set of conductors wrapped together and often concealed within insulation, used for signal transfer from one device to another, with connectors on either end that allows the cable to be removed.

Continued on the next page

**Glossary of Terms (continued)**

<b>Term</b>	<b>Definition</b>
Cache	A type of memory buffer to store data temporarily, used to hold information that is most often exchanged between Controller and peripheral, to expedite data transfer.
Calibrating	A procedure to adjust an electro-mechanical device so that it operates within established parameters.
CD (Compact Disc)	A 4.75 inch (12 cm) optical disk that stores data, written too and read from using a laser.
DMA (Direct Memory Access)	Channels designated within the Windows operating environment that are used for dedicated high-speed communication between the PC and the Printer port.
Coercivity	The property of a magnetic stripe that indicates the amount of force needed before magnetic saturation, measured in Oersted (Oe).
Color matching	The process of adjusting color hue, saturation and brightness, to duplicate a desired color. An algorithm within the Driver, which adjusts the color balance and provides output with the desired color, automates this process.
Compressed air	Air stored in a tank or produced by an aerosol can, delivered by through nozzle at a high speed. Used in the Printer to blow out debris.
Contrast	The degree of difference in luminance of two areas.
Control Panel	The Panel on the Printer from which the Operator can control Printer functions. The Printer is usually composed of the control buttons and an LED or LCD display.

Continued on the next page



**Glossary of Terms (continued)**

<b>Term</b>	<b>Definition</b>
CR-80	A card dimension standard of 2.125" X 3.370" (+/-0.002" W, +/- 0.005" L) or 53.975 X 85.598 mm.
Cursor	The marker in the LCD Display Window that indicates the active selection.
Darkness	A reference to color saturation.
DC Motor	A Motor that works on DC with continuous motion. See CardJet Engineering Drawing No. D400145 in the appendix.
DC (Direct Current)	Electronic flow that is unidirectional, flowing from the positive (+) to negative (-) of a power source.
Default	A setting or parameter that comes preset from the factory in Driver or Firmware. Performance parameters can be customized in the Driver, but can be reset to the factory values usually through the push of the default button. The default values for the Firmware are usually denoted on a label attached to the Printer.
Defrag	Abbreviation for defragmenting. The process of reformatting data on a hard drive so that it uses space more efficiently.
Dither	A system of distributing dots to control the hue, brightness and/or saturation. In monochrome printing, this controls the brightness. In color printing, dithering can supply a larger color gamut than non-dithering. In the Driver, dither modes can be selected to provide better image quality depending on the type of image to be printed.
Dongle	A peripheral that attaches to a port to act as a key for an installed application. The PC is able to run that application only when the dongle is installed. Typically, it works as a pass-through device and is connected in serial to the parallel cable.
Dot	The smallest unit of an image that the Printer is able to produce. The smaller the dot, see dot pitch, the sharper the image.

Continued on the next page

**Glossary of Terms (continued)**

<b>Term</b>	<b>Definition</b>
Dot pitch	A measurement of image sharpness denoting the width of the dots that makes up a pixel. The smaller the pitch, the sharper the image.
Download	The transfer of a data file from one device to the other over a network or cable, typically from the Internet to a PC.
DPI (Dot Per Inch)	A measurement of the Printer resolution indicating how many dots a Printer can produce in a linear inch.
DRAM (Dynamic Random Access Memory)	A microchip based volatile memory storage device. The Printer uses this to buffer a print job, transferred from the PC, until the Printer Controller is able to process the packet.
Driver	Software utility installed in Windows, that interfaces an application to rasterize image data and include command codes so the Printer can process the file.
Edge-to-Edge	Refers to the maximum printable area on a card resulting in printed cards with virtually no border. ( <b>Note:</b> CardJet is over the edge.)
EE Memory	An abbreviation for EEPROM.
EEPROM (Electrically Erasable Programmable Read Only Memory)	A microchip based non-volatile memory storage device that can be rewritten in the field. The chip can hold new values as the Printer adapts its operational parameters.
Encoder (smart card)	An electro-mechanical interface to transfer data from the PC to a chip or magnetic stripe built into the card.

Continued on the next page

**Glossary of Terms (continued)**

<b>Term</b>	<b>Definition</b>
Encoder (wheel)	An electromechanical device, attached to a shaft that detects the change in rotational position, incremented to count ticks per revolution. The Printer's encoder wheel both detects motion and measures the amount of rotation in the movement of the ribbon.
Engine	A generic term for a collection of systems and mechanisms that is dedicated to executing a specific function. A Printer that also laminates would have both a Print Engine and a lamination Engine.
EOF (End Of Form)	The trailing edge of the card, detected to indicate when the Printer should stop printing.
EPP (Enhanced Parallel Port)	A type of parallel port mode, developed by Intel, to increase the port throughput.
EPROM (Electrically Programmable Read Only Memory)	A microchip based non-volatile memory storage device that cannot be rewritten in the field. Firmware for many Fargo Printers is stored on these chips and so a change of the chip is necessary for an upgrade.
Escape sequence	A string or control character that indicates to the processor that what follows is a command and not data.
ESD (ElectroStatic Discharge)	The discharge of static electricity (high voltage, low current) that can damage electronic devices.
Ethernet	A system of networking a series of computers for the sharing of data or peripherals.
Firmware	The instruction set, stored in chip memory, inside the Printer that controls functional and operational data. Firmware updates are done with Driver updates.
Font	A character set similar in style and form. Fonts can be graphical or mathematical constructs, represented by a series of dots or an assembly of curves and lines.

Continued on the next page

**Glossary of Terms (continued)**

<b>Term</b>	<b>Definition</b>
Full bleed	Printing that covers the entire card surface.
Gamma	The degree of contrast of an image or the display of a monitor determined by the slope of a characteristic curve relating optical density to relative log exposure.
Graphical Device Interface (GDI)	A Windows standard for protocol between Drivers and applications and the Windows interface. An application uses a Driver to rasterize the data in the format necessary for the Printer but also for the Windows interface to execute the print commands.
Gray Scale	A graduation through the various brightness levels from white to black.
Halftoning	A process in monochrome printing that simulates continuous tone by using changes to the distribution of single dots. Increasing the number of dots in a given area increases the darkness even though the individual dots stay the same size.
Hard Drive	A high capacity storage device in a PC consisting of non-removable magnetically encodable platters.
Hardware	Physical components of a system such as the Printer, the PC, the power supply.
HiCo (High Coercivity)	The coercivity value of magnetic media between 2500 - 4000 Oe (ISO 7811-6). Fargo's High Coercivity encodes at 2750 Oe.
HTML (HyperText Markup Language)	A standard protocol used to format text files for use in a browser or on the Internet.
HTTP (HyperText Transfer Protocol)	A standard protocol by which computers can transfer data, compatible through multiple platforms.
IC (Integrated Circuit)	An electronic device that contains many individual circuits interconnected and placed within a discrete package.

Continued on the next page

**Glossary of Terms (continued)**

<b>Term</b>	<b>Definition</b>
ID (Identification)	An abbreviation for identification.
Image	A collection of pictures or graphical elements that compose the visual features on a card. Also refers to the digital representation.
Input	Any data or material being transferred to the Printer.
Input Hopper	The area of the Printer that stores the blank cards, ready to print.
ISO	For the Greek, "iso", meaning same. Used to represent data from the International Organization for Standardization.
LAN (Local Area Network)	An array of several computers connected through a series of data transfer cables for the sharing of data and peripherals.
Landscape	A document layout that is viewed with the document's long axis in a horizontal orientation.
LED (Light Emitting Diode)	A semiconductor that emits light when a current is applied.
Mag encoding	The process of orienting successive magnetic bits to produce a serial data string.
Mag stripe	An area of the card with an applied or impregnated ferrous material that can hold encoded data through a series of prescribed polarity changes.
Mag Track	An area of a magnetic strip running the length of the card, with a given width and position, constitutes a track. This is the area dedicated to one data string, restricted to specific rules of format. ISO standards specify three magnetic tracks on the back of a card.
Mag Verify	A process to confirm proper Magnetic Encoding. After encoding, the information is read off back and compared to the intended string.

Continued on the next page

**Glossary of Terms (continued)**

<b>Term</b>	<b>Definition</b>
MB (Megabyte)	A unit of storage that equals 1,048,576 bytes.
Memory	A generic term for any device that stores digital information using magnetic media or digital chip storage device.
Menu	A descriptive list of headings above nested functions that aid navigation to a specific operation. These are found in computer applications, with the heading at the top of a subset of like functions. They are also on the Printer LCD control Panel.
Monochrome	An image composed of a single color.
Network	A series of computers connected by data transfer cable for communication and sharing of functions and peripherals.
Oersted (Oe)	The unit of magnetic field strength named after Dutch scientist Hans Christian Oersted who found the science of electromagnetism.
Offset	The prescribed distance between a reference point and the target point. The offset in card printing can refer to the position of the image relative to the leading edge or the distance of the start of Magnetic Encoding from the leading edge of the card.
OS (Operating System)	The instructions installed on the computer hard drive that run the computer's operations and applications. The Driver used for any given OS will differ from other platforms. The correct version Driver is loaded for the Printer to interface with the OS and the application to print.
Output	Any product of the Printer including card image, encoded data and lamination.
Output Hopper	The portion of the Printer that accepts the completed cards.

Continued on the next page

**Glossary of Terms (continued)**

<b>Term</b>	<b>Definition</b>
PC (Personal Computer)	A stand-alone, programmable, electronic device that can store, retrieve and process data consisting of a CPU, mouse, keyBoard and monitor.
PCB (Printed Circuit Board)	A solid, multi-layered plate on which electronic elements are attached, either through the Board or on the surface.
Peripheral	Any device that is attached externally to a PC. These often share the same data cable or port as a Printer and can be the source of communication problems.
Pinch roller	A free spinning (non-driven) roller that presses the card against the drive roller, on the opposite side, to ensure an adequate normal force for proper traction.
Pixel	Short for picture element. The smallest element of a graphic.
Platen	The hard rubber roller that drives the media through the Printer, providing support to the backside of the media during printing.
Port	A communication interface used for the transference of data.
Portrait	A document layout that is viewed with the document's long axis in a vertical orientation.
Print Driver	A software utility that serves as an interface between the Printer and the Windows GDI (Graphical Device Interface), making the Printer's functions available through the software application. It also provides the format information for the rasterizing of the print file including any necessary escape or function commands.
Print Job	A file of one or more cards for the Printer to print, including image data and Printer functions, transmitted through the parallel interface and at times stored temporarily in the print buffer and spooler.
Print Server	A device used to connect and control a Printer on a network.

Continued on the next page

**Glossary of Terms (continued)**

<b>Term</b>	<b>Definition</b>
Queue	A sequence of files or sets of data, awaiting transmission or processing.
RAM (Random Access Memory)	A storage device for digital information to be held temporarily, to facilitate processing.
Rasterize	The process of converting the elements of a graphic into a bitmap to be printed.
Reboot	Cycling the power to the Printer so that it resets and reinitializes.
Registration	The quality of the alignment of the separate primary-color images: YMCK.
Resident Font	A set of characters loaded into the Printer memory that can be programmed to print those characters on the card without rasterizing the image.
Resolution	The number of individual pixels in a graphic, taken over a given length, used to indicate the sharpness of the picture and the level of detail. The number of elements in the Printhead determines Fargo Printer resolution. See CardJet Engineering Drawing No. D400147 in the appendix.
RGB (Red/Green/Blue)	The three primary colors of the luminance or additive, model. Combinations of these three colors can produce practically all the colors of the spectrum that humans can detect. Computer monitors operate on an RGB model.
Ribbon	The dye impregnated film that is used for color printing.
Ribbon cable	Parallel wires held flat in a row by plastic insulation.
RMA number (Return Merchandise Authorization number)	A number, acquired from Fargo Support, which authorizes the return of merchandise for repair or credit.

Continued on the next page



**Glossary of Terms (continued)**

<b>Term</b>	<b>Definition</b>
Roller	Elements of the Printer used for the transport of media consisting of a rotating steel shaft (for ribbon) or a rotating steel shaft with a rubber cylinder installed at the shaft midpoint (for moving cards).
Saturation	A measure of the degree of color, from gray, with the same brightness.
Self-test	A pre-determined print file used to confirm Printer operation sent from the Driver.
Sensor	An electro-mechanical/electro-optical device used to indicate a change in state in the Printer such as when a card reaches a certain location.
Software	Instructions saved in computer memory that directs the computer to perform certain tasks and functions.
SS (Start Sentinel)	The character denoting the end of a magnetic data string.
String	A sequence of characters that form a line of data.
Surface mount	A method of mounting circuit elements onto the surface of a circuit Board, attached at solder pads, rather than through holes in the Board.
Surge Protector	An electronic device, placed in serial to the Printer's power supply, that prevents damage to the Printer from electronic surges and electrical current that is outside of the normal parameters.
Temp file	A temporary file, generated automatically by Windows, to store the information for an active document. Windows should delete these files when the application is closed.
Test-print	A file stored in or generated through windows that is sent to the Printer to test basic functionality.

Continued on the next page

**Glossary of Terms (continued)**

<b>Term</b>	<b>Definition</b>
Through-hole	A method of mounting circuit elements with the leads passing through holes in the circuit Board and soldered on the opposite side.
Timeout	An interruption of a print job that occurs when a function is not completed in the time allotted by the operating system.
TOF (Top of Form)	The leading edge of the card, as it travels through the Printer.
Track	The area on a mag stripe designated to contain the magnetic data string.
Troubleshooting	The process of investigating and determining the cause of a problem.
TrueType (TT)	A font format that produces each character using a mathematical equation, rather than a graphical representation, resulting in a much sharper, cleaner image.
Update	The process of installing a new revision of software or Firmware to implement new changes to the Printer's command codes and procedures.
UPS (Un-interruptible Power Supply)	An AC power supply, typically powered by batteries, which provides temporary power to the PC or Printer during an interruption of the supply voltage.
USB (Universal Serial Bus)	A 1.5M/sec (12Mbit/sec) serial communication interface that can support 127 separate devices consisting of 4 wires: power, ground, data in and data out.
Virtual Memory	A technique used by Windows when chip memory is exhausted, in which data is written to the hard to hold data temporarily and support Window's operations.
Wrinkle	The appearance in the card image of wavy or arched lines, either colored or clear, caused by improper film or ribbon tension.

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